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STUDIES IN FAMILIAL NEUROSYPHILIS

I. CONJUGAL NEUROSYPHILIS *

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The clinical evidence favoring the existence of a neurotropic strain of *Spirochaeta pallida* lies partly in the comparative frequency of neurosyphilis in both partners to a marriage and in their children. The literature is replete with reports of individual families in which this association has been observed. Those who support the theory of a single undifferentiated strain of the organism have justly contended that the occurrence of conjugal neurosyphilis must be demonstrated to be more than merely coincidental before it can be employed as an argument by the dualists. It must be shown that the incidence of neurosyphilis among the marital partners and the children of neurosyphilitic patients is greater than that found among any unselected class of syphilitics. In order to accomplish this end, it is necessary to examine by all available means the families of a large number of neurosyphilitics. The tedious aspect of this research may account for the paucity of adequate references in the American and English literature, though numerous valuable contributions have been made by German neurologists.

In the light of our present knowledge of asymptomatic neurosyphilis, such a routine study must include as indispensable parts of the examination a careful anamnesis, physical and neurologic examination, and investigation of the Wassermann reaction of the blood and of the cytobiology of the cerebrospinal fluid. So far as we have been able to determine, no investigations have been reported in which all these necessary measures were employed.

We have purposely avoided a review of the individual family reports in the literature, of the isolated instances in which several persons infected with syphilis from a single source have all developed neurosyphilis, and of statistical studies carried out before the advent of the Wassermann reaction and therefore based on clinical impressions alone. It is necessary, however, to refer to the work of Fischer,¹ in whose paper the earlier literature is reviewed. This investigator found only ten cases of conjugal neurosyphilis among the

partners of 395 paretics. His conclusion as to the infrequency of the association is supported by the report of Hannard and Gayet,² who observed only twenty-five cases of conjugal paresis among the partners of 2,429 paretics. Their observations extended over a period of thirty-eight years. On the other hand, Meyer³ found eight cases of neurosyphilis among twenty-eight partners of neurosyphilitics, and Hauptmann⁴ reports eleven instances among thirty-six partners. Routine examinations of all partners are not reported by these workers, so that an estimate of the actual frequency of conjugal neurosyphilis is impossible from their figures.

The later investigators, especially Plaut and Göring,⁵ Schacherl,⁶ Raven,⁷ von Rohden⁸ and Seelert⁹ in Germany, and the Solomons¹⁰ in this country, have reported more elaborate studies. In addition to the investigation of marital partners, all of these authors lay much stress on the status of health of the children of neurosyphilitic marriages. In the present study the results of the examination of children of neurosyphilitic parents have been omitted, in order not to cloud the issue of conjugal neurosyphilis. It is expected that these findings will be reported in a future communication. The results obtained by these various investigators have been based on history, physical examination and blood Wassermann only, the study of the spinal fluid, which we regard as essential for reasons presently to be considered, having been omitted. A comparison of their results with those which we have obtained will be considered presently.

In this paper is presented in summary form the results of the examination of the marital partners of fifty neurosyphilitic patients. Fifty-two partners (forty-two wives, two mistresses and eight husbands) were examined by the physical and serologic methods outlined. Certain qualifying statements regarding the results must be made. The material is, so far as possible, unselected; but, as Solomon¹⁰ points out, an unconscious selection is difficult to avoid, particularly in such

2. Hannard and Gayet: De la paralysie générale et de la taboparalysie conjugales dans le Département du Nord, 1871 à 1909, Ann. méd. psychol. **69**: 200, 1911.

3. Meyer, E.: Zur Kenntnis der konjugalen und familiären syphilitischen Erkrankungen des Zentralnervensystems, Archiv. f. Psychiat. **45**: 964, 1909.

4. Hauptmann, A.: Serologische Untersuchungen von Familien syphilitischer Nervenkrankter, Ztschr. f. d. ges. Neurol. u. Psychiat. **8**: 36, 1912.

5. Plaut, F., and Göring, M. H.: Untersuchungen an Kindern und Ehegatten von Paralytikern, München. med. Wchnschr. **58**: 1959, 1911.

6. Schacherl, M.: Ueber Luetikerfamilien, Jahrb. f. Psychiat. u. Neurol. **36**: 521, 1914.

7. Raven, W.: Serologische und Klinische Untersuchungen bei Syphilitiker-familien, Deutsch. Ztschr. f. Nervenhe. **51**: 342, 1914.

8. Von Rohden, F.: Ueber die Pathologie der Paralytikerfamilie, Ztschr. f. d. ges. Neurol. u. Psychiat. **37**: 110, 1917.

9. Seelert, H.: Untersuchungen der Familienangehörigen von Paralytikern und Tabikern auf Syphilis, Monatsschr. f. Psychiat. u. Neurol. **41**: 329, 1917.

10. Solomon, H. C., and Solomon, M.: The Family of the Neurosyphilitic, Ment. Hyg. **2**: 71, 1918; The Effects of Syphilis on the Families of Syphilitics Seen in the Late Stages, Soc. Hyg. **6**: 469, 1920.

* From the Syphilis Department of the Medical Clinic, Johns Hopkins Hospital.

* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Fischer, O.: Gibt es eine Lues nervosa? Ztschr. f. d. ges. Neurol. u. Psychiat. **16**: 120, 1913.

a small series as this. The results must therefore not be regarded as absolute, since they require confirmation from a larger series of patients. In most instances both the original neurosyphilitic patient and his partner were examined personally; a few families were seen in the Phipps Psychiatric Clinic of this hospital.¹¹ The neurologic examination was usually made by one of us (Moore), and included the usual routine procedures with the exception of a careful sensory examination, which was not carried out in any case. The available data includes anamnesis with special attention paid to syphilis, physical examination, and blood and spinal

fluid examinations in both the original patient and the marital partner.

The material may be considered in three groups, according to the diagnosis of the original patient. In the fifty families, the type of neurosyphilis in the original patient was paresis, twenty-one times; tabes, eight times, and cerebrospinal syphilis of various types, twenty-one times.

GENERAL PARALYSIS

The partners of the twenty-one paretics include twenty-two individuals (eighteen wives, one mistress and three husbands). The essential data are presented in Table 1. Six were, so far as could be determined, normal. In sixteen, or 72.7 per cent., there was definite

11. We are indebted to Dr. Phyllis Greenacre for permission to use this material.

TABLE 1.—GROUP OF GENERAL PARALYSIS FAMILIES

Family	Duration of Marriage, Years	Syphilifer	Diagnosis of Syphilifer	Duration of Syphilis, Years	Condition of Partner (Wife or Husband)							Diagnosis in Partner
					History of Syphilis	Physical Examination	Blood Wassermann Test	Cerebrospinal Fluid				
								Cells	Globulin	Wassermann Test	Colloidal Tests	
5	3 mos.	Husband	G. P.	7	None	Negative	0	0	0	0	Negative	Nonsyphilitic
8	7	Husband	G. P.	10	None	Negative	0	2	0	0	Negative	Nonsyphilitic
10	17	Husband	G. P.	6	Chancre 4 months after husband	Negative	4	0	0	0	Negative	Syphilis, Wassermann
13	6	Husband	G. P.	?	(a) Wife: Rash 3 years after marriage, no trouble since	Anisocoria, right pupil sluggish, speech stumbling reflexes +	4	36	++	4	Paretic	General paresis
					(b) Mistress: Lived with man before his marriage; in 1912 rash, malaise; gumma soft palate, 1916; in 1920, headache, diplopia	Complete left III and VI nerve paralysis; reflexes +++	0	16	++	2	Paretic	Meningovascular neurosyphilis
16	14	Wife	G. P.	21	None	Negative	0	0	±	0	Negative	Nonsyphilitic
18	3	Husband	G. P.	?	None	Negative	4	65	++++	4	Paretic	Asymptomatic neurosyphilis
20	2	Husband	G. P.	13 ?	None	Negative	0	0	0	0	Negative	Nonsyphilitic
21	10	Wife	G. P.	12	None	Negative; Wassermann reaction fast	4	2	0	0	Negative	Syphilis, Wassermann
22	6	Husband	G. P.	10	None	Negative	4	68	++++	4	Paretic	Asymptomatic neurosyphilis
23	8	Husband	G. P.	?	None	Negative	0	0	0	0	Negative	Nonsyphilitic
26	17	Husband	G. P.	?	None	Negative	4	2	0	0	Negative	Syphilis, Wassermann
30	3	Husband	G. P.	?	Rash 3 months after marriage nothing since	Negative	0	40	++++	4	Paretic	Asymptomatic neurosyphilis
33	22	Husband	G. P.	?	Primary after marriage followed by secondaries	Negative neurologic examination; aortitis	4	2	0	0	Negative	Syphilis cardiovascular, aortitis
34	20	Husband	G. P.	25	None	Anisocoria, otherwise negative	4	52	++++	4	Paretic	Cerebrospinal syphilis, unclassified
40	21	Husband	G. P.	20+	Annular rash lasting 2 weeks 20 years ago; no further complaint	Anisocoria, A. R. pupils; reflexes ++	4	11	++++	4	Paretic	General paresis
43	15	Wife	G. P.	?	None of early syphilis; vertigo, loss of libido and potency, lightning pains for 1 year	A. R. pupils, K. K. and A. J. absent, Romberg +	0	16	+++	4	Paretic	Tabes dorsalis
44	16	Husband	G. P.	?	None	Negative	4	2	0	0	Negative	Syphilis, Wassermann
46	20	Husband	G. P.	?	None of early syphilis; 6 months ago, loss of memory and ethical sense; euphoria, grandiose ideas	Pupils irregular, sluggish; tremor; reflexes +++; speech defect	4	8	++	4	Paretic	General paresis
47	24	Husband	G. P.	26	None	Pupils unequal; right sluggish; otherwise negative	4	1	0	0	Negative	Cerebrospinal syphilis?
48	25	Husband	G. P.	25	None of early syphilis; transient hemiplegia 15 years ago, 10 years after marriage	Multiple cerebral vascular insults	0	2	+	2	Negative	Vascular neurosyphilis
50	25	Husband	G. P.	30	None	Negative	0	2	0	0	Negative	Nonsyphilitic

evidence of syphilis provided, either by history, the presence of lesions, or a positive Wassermann test in the blood. Eleven, or 68.7 per cent., of these sixteen syphilitic partners had neurosyphilis. The type of neurosyphilis was paretic, three times, tabetic, once; vascular, once; meningovascular, three times, and asymptomatic, three times. In other words, the diagnosis of neurosyphilis was permissible in only eight of these eleven individuals on the basis of clinical evidence; in the remaining three it was obtained only by means of a routine spinal fluid examination. In two of the asymptomatic cases there was neither history nor clinical evidence of syphilis, but the blood Wassermann test was positive; in the third there was a doubtful history of a rash three months after marriage, an absolutely normal physical examination, and a negative blood Wassermann test. The spinal fluid in this patient showed 40 cells, a four plus globulin reaction, Wassermann reaction positive with 0.2 c.c., and a paretic gold curve.

(meningovascular), nine times; meningeal, four times, and asymptomatic, four times (Table 3). Syphilis was present in the twenty-two partners (eighteen wives, one mistress and two husbands) eighteen times (81.8 per cent). Of the syphilitic partners, however, only five, or 27.7 per cent., were definitely neurosyphilitic on the basis of positive spinal fluid findings, while an additional partner showed clinical signs of neurosyphilis with a negative spinal fluid. If this case is included, 33.3 per cent. of the syphilitics had neurosyphilis. The incidence of neurosyphilis among partners in this group was therefore only about one half of that found in the groups of tabetics and paretics.

TYPE OF NEUROSYPHILIS IN MARITAL PARTNER

It may be seen from Table 4 that in eight of the twenty-one neurosyphilitic partners the type of neurosyphilis was the same as in the original patient (conjugal paresis, three times; tabes, twice, and cerebrospinal syphilis of the same type, three times). In six

TABLE 2.—GROUP OF TABES FAMILIES

Family	Duration of Marriage, Years	Syphilifer	Diagnosis of Syphilifer	Duration of Syphilis, Years	Condition of Partner (Wife or Husband)							Diagnosis in Partner
					History of Syphilis	Physical Examination	Blood Wassermann Test	Cerebrospinal Fluid				
Cells	Globulin	Wassermann Test	Colloidal Tests									
7	20	Husband	Tabes	17	None of early syphilis; 2 years ago headache, diplopia; 1 year ago right hemiplegia, transient aphasia	Right hemiparesis, hemianesthesia	4	?	+++	4	?	Vascular neurosyphilis
15	13	Wife	Tabes	? Tabetic 3 yrs.	Headaches for 3 years; for 4 mos. difficulty with urination, lightning pains	Pupils normal; K. K. and A. J. absent	0	26	++++	4	Paretic	Tabes dorsalis
24	23	Husband	Tabes	25	None of early syphilis; gumma tonsil 1 year ago	Negative	0	1	0	0	Negative	Syphilis, tertiary, treated
29	4	Wife	Tabes	7	None	Negative	0	2	0	0	Syphilitic zone	Nonsyphilitic
32	23	Husband	Tabes	17	None	Negative	0	58	++++	4	Paretic	Asymptomatic neurosyphilis
38	20	Husband	Tabes	7	None of early syphilis; many vague complaints	A. R. pupils, K. K. and A. J. absent; Romberg +	4	38	+++	4	Paretic	Tabes dorsalis
42	13	Husband	Tabes	?	None	Negative	0	0	0	0	Negative	Nonsyphilitic
49	17	Husband	Tabes	23	None	Negative	4	0	0	0	Negative	Syphilis, Wassermann

TABES

Six wives and two husbands of tabetics were examined (Table 2). Six of these eight partners had syphilis, of whom four were neurosyphilitic. The neurosyphilitic partner was tabetic twice, hemiplegic once, and asymptomatic once. The cytobiology of the spinal fluid was positive in all four instances. The asymptomatic partner is of particular interest, since she gave neither a history nor any clinical evidence of syphilis (though one of her children was syphilitic), and the blood Wassermann test was negative. Routine examination of the spinal fluid revealed 58 cells, a four plus globulin reaction, Wassermann test positive with 0.1 c.c., and paretic colloidal gold and mastic curves. The number of families in this group is too small to permit definite conclusions. Of the material available, however, 75 per cent. of the marital partners had syphilis, and of these, 66.6 per cent. had neurosyphilis.

CEREBROSPINAL SYPHILIS

The neurosyphilis of the twenty-one original patients in this group was vascular in type, four times; diffuse

of the remaining thirteen instances, neurosyphilis was manifest in the partner by positive spinal fluid findings only. In each of these instances the cytobiology of the fluid was of the same type: cell count between 30 and 100, globulin reaction and Wassermann test strongly positive, and colloidal tests paretic. Cases of this type have been designated by Southard and Solomon as paresis sine paresi; and our own experience leads us to believe that the majority of patients presenting this type of spinal fluid abnormalities will ultimately develop neurosyphilis of the parenchymatous type. These figures demonstrate that, contrary to the statements of Raven, Fischer and others, conjugal neurosyphilis of the same type is relatively common.

RELATION OF SYPHILIS IN MARITAL PARTNER TO TIME OF MARRIAGE AND DURATION OF SYPHILIS IN ORIGINAL PARTNER

The average duration of marriage is 11.9 years for the paretic, 17.8 years for the tabetic, and only 6.7 years for the cerebrospinal syphilitic group. The average duration of syphilis in the syphilifer shows the same

difference in grouping: paretic group, seventeen years; tabetic, sixteen years; cerebrospinal syphilitic, nine years. In Table 5 is shown for the whole group that the danger of infection for the partner increases as the time of infection in the syphilifer approaches the year of marriage. When the syphilifer was infected after marriage, 90.9 per cent. of the marital partners acquired syphilis. The incidence is almost as high in the sixteen cases in which it was impossible to determine the date of the original infection. Seelert⁹ lays great stress on this time relation, and concludes from a study of his material that the spouse may escape syphilis if the original infection took place three years or more before the marriage. Our own data are insuffi-

cient to corroborate or deny this conclusion; but in five families in which the original member was infected five years or more before marriage, the partner contracted syphilis twice.

LESIONS OF EARLY SYPHILIS IN THE MARITAL PARTNERS OF NEUROSYPHILITICS

An additional point of difference between the paretic and tabetic groups and the group of cerebrospinal syphilitics lies in the apparent latency of infection in the syphilitic partners. Raven⁷ draws special attention to this latency of infection. In twenty-seven families reported by him in which both partners were certainly or probably neurosyphilitic, symptoms of early syphilis

TABLE 3.—GROUP OF CEREBROSPINAL SYPHILIS FAMILIES

Family	Duration of Marriage, Years	Syphilifer	Diagnosis of Syphilifer	Duration of Syphilis, Years	Condition of Partner (Wife or Husband)		Blood Wassermann Test	Cerebrospinal Fluid				Diagnosis in Partner
					History of Syphilis	Physical Examination		Cells	Globulin	Wassermann Test	Colloidal Tests	
1	3½	Husband	Vascular: epilepsy	?	Late secondary rash 6 mos. after husband's nervous symptoms	Negative	4	3	0	0	Negative	Syphilis, Wassermann
6	2	Husband	Vascular: hemiparesis	2	Primary 2 mos. after husband's primary	Mydriasis, otherwise negative	0	8	0	0	Negative	Syphilis, latent
25	16	Husband	Vascular: hemiparesis	14	Negative	Anisocoria, sluggish pupils; auditory hallucinations	4	112	+++	4	Paretic	General paresis
36	2	Husband	Vascular: hemiparesis	4	Negative	Negative	4	2	0	0	Negative	Syphilis, Wassermann
2	8	Husband	C. N. S. unc.	6	Negative	Negative	0	0	0	0	Negative	Nonsyphilitic
3	15	Husband	C. N. S. unc.	4	Secondary rash after husband's infection	Negative	4	0	0	0	Negative	Syphilis, Wassermann
4	6	Husband	C. N. S. unc.	9	Negative	Negative	0	0	0	0	Negative	Nonsyphilitic
14	3	Husband	C. N. S. unc.	4	Doubtful history of rash	Negative	4	27	+++	4	Paretic	Asymptomatic neurosyphilis
19	7	Husband	C. N. S. unc.	?	(a) Wife: None of early syphilis; gumma of soft palate	Negative except for tertiary lesion	0	0	±	0	Negative	Syphilis, tertiary
					(b) Mistress: Negative	Negative	0	0	0	0	Negative	Nonsyphilitic
31	13	Husband	C. N. S. unc.	14	Negative	Negative except for hypertension	0	1	±	0	Negative	Nonsyphilitic
37	7	Husband	C. N. S. unc.	27	Just after marriage rash lasting 4 wks.; for 2 years headache, girdle sensation	Anisocoria, eccentric irregular pupils; reflexes +	0	8	+	0	Negative	Cerebrospinal syphilis, unclassified
39	3	Husband	C. N. S. unc.	6 ?	Alopecia 5 months ago; congenitally syphilitic child	Negative	0	63	+++	4	Paretic	Asymptomatic neurosyphilis
41	7	Husband	C. N. S. unc.	9	Extragenital (lip) 2 years ago; well treated	Negative for neurologic signs	0	5	0	0	Negative	Syphilis, primary, treated
11	5	Wife	C. N. S. asymp.	.....	Infected 2 years before wife, whose sp. p. was routine diagnostic measure	Negative	4	6	0	0	Negative	Syphilis, Wassermann
17	13	Wife	C. N. S. asymp.	.....	Infected 5 mos. before wife, whose sp. p. was found routinely positive	Recurrent secondary rash; no neurologic signs	4	2	0	0	Negative	Syphilis, recurrent secondary
28	2	Husband	C. N. S. asymp.	4 mos.	Developed secondary syphilis concurrently with husband; maculopapular rash palmar syphilide	Neurologic examination negative	4	0	0	0	Negative	Syphilis, secondary, early
12	1	Husband	Secondary neurorecurrence; left neuroretinitis, bilateral N VIII vestibular	15 mos.	None of early syphilis	Right facial paralysis, duration 1 week	4	18	++	4	Syphilitic zone	Meningeal neurosyphilis
27	20	Husband	C. N. S. meningeal	24	Shortly after marriage sore throat, bone pains, malaise lasting 6 mos.	Pupils irregular, sluggish; reflexes exaggerated	0	3	0	0	Negative	Nonsyphilitic ?
45	6	Husband	C. N. S. meningeal	?	Five years after marriage, secondary syphilis	Negative except for signs of secondary syphilis	4	2	0	0	Negative	Syphilis, secondary, early
51	12	Husband	C. N. S. meningeal	5	Negative; has had a syphilitic child	Negative	1	0	0	0	Negative	Syphilis, latent
52	6 mos.	Wife	C. N. S. asymp.	?	Four months ago primary, followed by secondaries	Lesions of secondary syphilis; no neurologic signs	4	16	+	0	Syphilitic zone	Syphilis, secondary, early (asymptomatic neurosyphilis)

appeared in the secondarily infected partners only twice. In this series, the figures are as follows: Of sixteen marital partners infected by paretic spouses, a history of the lesions of early syphilis or of gummatous lesions was obtained six times (37.5 per cent.); of six partners of tabetics, once only (16.6 per cent.); of the twenty-two partners of these combined groups of parenchymatous neurosyphilis, in 31.8 per cent. On

TABLE 4.—TYPES OF CONJUGAL NEUROSYPHILIS OBSERVED

Neurosyphilitic Disease in Syphilitic	Family Number*	Partner	Type of Neurosyphilis in Partner
General paresis	13	Wife	General paresis
	18	Mistress	Cerebrospinal syphilis; N III palsy
	22	Wife	Asymptomatic (positive C. S. F. only)
	30	Wife	Asymptomatic (positive C. S. F. only)
	34	Wife	Cerebrospinal syphilis unclassified (only neurologic manifestation anisocoria, positive C. S. F.)
	40	Wife	General paresis
Tabes	43	Husband	Tabes
	46	Wife	General paresis
	48	Wife	Vascular neurosyphilis
	7	Wife	Vascular neurosyphilis
Vascular.....	15	Husband	Tabes
	32	Wife	Asymptomatic (positive C. S. F. only)
	38	Wife	Tabes
Unclassed.....	25	Wife	General paresis
Unclassed.....	14	Wife	Asymptomatic (positive C. S. F. only)
Unclassed.....	37	Wife	Unclassed (positive physical findings; C. S. F. negative)
Unclassed.....	39	Wife	Asymptomatic (positive C. S. F. only)
Meningeal (neuro- recurrence)....	12	Wife	Meningeal (N VII palsy)
Asymptomatic...	52	Husband	Asymptomatic (positive C. S. F. only)

* Compare Tables 1, 2 and 3.

the other hand, twelve of the eighteen syphilitic partners (66.6 per cent.) of the group of cerebrospinal syphilitics gave a definite history of early lesions of syphilis.

COMPARISON OF DATA WITH THOSE OF OTHER WORKERS

The only reports which lend themselves readily to a detailed comparison with our material are those of Plaut and Göring⁵ (all paretics), Schacherl,⁶ Raven⁷ and Seelert⁹ (paretics and tabetics). The results of such a comparison are shown in Table 6. It is often difficult properly to classify the cases reported by these authors. Several of them have included as definitely neurosyphilitic partners who show, for example, only sluggish pupils or sluggish reflexes with an otherwise negative physical examination, negative history and negative blood Wassermann test. The interpretation of such ambiguous abnormalities depends, in our opinion, too much on the personal equation of the investigators for scientific accuracy. We have nevertheless classified such cases as "probable neurosyphilis." The twenty-one cases of neurosyphilis in marital partners which we report are largely free from this criticism, since in nineteen of them the spinal fluid findings were positive. In general, there is a fairly close agreement between the percentages of the various workers named and those obtained in this study. Only the percentages for the whole class of neurosyphilitics are sufficiently large to permit definite conclusions. They show that from 60 per cent. (Plaut and Göring) to 76.9 per cent. (this study) of the partners of neurosyphilitic patients are syphilitic; that from 18 per cent. (Plaut and Göring) to 40.3 per cent. (this study) of the total number of partners are neurosyphilitic; and that from 30 per cent. (Plaut and Göring) to 52.5 per cent. (this study) of the syphilitic partners are neurosyphilitic. The

higher figures which we have obtained, are, of course, due to the use of spinal fluid examinations as a routine part of the investigation.

COMMENT

The incidence of neurosyphilis in an unselected class of untreated or badly treated syphilitic patients is probably between 25 per cent. (Mattauschek and Pilcz,¹² from clinical observations) and 35.7 per cent. (Wile and Marshall,¹³ based on 1,869 spinal punctures on patients in all stages of syphilis, including 349 neurosyphilitics). In a large number of syphilitics without definite neurologic involvement, subjected to an amount of treatment known to be insufficient to cure, it was found to be from 12 to 16 per cent.¹⁴ Of the forty partners of this study demonstrated to have syphilis, fifteen had had one or more courses of treatment before spinal puncture was performed; so that the expectation of neurosyphilis in this group of patients might fairly be put somewhere between 15 and 35.7 per cent. Actually, however, 52.5 per cent. were neurosyphilitic. This may be considered as evidence in favor of a special strain of infecting organism with a predilection for invasion of nervous tissue. Complicating factors arise, however, when these patients are divided into the two groups of partners of parenchymatous neurosyphilitics (tabes and paresis) and those married to neurosyphilitics of the cerebrospinal (meningovascular) type. Of twenty-two syphilitic partners of the first group, fifteen, or 67.2 per cent., had neurosyphilis. This incidence seems far too high to be coincidental; but of eighteen partners of the second group, only six, or 33.3 per cent., were neurosyphilitic, which is not materially greater than the expected incidence of neurosyphilis in any group. As we have already pointed out, furthermore, the duration of marriage and of syphilis in the syphilitic is about twice as long in the combined groups of parenchymatous neurosyphilis as in the group of cerebrospinal syphilis. An attempt to employ this fact to explain the discrepancy of neurosyphilis in the partners in the two groups conflicts with our present day theories regard-

TABLE 5.—DURATION OF SYPHILIS IN ORIGINALLY INFECTED PARTNER IN RELATION TO TIME OF MARRIAGE AND STATUS OF HEALTH OF WIFE OR HUSBAND

Duration of Syphilis in Syphilitic	Total	Status of Wife or Husband			Per Cent. of Total Partners Syphilitic
		Neuro-syphilitic	Syphilis but No Apparent C. N. S. Involvement	Non-syphilitic	
More than 10 years before marriage.....	2	1	..	1	50.0
From 5 to 10 years before	3	..	1	2	33.3
From 1 to 5 years before..	16	5	6	5	68.7
Year of marriage.....	2	1	1	..	50.0
After marriage.....	11	4	6	1	90.9
Duration unknown.....	16	8	6	2	87.5

ing the genesis of neurosyphilis. So far as we now know, the central nervous system is invaded early in the course of the disease, probably at the time of the first period of generalization,¹⁵ and, except under unusual circumstances, not at any other time.¹⁶ It is therefore not permissible to argue that if the nervous

12. Mattauschek and Pilcz: Zweite Mitteilung über 4,134 katamnestisch verfolgte Fälle von luetischer Infektion, Ztschr. f. d. ges. Neurol. u. Psychiat. **15**: 608, 1913.

13. Wile, U. J., and Marshall, C. H.: A Study of the Spinal Fluid in One Thousand Eight Hundred and Sixty-Nine Cases of Syphilis in All Stages, Arch. Dermat. & Syph. **3**: 272 (March) 1921.

14. Moore, J. E.: The Cerebrospinal Fluid in Treated Syphilis, J. A. M. A. **76**: 769 (March 19) 1921.

15. Fordyce, J. A.: The Importance of Recognizing and Treating Neurosyphilis in the Early Period of the Infection, Am. J. M. Sc. **161**: 313 (March) 1921.

16. Moore, J. E.: The Genesis of Neurosyphilis, Arch. Derm. & Syph., to be published.

system has not been invaded by the ninth year after marriage, invasion may yet take place before the sixteenth year, and thus bring the incidence of conjugal neurosyphilis in the group of meningovascular syphilitics equal to that of the parenchymatous group.

A further essential point in the argument of the supporters of the neurotropic strain theory lies in the comparative infrequency of symptoms of early syphilis in patients with neurosyphilis and, especially, parenchymatous neurosyphilis. This infrequency is well illustrated in the present series in the syphilitic partners of tabetics and paretics; but two thirds of the partners of cerebrospinal syphilitics had passed through the usual course of early syphilis.

It is hardly conceivable that neurosyphilis of the parenchymatous type may be due to a strain of *Spirochaeta pallida* which involves nervous tissue mainly, while the more diffuse meningovascular neurosyphilis is due to a different strain, which also freely invades other organs, particularly the skin. Although the evidence offered by this paper seems to point in

2. Of the twenty-two partners of twenty-one paretics, sixteen, or 72.7 per cent., had syphilis. Of these syphilitics, eleven, or 68.7 per cent., were neurosyphilitic.

3. Six of the eight partners of tabetics had syphilis, and four of these had neurosyphilis.

4. In the group of meningovascular neurosyphilitics, eighteen, or 81.8 per cent. of twenty-two partners, had syphilis; but of these, only six (33.3 per cent.) were neurosyphilitic.

5. Of the whole number of fifty-two partners, forty, or 76.7 per cent., were syphilitic, and of these, twenty-one, or 52.5 per cent., had neurosyphilis.

6. Conjugal neurosyphilis was observed in twenty-one instances. The type was similar in both partners eight times. In seven instances, neurosyphilis was asymptomatic in the marital partner, and was detected only by routine examination of the cerebrospinal fluid.

7. The duration of marriage, and of syphilis in the syphilifer, was about twice as long in the group of

TABLE 6.—COMPARISON OF RESULTS OBTAINED IN THIS STUDY WITH THOSE OF OTHER INVESTIGATIONS

Author	Families	Partners Investigated	Neurosyphilis Certain	Neurosyphilis Probable *	Status of Health of Partners										Per Cent. of Syphilitics with Neurosyphilis
					Total Neurosyphilis		Syphilis Without C. N. S. Involvement†		Total Syphilis		Normal				
							No.	Per Cent.					No.	Per Cent.	
					No.	Per Cent.			No.	Per Cent.	No.	Per Cent.			
Paresis															
Plaut and Göring.....	54	50	1	8	9	18.0	21	42.0	30	60.0	20	40.0	30.0		
Schacherl.....	24	24	5	5	10	41.6	5	20.8	15	62.5	9	37.5	66.6		
Raven.....	37	37	4	8	12	32.4	18	48.6	30	81.0	7	18.9	40.0		
Seclert.....	30	30	4	1	5	16.6	10	33.3	15	50.0	15	50.0	33.3		
Moore.....	21	22	10	1	11	50.0	5	22.7	16	72.7	6	27.2	68.7		
Tabes															
Schacherl.....	26	26	..	7	7	26.9	10	38.4	17	65.3	9	34.6	41.1		
Raven.....	23	23	3	4	7	30.4	7	30.4	14	60.8	9	39.2	50.0		
Seclert.....	9	9	3	..	3	33.3	3	33.3	6	33.3	3	33.3	50.0		
Moore.....	8	8	4	..	4	50.0	2	25.0	6	75.0	2	25.0	75.0		
Cerebrospinal syphilis															
Schacherl.....	15	15	1	3	4	26.6	11	73.3	15	100.0	..	....	26.6
Raven.....	12	12	..	4	4	33.3	5	46.6	9	75.0	3	25.0	44.4		
Moore.....	21	22	5	1	6	27.2	12	54.5	18	81.8	4	18.2	33.3		
Total															
Plaut and Göring.....	54	50	1	8	9	18.0	21	....	30	60.0	20	40.0	30.0	
Schacherl.....	65	65	6	16	22	33.8	25	....	47	72.3	18	27.7	46.7	
Raven.....	72	72	7	16	23	31.9	29	....	52	72.2	20	27.8	44.2	
Seclert.....	39	39	7	1	8	20.5	13	....	21	53.8	18	46.1	38.09	
Moore.....	50	52	19	2	21	40.3	19	....	40	76.9	12	23.1	52.5	

* Included under this head are some cases in which the diagnosis rests on a single neurologic abnormality only, such as sluggish reflexes. In those cases reported by the various German authors the spinal fluid was not examined. In the two cases of this series included, it was negative.

† In this group are all cases classed by the German investigators as syphilitic because of a positive blood Wassermann test, or in women, because of a syphilitic child, frequent abortions or stillbirths, or numerous children who died in infancy. In this series a diagnosis of syphilis has been considered permissible only if the blood Wassermann test is positive, if lesions of syphilis were present or an unmistakable history obtained, or if a woman had borne a syphilitic child.

that direction, we prefer to consider the question as yet unsettled from the clinical standpoint, and to await the results of the examination of a much larger series of patients than the present.

If the scientific value of this material, so far as it permits a division of the organism of syphilis into distinct strains, is inconclusive, the practical value of the work is nevertheless obvious. The slogan introduced by Solomon, "The family of a paretic is the family of a syphilitic," receives ample support. It is as much the duty of every physician who deals with neurosyphilis to investigate the families of his patients as it is that of the physician who treats early syphilis. Furthermore, the seven spouses in this series with asymptomatic neurosyphilis demonstrate that such an investigation must be complete. Unless it includes anamnesis, physical and neurologic examination, and the usual laboratory tests of the blood and spinal fluid, it is inadequate.

SUMMARY

1. Routine examination was made of the fifty-two marital partners of fifty neurosyphilitic patients.

parenchymatous (paresis and tabes) neurosyphilis families as in the group of meningovascular syphilis. The danger of infection for the partner increases as the date of infection in the syphilifer approaches the date of marriage.

8. In two thirds of the syphilitic partners of parenchymatous neurosyphilitics, the course of syphilis had been latent. Only one third of the partners of meningovascular neurosyphilitics showed this latency.

9. The higher percentages of conjugal neurosyphilis which we have obtained, as compared with those of other investigators, are due to the routine use of spinal fluid examinations.

10. Though the high incidence of conjugal neurosyphilis in the partners of parenchymatous neurosyphilitics points to the existence of a special neurotropic strain of *Spirochaeta pallida*, the comparatively low percentage found in the partners of cerebrospinal neurosyphilitics introduces a complicating factor. From the available material, a definite decision as to duality of strain cannot be reached.

11. Routine examination of the partners of neurosyphilitics is of practical value. That spinal fluid examination is an indispensable part of the routine is indicated by the discovery of asymptomatic neurosyphilis in seven partners.

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ABSTRACT OF DISCUSSION

DR. HARRY C. SOLOMON, Boston: I have been greatly interested in the high percentage of syphilis in mates. We have published the results of examinations in 555 families of syphilitic patients which were divided between the parietic or parenchymatous group—the cerebrospinal syphilis group—and the group in which the central nervous system is not involved. We gave the figures from a Wassermann survey, using the Wassermann reaction with the idea that while it would probably show a less number of positive cases than if we took in all the factors mentioned by the authors for making the diagnosis of syphilis, yet it was standard and there would be less chance of the individual equation of the examiner interfering with the results. We found that the positivity of the Wassermann test in the mate varied between 25 and 33 per cent. As far as the central and the noncentral nervous system groups are concerned, there is very little difference in our group. The incidence of positive Wassermann reactions was about the same in the two groups. Another striking fact is the frequency in which the spinal fluid was positive in the cases reported today. We did not examine the spinal fluid in the mate as a routine procedure. However, the positive fluids were less than 10 per cent. They were selected to a certain extent because they all had positive Wassermann reactions and there was reason to suspect involvement of the central nervous system. This discrepancy is striking. It is interesting to know that 25 per cent. of the mates of the syphilitics had no conception that they had syphilis. The same thing was true of the children in these families. The average age at which the diagnosis was made in children who showed symptoms of congenital syphilis was between 8 and 12 years. That is important from the diagnostic standpoint. As to the strains of spirochetes: The authors were conservative. If we consider the necropsy findings, there is reason for being more conservative. In the vast majority of cases of general paresis, disease of the aorta is present. There is evidence that these patients have had more than a central nervous system lesion. There may be a predilection of these strains for the central nervous system, but there is also a predilection for the vascular system, so that it cannot be said to be a pure nervous system strain.

DR. JOHN H. STOKES, Rochester, Minn.: The authors are to be congratulated for their conservatism and because they have subscribed to the validity of the clinical investigation in attacking these questions. What we found out about patients was told us before the laboratory man worked out the case. Certain general principles underlie investigations of this type. There are multiple agencies. The first is the strain of the infecting agent. The second is the duration of the infection. The picture might be entirely different when the husband infected the wife five years after his own infection, and a comparison of the two situations might have no validity whatever. The third point is the soil on which the organism is implanted. One man's meat is another man's poison, and one man's spirochete is his death, whereas, the same organism only quickens the other man's wits and improves his outlook on life, so to speak. The fourth factor is treatment. At Rochester we are studying pairs, husbands and wives, in which we found that the strain of the organism is the same—that the husband was responsible for the infection of the wife, or the reverse, and that the duration of the disease is the same. We are also trying to compare the factor of treatment and the individual factor, as to the man and the woman. There seems to be a distinct tendency for the man to develop neurosyphilis as distinct from the woman. The woman has many protective factors in her life which do not enter into the life of the man. One sees in many pairs that one, the woman, has a severe cardiovascular syphilis, while the man has an extreme neurosyphilis and only the faintest signs of

myocardial involvement. A revision of our knowledge of syphilis must be made in the light of the cerebrospinal manifestations. We must revise our ideas of the disease, and its detection by the spinal fluid examination easily places that examination on a par with the Wassermann test, certainly in late cases, even if it does not rank above it. The multiple involvements should be searched for in these patients. The mere fact that one patient has neurosyphilis and another has not, is not, after all, so important for the patient to know; but the other patient may have the beginnings of an aneurysm which may cloud his future just as distinctly as does the other patient's paresis.

DR. WADE H. BROWN, New York: Some differences of opinion may be expressed as to whether there are two strains or one strain. The strongest evidence for strains is clinical evidence. Some laboratory work tends to confirm a dualistic strain theory. The clinical evidence is just as strong for one as for the other of these theories. I wish to emphasize the necessity for great caution. We know entirely too little of the possibilities of what any strain may do in an experimental animal either at the time of isolation or subsequently. The great difficulty which has arisen from laboratory studies is due to the fact that these comparisons have been made for the most part under wholly incomparable conditions—freshly isolated strains compared with strains carried for a number of years. The only proper way is to study strains isolated at practically the same time from the same source and carried under the same conditions and then vary the conditions. There is a demand for careful epidemiologic studies and careful laboratory investigations. We need facts, a great many more facts than we possess, before we are ready to commit ourselves to any opinion as to what the causative organism is in this disease as to strain.

PRINCIPLES UNDERLYING THE TREATMENT OF HEART DISEASE BY EXERCISE *

THEODORE B. BARRINGER, JR., M.D.

NEW YORK

For many years the idea has prevailed, and still prevails, that the chief cause of heart failure in patients suffering from chronic cardiac disease is physical overstrain. This firmly rooted belief has dominated our methods of treating heart disease, with the result that exercise has been almost completely banished as a therapeutic measure. Only recently has it come into comparative prominence and, although many physicians can testify to its efficacy, the principles guiding its use are as yet mainly empiric, and much uncertainty exists about the whole matter.

We have considerable evidence which tends to controvert this long-held mechanical theory of the cause of heart failure. I recently investigated the clinical records of a series of 154 cases of heart failure complicating chronic valve or muscle disease.¹ In but three cases was there a definite history of physical strain immediately preceding the onset of symptoms. A large proportion of the remaining 151 cases showed fever over varying periods. Sixty-nine patients showed an increase above normal of the polymorphonuclear leukocytes (blood counts were done in 134 cases). The results of the survey pointed strongly to infection in the heart itself as the cause of heart failure. We found a certain group of patients, generally with a history of

* From the Cardiac Clinic of the New York Hospital.

* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Barringer, T. B., Jr.: The Etiology of Heart Failure, J. A. M. A. 76: 1143 (April 23) 1921.

syphilis, who suffered from acute or chronic heart failure following an attack of angina, occasionally initiated by physical exertion. It was probably this group which did much to establish the old theory of the mechanical cause of heart failure.

The newer circulatory physiology teaches that a normal heart always dilates during exercise, for only in this way can it increase largely its output. A damaged heart acts in the same way, only more rapidly and extensively and in response to a smaller amount of exercise. It is improbable that the dilatation accompanying a brief period of exercise, even if marked, could so damage the contractile power of the heart muscle fibers that the temporary dilatation would become persistent and heart failure result. Only if the exercise causing the dilation continued would heart failure ensue, but the patient's sensations would warn him long before this. We frequently see damaged hearts overtaxed by physical exercise, but only rarely do the symptoms persist more than a few minutes after the exercise has ceased.

Certainly the fear of overtaxing the heart in heart disease by physical strain and thereby producing heart failure was closely connected with the old theory of the

increased work. During vigorous exercise the blood flow through these vessels may be increased to six times the normal. The flooding of the heart muscle with blood, which accompanies every kind of exercise, must have a marked effect on its nutrition, provided it is not overfatigued by the exercise. Improvement in the nutrition of the heart muscle fibers increases their contractile power, which is the main reason for the increase in cardiac reserve power which properly graded exercise will cause in normal people and in patients with heart disease.

Increased blood pressure plays such an essential part in the effect produced by exercise on the heart that further clinical investigation along this line seemed desirable. During the past year I have carried out a number of experiments on normal persons and patients with heart disease to determine the course of the systolic blood pressure both *during* and *after* work. The only exercise requiring no apparatus which would permit the blood pressure to be taken while the exercise was proceeding was the following:

The patient stood still with one extended arm resting on a support not quite as high as the shoulder. The pressure was read by auscultation, and then the patient flexed the thighs alternately on the abdomen at the rate of from 60 to 90 per minute, holding as quiet as possible the arm from which the pressure was read. The pressure was read at frequent intervals during the work. Naturally, the amount and rate of work varied considerably.

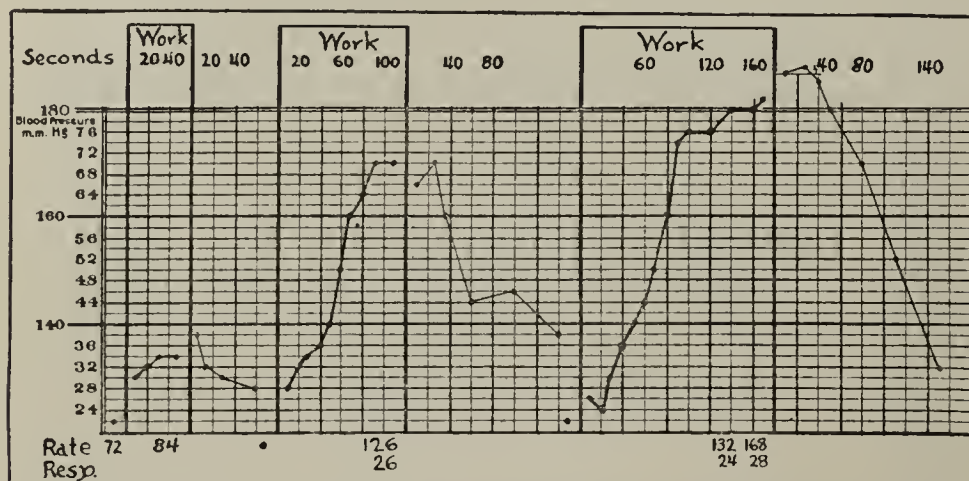


Chart 1.—Curve of systolic blood pressure during and after work in a normal person, aged 30, in poor physical training. Spaces between heavy perpendicular lines represent working periods. Work furnished by flexing alternately thighs on abdomen at rate of 90 per minute. Normal reactions.

cause of heart failure and is not justified by our present knowledge of circulatory physiology or by our present conception of the dominant rôle which infection plays in the production of heart failure.

CIRCULATORY PHYSIOLOGY OF EXERCISE²

The circulatory physiology of exercise will be discussed briefly, for a knowledge of this is essential to an intelligent use of exercise in heart disease. Only recently have we learned how intensely exercise affects the heart and arteries, and of the great margin of safety existing in a normal cardiovascular apparatus. During physical work the heart increases its output per minute either by a larger output per beat or by an increased rate or by both. This increase may be as much as four times the normal during heavy work. The splanchnic vessels are constricted, and this in conjunction with the increased output of the heart, raises the blood pressure. The rise of blood pressure is perhaps the most striking and important of the phenomena accompanying exercise. It is the chief factor in maintaining or increasing the coronary blood flow whereby the heart muscle is supplied with sufficient oxygen to perform its

(delayed rise or prolonged fall³). In some experiments the work continued as long as five minutes at top rate of speed (90 flexions per minute).

These reactions may be interpreted as follows: The rise during work was caused by an increased heart output per minute and constriction of the splanchnic vessels. The heart muscle was stimulated to contract more energetically, which increased each systolic discharge and played an important part in producing the increased minute output of the heart. The blood flow through the coronary vessels was increased markedly, which not only enabled the heart to do its additional work but improved the nutrition of its muscle fibers.

CIRCULATORY REACTIONS DURING AND AFTER EXERCISE IN PERSONS WITH HEART DISEASE

In patients with large cardiac reserve powers there was no difference from the reactions described in normal persons.

Patients with small reserve power showed several differences. They were able to work for shorter periods of time, which increased as they improved. In the

2. Bainbridge, F. A.: The Physiology of Muscular Exercise, London, 1919. This excellent monograph is the authority for many of the statements about circulatory physiology in this paper.

3. Barringer, T. B., Jr.: The Circulatory Reaction to Graduated Work, Am. J. M. Sc. 155:864 (June) 1918.

majority of cases the pressure rose *during* work, reaching its highest point toward the end of the longest working periods. Occasionally the longest periods of work were accompanied by lower blood pressures (Chart 4). The pressure *after* work was, as a rule, higher than that during work and reached the highest point after the longest working period. There were a few exceptions to this. Abnormal curves of blood pressure (delayed rise and prolonged fall) were present in the majority of cases when the heart was overtaxed.³ Also on several occasions a marked pulsus alternans occurred. The heart showed a greater increase in rate earlier in the working period than did the normal person's. These patients with limited cardiac reserve powers showed the same circulatory reactions to exercise that normal persons did up to the point where the heart became overtaxed.

In patients with cardiac failure and little or no reserve power the pressure rose during work, at times excessively. This was caused probably by an exaggerated activity of the vasomotor center. The pressure subsequent to work showed abnormal curves. The experiments in this class of patients are described at length elsewhere.⁴

increases the output per beat and at the same time richly supplies the muscle with blood, and to avoid any degree and duration of exercise which would fatigue the heart and interfere with its nutrition. It is hardly probable that prescribed exercise would be so strenuous and long continued as to produce heart failure; nevertheless the fatigue and interference with nutrition which is caused when the optimum of exercise is exceeded, even for a brief period, must make the heart muscle more susceptible to reinfection.

We have a number of indications which enable us to determine whether a given exercise has overtaxed the heart and produced the undesirable results discussed above. The appearance of the face, the patient's sensations, the rate of respiration, the time it takes the pulse rate to return to normal, and the type of systolic blood pressure curve subsequent to work, all are of value. I have found the form of systolic blood pressure curve to be the most reliable.⁵ Also, we are less liable to exceed the limit of safety if the early exercises given to a heart patient after a breakdown are of short duration.

The height of the blood pressure curve subsequent to exercise gives us an indication as to the effect of a given exercise on the heart in the majority of patients. A rise

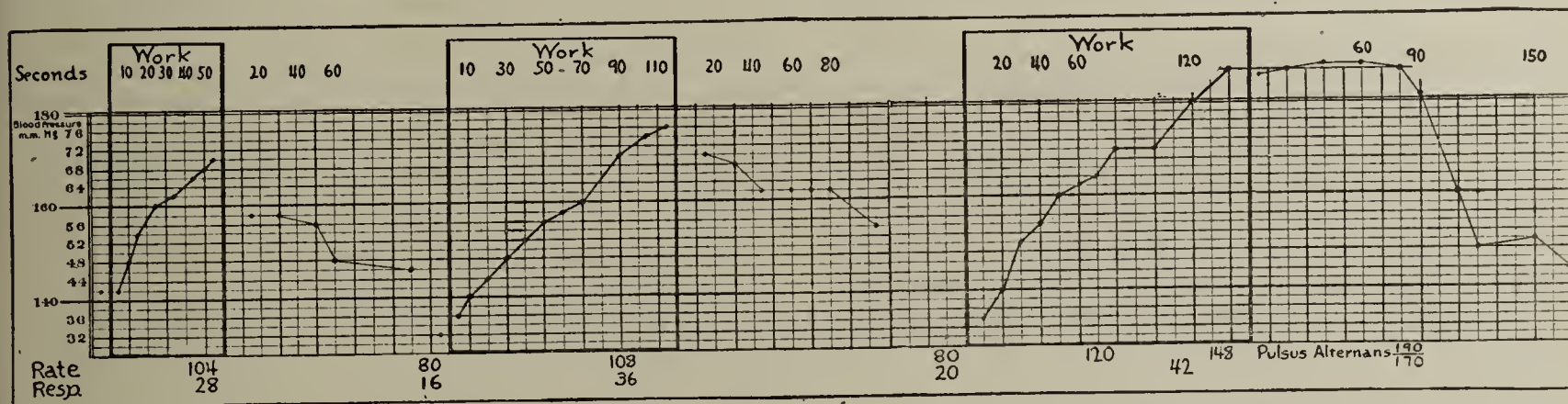


Chart 2.—Curve of systolic blood pressure during and after work in a patient, C., aged 51, suffering from valvular disease (aortic regurgitation) with small cardiac reserve power. Spaces between the heavy perpendicular lines represent working periods. Work furnished by flexing alternately thighs on abdomen at rate of 80 per minute. The first two periods of work did not overtax the patient's heart. The third period of work for 150 seconds did overtax the heart. Blood pressure curve after work abnormal and pulsus alternans developed.

DEDUCTIONS FROM PRECEDING EXPERIMENTS

To decide accurately what is going on in the circulatory system at each instant of one of these experiments is difficult, even impossible. We know that a heart with diseased or poorly nourished muscle is able to increase its output per minute in response to the call of exercise, mainly by an accelerated rate and to a lesser degree by an increase in its output per beat.⁵ An increased output per beat means a more energetic contraction of the muscle and, *pari passu*, an increased blood supply to the muscle. If the heart is not able to increase its output per beat, the only way in which it can propel more blood to the working muscles is by increasing its rate. As the work augments, even the accelerated rate no longer enables the heart to increase its output, and dilatation beyond physiologic limits rapidly ensues. This means that the heart muscle becomes fatigued, the coronary circulation is mechanically impeded, the contractile power of the heart muscle fibers is damaged, and ultimately heart failure may ensue.

In giving exercise to a damaged heart, the end to be achieved is so to grade the exercise that the heart muscle is stimulated to contract more energetically, which

of more than 20 mm. of mercury from the preexercise level indicates an energetic and favorable response of the heart to the exercise, *provided there is no indication of overtaxing the heart*. A smaller rise is noted with milder exercise, and indicates a less energetic effect on the heart's contraction and nutrition.

Occasionally, as the exercise is increased, the subsequent pressure reaches lower and lower levels instead of mounting higher and higher (Chart 4). This is accompanied, however, by evidence of overtaxing the heart, and is followed by abnormal curves of pressure.

A small group of patients do not react in the ways described above. They show a marked fall in pressure during the first thirty seconds subsequent to work, which may fail to return to the preexercise level even though the work has been vigorous and the heart obviously not overtaxed.

EXERCISE FOR HEART PATIENTS

It must be emphasized that no exercises other than sitting up in bed or in a chair should be given to any patient convalescent from an attack of heart failure or recurrent endocarditis until the temperature has been normal for a week. Even after ten days of normal temperature, a recurrence of fever and heart symptoms is occasionally seen. The early exercise should be of short duration, and each series of movements should not last

4. Barringer, T. B., Jr.: Am. J. M. Sc., to be published.

5. Patterson, S. W., and Starling, E. H.: On the Mechanical Factors Which Determine the Output of the Ventricles, J. Physiol. 48: 357, 1914.

more than thirty seconds and should be followed by a rest. For the first three or four days the exercises should be well within the heart's capacity, and the limit of tolerance should not be approached.

Exercise may be divided into two forms, energetic and mild, this classification, as explained above, being based on the amount of increase of the systolic blood pressure subsequent to the exercise. The energetic type is the more important for heart patients. The question of overtaxing the heart must be carefully decided in this form, although one or two overtaxings have never

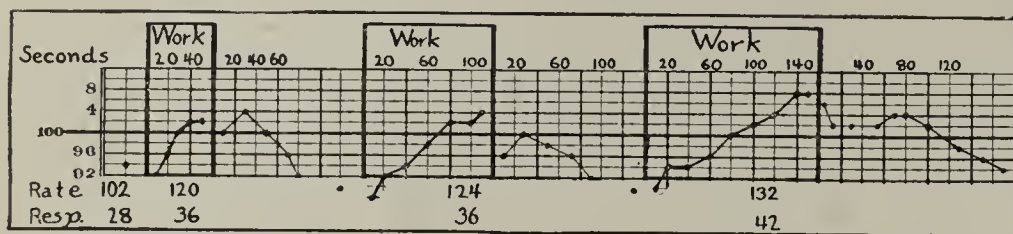


Chart 3.—Curve of systolic blood pressure during and after work in Patient S., aged 10 years, suffering from valvular heart disease (mitral stenosis and regurgitation) with small cardiac reserve power. Vital capacity, 76 cubic inches (normal, 115). Work furnished by flexing alternately thighs on abdomen at rate of from 60 to 70 per minute. The first two periods of work did not overtax the patient's heart. The third period of work for 160 seconds did overtax the heart. Abnormal blood pressure curve after work.

in my experience done any harm. This energetic type produces an increase of 20 or more millimeters of mercury after work, and shows a normal curve of systolic pressure subsequent to work. The working periods should be of short duration and alternated with periods of rest. The exercise should be of such a kind that it can be prescribed in definite amounts and increased or decreased in definite proportions.

Exercise with dumb-bells, stair-climbing, skipping rope, running in place, hopping, and all calisthenic exercises in which the body trunk is moved widely are the ordinary forms of energetic exercise useful for heart patients.

I have found the most convenient form of energetic exercise to be different movements with dumb-bells varying between 1 pound and 15 pounds in weight. Swinging a bell from between the feet in an arc up above the head and repeating without a pause; flexing the forearms alternately, with a bell in each hand, the patient sitting or standing; and pushing two bells alternately above the head are the three most useful movements. Each "close" varies between five and twenty movements. After each close the patient rests until blood pressure and pulse return to normal. The closes are repeated from five to ten times at each exercise period, which is generally once in twenty-four hours.

The mild form of exercise is one which stimulates the heart's activity only moderately over longer periods of time, as shown by the small increase in blood pressure subsequent to the exercise. This form should be used for patients with small cardiac reserve power and also to supplement the first more energetic type.

Walking is perhaps the best example of the second, milder type of exercise. This should be at first on a level. The patient should not talk and should not walk against a strong wind. A short distance should be covered at a steady gait, and then the patient should rest for two or three minutes, then repeat the walk and rest.

Other forms of mild exercise suitable for heart patients are croquet-playing, setting up exercises in which the arms and legs and not the trunk are moved, and "short golf." As the patient's reserve power increases, one of the more energetic types of exercise should be added to the daily regimen.

The improvement in the general condition of the heart patient, his lessened liability to general infections, and the increase in his exercise tolerance, are all quite well known results of exercise and sufficient to establish its value as a therapeutic agent. There is, however, reason to believe that exercise has another and most important function. If the idea which ascribes to infection the chief rôle in the causation of heart failure is correct, exercise must have a definite preventive value against this most serious complication of heart disease. The marked influence on the coronary circulation and the effect on the nutrition and contractility of the heart muscle fibers, which exercise will cause in a normal heart, are important teachings of the newer circulatory physiology. We have indicated the similarity of

the effects which exercise, properly graded, will cause in a damaged heart. The resistance of the heart muscle to infection must certainly be much increased thereby and, in conjunction with the removal of infectious foci elsewhere in the body, may well be the most important preventive measure against heart failure which we possess.

ABSTRACT OF DISCUSSION

DR. ALEXANDER LAMBERT, New York: The author emphasizes that the infections of the body are the ones that poison the heart and not the ordinary and usual exercises that come to men in active or inactive life; that quiescence and freedom from exertion are necessary during the activity of the period of infection, and that the heart after infection should be made to do what work it can. I do not believe that it is as yet accepted by the profession that all infections are liable to do injury to the heart muscle. The question is how long to keep a patient in bed during an acute disease. No matter how he feels, as long as the temperature shows any

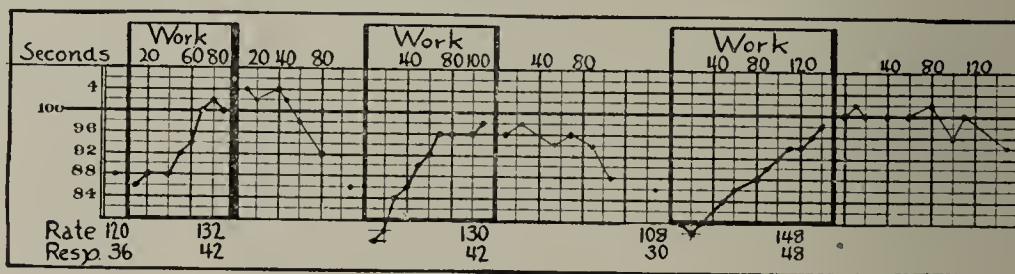


Chart 4.—Experiment on Patient S. (compare Chart 3) five days earlier at a time when cardiac reserve power was very small. This depicts a less common type of reaction. Instead of reaching higher figures during increasing work, the blood pressure reached lower figures as a result of the heart's becoming more fatigued and not regaining its initial strength. From five to ten minutes elapsed between exercise periods.

rise from 99 up to 100 F., it shows a still active process in the heart muscle, and the patient must remain in bed. The value of exercise and what it can do for those who are used to it was forcibly shown when I listened to the hearts of six day test bicycle riders. I saw them when they had been riding three hours. Their hearts were extraordinarily quiet. They were only 4.5 or 4.75 cm. outside the median line. The pulse, even when they came off the track, was not higher than 80; one man had a pulse of 76, and most of them were in the sixties. The heart sounds were very faint, but the pulses were strong. One man had a reduplicated first sound, and another had a reduplicated second sound. The value of this thing is in making an organ of the body increase its health by improving its function and insisting that it perform

6. The word "close" is used to indicate the period during which the patient is continuously exercising. Its duration is not measured in time, but by the number of units of exercise it includes.

its function better than it has been doing. In other words, exercise trains the heart to better and more easy contractions.

DR. H. M. FUSSELL, Philadelphia: Dr. Barringer's paper emphasizes not only that the normal individual should keep up the amount of normal exercise during his life, but also that we can increase the value of the heart beat by proper, well supervised exercises in individuals with cardiac disturbance. I fear, however, that we might be overimpressed with the value of exercise in cardiac disease, and not take into consideration the great necessity of continued rest after infection. All of us have seen prolonged mild cases of endocarditis converted into severe cases of endocarditis by allowing the patient to take exercise too soon, or to get out of bed too soon. An individual with this affection must remain quiet in bed for at least ten days or two weeks after the temperature has become normal, and the exercise must be taken very tentatively, the patient being observed immediately afterward and even during the exercise of sitting up. If there is the slightest rise of temperature, or any undue acceleration of the pulse, that patient is taking his exercise too soon. I am sure that by regulating the exercise at the proper time after the infection, we shall save ourselves many severe cardiac affections.

DR. SAMUEL A. LEVINE, Boston: Whether infection plays as important a rôle in the senile heart is a question. We must bear in mind that a different problem may play a part in chronic myocardial disease where the valves may be normal. It is certain that those patients do very well with rest in bed. They do not get sufficient rest in bed, rather than not getting enough exercise. It is hard to believe that the few graded exercises which we give an individual will do any more than the exercise he gets when he goes back to the ordinary routine of life. Convalescents from rheumatic fever should stay in bed not for ten days or two weeks but for a month. Every heart that goes through a rheumatic infection is injured, and during that period of a month it is hard to believe that resting the heart in bed is worse than getting them out of bed and starting the patient on graduated exercises.

DR. ROBERT H. BABCOCK, Chicago: I want to emphasize the necessity of prolonged rest after an acute infection of the heart, of either the myocardium or the endocardium. Most physicians are apt to err on the side of letting the patient up too soon because they think the injury to the heart has ceased when the temperature has become normal for a week or two, and partly because it is difficult to get the patients to remain in bed long enough and difficult to get the family to realize the necessity of it. Years ago I saw a young man who had involvement of both mitral and aortic leaflets. It seemed that the man had no chance to recover. Dr. Johnson kept that man in bed for nine months with the result that he got perfect compensation, lived and married, but finally succumbed to a *Streptococcus viridans* endocarditis. Exercise is of great value to many damaged hearts. Stokes insisted on his aortic regurgitation patients taking exercise for the purpose of developing a good compensatory hypertrophy of the left ventricle. It is my habit to tell patients that they can take any form of exercise which does not produce distress either of breathing or of heart action, with one exception—I very rarely allow a patient to do much swimming. I had a young man with a perfectly compensated mitral who had been swimming long distances, as far as 5 miles. I regard swimming as very dangerous to a man with a damaged heart for the reason that just as soon as cyanosis appears there is capillary paralysis, and when capillary paralysis takes place, the heart muscle is subjected to great strain. The expert swimmers who die of cramps die from acute cardiac overstrain as a result of paralysis of the capillaries. In any patient with a damaged heart, swimming should be allowed only for short distances and for short lengths of time. Exercise is of advantage by improving venous circulation and coronary circulation, for proper exercise calls into play those accessory factors which keep up circulation such as improved venous return to the heart in consequence of the deepened respiration and muscular contractions.

DR. WILLIAM D. REID, Boston: The question of how long the patient with a rheumatic type of infection is to be kept

in bed must not be decided purely on the temperature. We must think of the pathology—what has happened to the heart, and judge from that, from the severity of the symptoms present during the febrile attack, and also from the duration of the febrile attack. We would naturally keep one patient in bed longer after the temperature has fallen to normal, and in some other case we would feel justified in letting the patient up earlier. Certainly a patient in whom the evidence of cardiac involvement is limited to a few days' fever and a questionable murmur can be given some freedom and tried out sooner than one who has had severe symptoms.

DR. CARROLL E. EDSON, Denver: I wish to emphasize the need for caution in recommending exercise in heart disease. It is essential to discriminate clearly in every case the fundamental nature of the trouble with the heart. The amount of exercise allowed or the degree and duration of rest needed will vary greatly according to whether the patient has (1) a myocardium simply poisoned from acute infectious disease; (2) a myocardium on a valve involved in an infective endocarditis whose organisms may be long latent but viable; (3) a simple mechanical trouble from healed valvular lesion; (4) a heart whose difficulty in maintaining its function is due only in part to itself but largely to lack of muscular tone in the entire body, thus losing this aid in the peripheral circulation, or (5) a senile heart whose problem is wholly one of nutrition from coronary insufficiency. Unless we keep these physiologic and pathologic states clearly in mind, our advice will be indiscriminate and our results may be disastrous.

DR. J. GARDNER SMITH, New York: Previous to 1900 I had charge of the physical training in the public schools in New York. Also in the Y. M. C. A. I examined more than 10,000 men and boys. Twenty years later as medical member of a local draft board, I examined 2,500 men for war service. In spite of the fact that physical training has had a place in the public school education, we found an appalling unfitness of our young men when examined for war service. I am much in favor of more careful examination of boys and girls in our schools, preparatory schools and colleges, because there is no greater need today than for strong healthy bodies with which to meet the emergencies of life. Our young people need carefully directed physical training. I realize that there are cases of overtraining, but I feel certain that the cases of injury are much more than counterbalanced by the benefit received by the mass of our boys and girls. I hope the influence of this paper and discussion will be to stimulate every member of this section to more interest in the physical training of the young, that they be examined properly and graded properly, that overcompetition be avoided, but not at the expense of the interest on the part of our scholars which is always increased by competition and the idea of play.

DR. THEODORE B. BARRINGER, JR., New York: You all have seen heart patients return to the hospital time and time again. Apparently we have not made many advances in the preventive treatment of heart failure during the last fifty years. The incidence of heart disease seems to be increasing and also the mortality, and I think it is time we scrutinized our methods of treatment and our ideas as to prevention, bearing in mind the great advance in our knowledge of circulatory physiology and cardiac diagnosis. My paper dealt exclusively with the principles underlying the treatment of heart disease by exercise. There are many points that came up in the discussion that are rather remotely connected with my subject. There are some, however, that I shall answer. In regard to the class of patients suitable for exercise treatment, patients in whom there is any suspicion of angina, have to be treated very cautiously in the matter of exercise. Until we know more about this disease it is best to eliminate all but the mildest calisthenic exercise, and these in only the mildest types. Patients who have recovered from a recurrent endocarditis or attack of heart failure are excellent subjects for exercise treatment. The time for beginning treatment is determined to a large extent by the severity of the attack. After these patients have had normal rectal temperature—not over 99.6 F.—for from seven to ten days, I let them sit up in bed for an hour, a few days later for two hours, then

a few days later in a chair, and then walk around the bed. Later they walk 50 feet. As soon as they do this, their circulatory reactions are determined to see whether the exercise has overtaxed the heart. A patient with cardiac failure complicating either muscular disease or valvular disease can be treated somewhat differently. Exercise can be begun earlier and increased more rapidly. In regard to the age of the patients, younger people undoubtedly do better with exercise, and yet in my experience people between 60 and 70, suffering with senile hearts and chronic interstitial myocarditis, are very much more improved by exercise than by keeping in bed or by limiting radically their physical activity. Sufficient evidence exists to make it probable that we will lessen the incidence of cardiac failure in our patients if we attend very carefully to the amount of exercise they get and if we remove any foci of infection which may be present in the body.

MANAGEMENT OF PLEURAL EFFUSIONS

IN THE COURSE OF THERAPEUTIC PNEUMOTHORAX *

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AND

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Pleural effusions may be expected in a large proportion of cases treated with pneumothorax. The exact percentages given vary directly with the length of time the patients remain under observation, and the frequency with which roentgenologic studies are resorted to. In our series we encountered effusions in more than 50 per cent. of cases. Opinions differ as to the effect of these effusions. Most early workers in this field considered them as pernicious complications. With increasing experience, however, their presence is looked on with less apprehension; in fact, some observers maintain that serous effusions are salutary phenomena, their beneficial effects being due to antibodies they engender and to the more efficient and uniform lung compression they produce. But whatever their beneficial effects are due to, there is hardly a doubt that once the acute symptoms have subsided, a definite, if only temporary improvement is noted in most cases, and very few patients are the worse for their experience.

It is of great importance, however, to consider the ultimate results of these effusions rather than their immediate salutary effects. Many observers are of the opinion that inflations should be discontinued in the presence of the effusions, on the ground that the antibodies they contain and the efficient and uniform pressure they exert on the lung are sufficient to produce satisfactory therapeutic results. Others are profuse in their praise of Debove's autoserotherapy to promote the rapid absorption of the pleural exudate.

Careful observation of a large number of cases, however, discloses the fact that these effusions are erratic in their behavior. In some instances they will accumulate in large quantities, markedly displacing the mediastinum, breaking up adhesions and laying open walled-in foci which may produce pyopneumothorax. On the other hand, the fluid may be rapidly absorbed, leaving behind numerous adhesions which ultimately cause obliteration of the pleural cavity. The rapid

absorption of the exudate and the consequent obliteration of the pleural cavity are even more disastrous in their results than the undue accumulation of the fluid, especially if the obliteration occurs early in the course of the treatment, because the diseased lung reexpands rapidly, its cavities are reopened, and a recrudescence of the disease is inevitable. It is evident, therefore, that the expectant form of treatment is not based on sound, scientific principle.

No hard and fast rules can be laid down as to the management of these effusions, and success or failure most frequently depends on the care exercised and the judgment used in the management of the individual case. Nevertheless, it occurs to us that the indications for treatment can be brought out in a more comprehensive manner by subdividing all cases of effusion into several groups, depending on the quantity, character and behavior of the exudate.

1. SMALL, FLEETING EFFUSIONS

Group 1 consists of those cases, which, in the course of treatment, without acute symptoms, developed small, fleeting effusions, enough to fill the costophrenic sinus. These effusions are of no consequence because they are transitory in character and are promptly absorbed. They do not affect the intrapleural pressure and are discovered only on fluoroscopy, with the patient in the erect posture. These cases need no special treatment, and the inflations can and should be continued as if no effusions occurred. Such cases are not included in the number of pleural effusions of the series herewith recorded, but they occur very frequently if carefully looked for.

2. MODERATE SIZE SEROUS EFFUSIONS, WITH NO TENDENCY TO UNDUE ACCUMULATION

Group 2 includes cases with a moderate amount of serous fluid, reaching the fifth or fourth rib anteriorly. The development of these effusions is ushered in by more or less acute symptoms, such as pyrexia, malaise, pain in the chest and increased cough, lasting approximately from four to seven days. After the acute symptoms abate, these patients show considerable improvement and their general condition is usually better than before the development of the effusions. In these cases the effusions show no tendency to rapid accumulation, and there is only slight or no displacement of the mediastinum. The intrapleural pressure, however, is definitely affected, and the introduction of small amounts of gas will cause a marked rise in tension. The indications for treatment in this group of patients are to maintain a satisfactory collapse and to prevent the formation of adhesions and retraction of the pleural cavity. Aspiration is rarely necessary because the fluid usually shows a tendency to spontaneous absorption. But the patient should be carefully watched roentgenologically and otherwise, and the pneumothorax should be continued with increasing intrapleural tension. If the pleural cavity shows a tendency to retraction and the mediastinum is pulled toward the treated side, the intrapleural pressure should be slowly increased to about 30 mm. of mercury.

In our series we encountered ten cases of this kind. Six of the patients, who are treated by continuation of the pneumothorax under increasing intrapleural tension, are doing well. They have now been observed from six months to two and a half years, and so

* From the Montefiore Home Country Sanatorium.

* Read before the Clinical Section of the National Tuberculosis Association, June 15, 1921, New York.

far we have been successful in maintaining a satisfactory collapse in all and the fluid has been absorbed in five. In the remaining four patients we discontinued the pneumothorax soon after the development of the effusion, trusting that the fluid would prove an efficient means of maintaining the collapse. In these cases extensive adhesions and obliteration of the pleural cavity took place and a recrudescence of the disease occurred.

3. LARGE, RAPIDLY ACCUMULATING SEROUS EFFUSIONS

To Group 3 belong cases in which there develop copious effusions, filling the greater part of or the entire pleural cavity. The symptoms at the onset in these cases are similar to those described in Group 2, but in addition there may be considerable distress owing to the pressure of the great volume of fluid and the marked displacement of the mediastinal contents. The indications for treatment in this group are to relieve pressure symptoms and maintain the collapse of the lung, as well as to prevent pleural adhesions. The fluid should be aspirated and replaced by air, even if the pressure symptoms are not severe, because it is practically impossible to retain control of the pneumothorax in the presence of large volumes of effusion, and when this control is lost, pleuritic adhesions and obliteration of the pleural cavity will result. The aspiration and gas replacement operation should be continued until there is no more tendency to reaccumulation of large amounts of fluid. The pneumothorax, however, should be continued indefinitely and the intrapleural pressure should be left at about zero so long as the mediastinum is displaced to the opposite side. But as soon as there is evidence of displacement of the mediastinum to the affected side and contraction of the pneumothorax cavity is noted, the intrapleural pressure should be gradually increased, and many patients will do well when the pressure is permitted to reach from plus 20 to plus 30 mm. of mercury.

We had eleven cases that can be included in this group. Seven of these were treated in the manner just described, while in the remaining four the pneumothorax treatment was discontinued on the advent of the effusion. Of the seven patients treated, five who have been observed for from one to two and a half years have been discharged with the disease apparently arrested. Their pneumothorax is still continued, and in four the fluid has been completely absorbed. Two patients did not benefit by this treatment on account of the extension of the lesion on the untreated side, which, in our opinion, had nothing to do with the development of the effusion. In the four remaining cases of this group that were not subjected to aspiration and readjustment of the intrapleural pressure, obliteration of the pleural cavity and opening up of ulcerating cavities have taken place, causing fatal hemoptysis in two and rapidly progressing lesions in the others.

4. STERILE, PURULENT EFFUSION—BENIGN EMPYEMA

In Group 4 are included cases in which there develops considerable effusion which promptly becomes turbid or purulent, but in which no tubercle bacilli or any other organisms can be found on direct smears of the fluid. The symptoms at the onset may be more

severe than those accompanying serous effusions, but after the acute symptoms subside, the patients usually do well.

Jacot calls these effusions "benign empyema." In these cases there is a decided tendency to organization of the exudate and obliteration of the pleural cavity. The fluid should therefore be aspirated and replaced by air, and the pleural tension should be gradually increased. Four of our cases that have been observed from one to three years belong to this group. In two, reexpansion of the lower lobe took place in spite of energetic treatment, but we succeeded in keeping the diseased upper lobe collapsed. All the four patients are doing well and are working part time. In two cases the fluid has completely disappeared, and tubercle bacilli can no longer be found in their sputum.

5. TUBERCULOUS PYOPNEUMOTHORAX

To Group 5 belong cases in which a tuberculous empyema develops, usually as a result of laying open a tuberculous focus in the pleural cavity. The symptoms at the onset are very severe, and the patients are dangerously ill for months. Smears from the pus aspirated show numerous tubercle bacilli, and occasionally a few secondary organisms are detected. In these cases, as much of the pus as is possible should be aspirated and replaced by air. The injection of 2 or 3 c.c. of saturated alcoholic solution of methylene blue into the pleural cavity through the aspirating needle seems to be of great benefit in the treatment of these cases. We are not yet ready, however, to say in what manner the methylene blue acts. Two of our patients who have been treated in this manner for more than a year show remarkable improvement. They gained considerable weight and strength, their sputums are negative for tubercle bacilli, and they are now able to perform the greater part of the work they used to do before their illness. These two cases will be reported in detail elsewhere.

6. PYOPNEUMOTHORAX DUE TO MIXED INFECTION

Group 6 includes mixed infections by virulent pyogenic organisms, introduced from without or through a perforation of the lung, or as a part of general infection. The prognosis is usually grave, but of late some reports indicate that good results are obtainable with rib resection, followed by irrigation with surgical solution of chlorinated soda (Dakin's solution).

COMMENT

A classification of effusions in the course of therapeutic pneumothorax from the etiologic and pathologic point of view has been described in a comprehensive manner by von Muralt. Our aim here is to outline only the general principles that govern the management of the various groups of cases. We must emphasize, however, that these are merely general principles and can be applied intelligently only when each individual case is carefully considered and repeatedly subjected to thorough roentgenologic examinations; for it is only then that we can be definitely informed of the accumulation or absorption of the fluid and the position of the mediastinum.

The position of the mediastinum is the important guide in the treatment of these effusions. A mediastinum markedly displaced to the untreated side indicates that the fluid is accumulating and that the intra-

pleural pressure is higher than the correct treatment of the case demands. Aspiration and substitution of air, with a final intrapleural pressure of about zero, is the best method of treatment in such cases. On the other hand, when the mediastinum is pulled toward the treated side, it is an indication that a fluid is in the process of absorption and that shrinkage and obliteration of the pleural cavity is threatened. Here creation of high intrapleural pressure is indicated.

The technic of aspiration and substitution of air hardly needs to be gone into at the present time. Suffice it to say that in order to avoid such symptoms as fainting, nausea and palpitation during the aspiration, it is advisable to perform the aspiration and the inflation simultaneously. The needle connected with the Potain aspirator is inserted in the most dependent portion of the chest, and the pneumothorax needle is inserted above the level of the fluid. In this way air is introduced while the fluid is being aspirated, thus preventing marked changes in the intrapleural pressure and rapid shifting of the mediastinal organs, which are responsible for untoward symptoms that are especially likely to occur when large amounts of fluid are removed.

SUMMARY

1. The immediate effects of serous effusions occurring during pneumothorax treatment are usually beneficial, but ultimately they cause premature reexpansion of the lung and obliteration of the pleural cavity. It is therefore unwise to discontinue the treatment and adhere to the dictum of "leave effusions alone."

2. Small, transitory effusions which do not alter the intrapleural pressure require no special attention.

3. Moderate effusions which do not displace the mediastinum and do not interfere with the continuation of the pneumothorax need not be aspirated, but the pneumothorax should be continued with increasing intrapleural pressure to prevent obliteration of the pleural cavity.

4. Large effusions should always be aspirated and replaced by air and the pressure regulated according to the needs of the individual case.

5. Purulent effusions should always be aspirated and replaced by air, not only because of their toxicity, but also on account of their tendency to produce extensive adhesion formation and obliteration of the pleura.

Legal Liability for Venereal Disease.—Legal liability for the transmitting of venereal disease has been established and upheld by both civil and criminal courts recently, according to a report issued by the United States Public Health Service. In Oklahoma a man has been sentenced to five years in the penitentiary for infecting a girl with syphilis. In Nebraska the court upheld a physician who warned a hotel keeper that one of his patients, a guest in the hotel, had syphilis and had refused treatment and was consequently a menace to public health. In North Carolina a woman has been awarded \$10,000 damages against her husband for a similar infection, and the supreme court has upheld the judgment. The report further states that twenty states have adopted laws forbidding persons with venereal disease to marry. New Hampshire, New Jersey, North Carolina, Oregon, Washington and West Virginia have acted through their state legislatures during the past year. A similar bill is pending in Florida. All of the twenty states, however, do not require medical examination and certification that the applicant is free from venereal disease.

ABERRANT VESSELS IN SURGERY OF THE PALATINE AND PHARYN- GEAL TONSILS

THE SIGMOID OR TORTUOUS CERVICAL INTERNAL
CAROTID ARTERY AND THE VISIBLE
PULSATING ARTERIES IN THE
WALL OF THE PHARYNX

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PHILADELPHIA

The Paris correspondent of THE JOURNAL, a few months ago, reported¹ that:

At a recent meeting of the Société de chirurgie, Dr. Sebileau, hospital surgeon and agrégé professor of the University of Paris, gave a dramatic account of the death of a young girl from fulminant hemorrhage following tonsillectomy, performed by an expert surgeon. Aside from its dramatic features, this observation is instructive, for the case was taken to court, a judicial necropsy was held, and a large tear was discovered in the internal carotid artery. The surgeon against whom the charge was brought had performed more than 500 tonsillectomies without the slightest accident.

The correspondent also referred to the "celebrated surgeon Péan" in connection with the internal carotid artery and hemorrhage following tonsillectomy.

Experience has shown that tonsillectomy is relatively a safe procedure at the hands of the trained operator. The mortality from hemorrhage is almost nil in the well-appointed and well-regulated clinic. Few real specialists have had such disasters as death from hemorrhage following tonsillectomy. Not that they had no troublesome and at times alarming hemorrhage to contend with, but modern methods and procedures and real training have proved life savers in such emergencies. Obviously, tonsillectomy is not a work for the novice; an intimate knowledge of the anatomy involved, together with technical training and experience, is vital. Lack of such knowledge and experience often brings disaster. Even the trained operator may at times become negligent in not exercising reasonable care and making special study of each case.

The foregoing report of Dr. Sebileau brings to my mind three cases of sudden and excessive hemorrhage during tonsillectomy, all resulting in death: One of the patients was a woman in whom the operation was performed by a well known specialist; the second, a girl, the operation being performed by an occasional operator; and the third, a girl, the operation being performed by a would-be surgeon and one certainly not versed in tonsil work.

These cases, together with the report of Dr. Sebileau, prompt me to direct particular attention to the occasional marked sigmoid tortuosity of the cervical segment of the internal carotid artery, whereby the vessel is forced into intimate topographic relationship with the palatine or faucial tonsil, the usual distance of 2.5 cm. between the tonsil and the artery being obliterated.

The sigmoid or tortuous internal carotid artery is not unknown, as is attested by a review of the literature. However, my belief is that the condition is not generally known or appreciated by those operating on the tonsil. The importance clinically of the tortuous internal carotid artery cannot be overstated, since the

1. The Carotid Arteries and Hemorrhages of the Tonsils, Paris Letter, J. A. M. A. 76: 532 (Feb. 19) 1921.

anomalous state of the vessel is unquestionably the underlying factor in many cases of visible pulsation of pharyngeal vessels and probably of fulminant hemorrhage during or following tonsillectomy. Doubtless, other arteries likewise are factors. A brief reference, therefore, to some observations on arterial conformations about the faucial tonsil, e. g., some of the large extrinsic vessels, may lead even to greater study and caution by the trained operator in individual cases, and the abandonment of the faucial field by the novice and the occasional operator as one fraught with too great hazards. I, however, fancy that the latter is too much to expect, and that fools will continue to rush in where angels fear to tread.

NORMAL ANATOMY

Under normal conditions the internal carotid artery should not be injured in operative procedures on the palatine tonsil if reasonable care is exercised, since the vessel is sufficiently remote from the tonsillar field. The same may be said of the external carotid. However, other arteries of goodly size, mentioned below, do under normal conditions come into more or less intimate topographic relationship with the palatine or faucial tonsil, and annoying hemorrhage following tonsillectomy from them would seem more probable.

The internal carotid artery normally is one of the terminal branches of the common carotid, arising at a level with the upper border of the thyroid cartilage. In the cervical portion of its course, the internal carotid first lies lateral to the external carotid, but as it courses toward the cranium it comes to occupy a position dorsal and then medial to the external carotid. Here the styloglossus and the stylopharyngeus muscles, the stylohyoid ligament, the glossopharyngeal nerve and the pharyngeal branch of the vagus nerve separate the two vessels. The internal carotid artery usually passes almost vertically up the neck to its immersion into the carotid canal. Dorsally, the cervical segment of the internal carotid rests on the prevertebral fascia which covers the longus capitis muscle; medially, about 2.5 cm. away, is the superior constrictor muscle separating the artery from the palatine tonsil; and laterally, is the internal jugular vein, the vagus nerve, etc.

The tonsillar branch of the external maxillary (facial) artery ascends to the region of the tonsil upon the superior constrictor muscle between the styloglossus and the internal pterygoid muscles; the ascending palatine branch of the external maxillary courses between the styloglossus and the stylopharyngeus muscles; the ascending pharyngeal artery from the external carotid ascends in the region of the palatine tonsil between the styloglossus and the stylopharyngeus muscles laterally and the superior constrictor muscle medially. These arteries are located variously lateral to the superior constrictor muscle and are more or less intimately related to the palatine tonsil, depending somewhat on the plane. They must always be thought of in connection with operative procedures in the region. Moreover, the upward bend or frequent marked redundancy and tortuosity of the cervical portion of the external maxillary artery and the lingual artery lie dangerously near the pharyngeal tonsillar wall at the lower pole of the tonsil. Indeed, a high curving of the superior thyroid artery is at times related to the inferior pole of a large palatine tonsil. This is particularly true in high division of common carotid. As stated above, the internal carotid artery under normal conditions lies fully 2.5 cm.

away from the superior constrictor muscle and the palatine tonsil, e. g., lateral and dorsal to the latter.

In brief, one may say that the lateral or attached surface of the palatine tonsil is covered by a thin, firm, fibrous capsule which is continuous with the pharyngeal aponeurosis. Immediately ectal to the latter is the thin superior constrictor muscle of the pharynx with the thin buccopharyngeal fascia on its lateral surface. The ascending pharyngeal and the ascending palatine arteries and the tonsillar branch of the external maxillary, in order from behind forward, are in intimate relationship with the structures forming the tonsillar fossa. The tonsillar branch of the *dorsalis linguae* artery approaches the tonsillar region from below, while the descending palatine artery approaches it from above.

The peritonsillar and the pharyngeal venous plexuses likewise are related to the ectal or outer surface of the buccopharyngeal fascia and the superior constrictor muscle and, with the arteries, would be endangered during tonsillectomy by accidentally biting through the constrictor and other muscles entering into the formation of the tonsillar fossa.

Both the external and internal carotids are separated from the tonsillar bed by a considerable space; from 2.5 to 3.5 cm. Not infrequently the lingual and external maxillary arteries course near the lower pole of the faucial tonsil and are in danger's way in careless tonsil surgery. Moreover, the superior constrictor is, at times, very thin; indeed, almost wanting, so that in essence the tonsillar capsule and the pharyngeal aponeurosis alone intervene between the attached surface of the tonsil and certain of the arteries and venous plexuses referred to.

The intrinsic blood supply of the palatine tonsil does not particularly concern us in this connection: Suffice it to say that Davis² believes branches from the ascending pharyngeal, the so-called tonsillar branch from the facial, and the tonsillar branch from the dorsal lingual together supply the tissues entering into the formation of the tonsillar fossa, while the ascending palatine and the descending palatine arteries form an anastomotic network superolateral to the tonsillar fossa from which the true tonsillar artery goes forth, pierces the tissues of the fossa, and enters the tonsil at its upper outer aspect, to become the real intrinsic supply of the organ. Fetterolf,³ on the other hand, holds that all of the arteries mentioned participate in the intrinsic supply of the palatine tonsil: anterior tonsillar (from dorsal lingual); posterior tonsillar (from ascending pharyngeal); superior tonsillar (from descending palatine); inferior tonsillar (anterior from dorsal lingual and posterior from tonsillar branch of the external maxillary).

A considerable venous plexus of veins which receives the intrinsic tonsillar veins forms around the capsule of the palatine tonsil and empties into the lingual vein and the pharyngeal plexus.

ARTERIAL VARIATIONS

Normally the cervical portion of the internal carotid gives off no branches. Occasionally, however, the occipital, the lingual and the ascending pharyngeal arteries variously arise from it. Again, the internal carotid may arise directly from the arch of the aorta

2. Davis, J. L.: Fixed Sources of All Hemorrhage from Tonsillectomy and Its Absolute Control, *Laryngoscope*, 1914.

3. Fetterolf, George: The Anatomy and Relations of the Tonsil in the Hardened Body, *Am. J. M. Sc.* 144: 37 (July) 1912.

or from the innominate. Total absence or dissociation of the internal carotid has been observed, a fact to be commented on later. Moreover, the external carotid may be absent, in which case the usual branches of the external carotid come off the upward continuation of the so-called common trunk. Finally, the internal carotid is occasionally, perhaps not infrequently, very tortuous or redundant in its cervical course. Visible and frank pulsation of the pharyngeal wall due to the nearness of large, aberrant and tortuous vessels is apparently very common.

In connection with arterial variations, it is interesting that "there is no definite bifurcation of the cephalic arterial trunk into an ectocarotid and entocarotid in ruminants: A small branch of the carotid perforating the cranium . . . represents the 'middle meningeal artery' and joins the 'rete mirabile'; but this is mainly formed in advance by branches of the internal maxillary." ⁴ Quain ⁵ illustrates an arterial arrangement in which the internal carotid is entirely wanting, the main common carotid extending upward, giving off the usual branches that arise from the external carotid; the internal maxillary branch giving off a series of branches which pass through the foramina at the base of the skull to form a rete mirabile and compensate for the absent internal carotid proper, a reversion to the condition in ruminants. I made a similar observation some years ago. Moreover, in many mammalia the internal carotid is more tortuous than in man. Fisher, ⁶ quoting Chauveau, says that the internal carotid of the seal is actually forty times as long as the distance it has to traverse.

It is fallacious to believe that tortuosity of the internal carotid is acquired and found only in the old. Indeed, Farlow ⁷ found large pulsating arteries which he believed to be due to tortuous internal carotids in patients as young as 14 years. Moreover, Wood ⁸ reports large pulsating blood vessels in two children, aged 5 and 7 years, respectively. It is more likely that the variations and tortuosities in the large blood vessels of the neck are a reversion to more primitive types.

THE SIGMOID OR TORTUOUS INTERNAL CAROTID

While no extensive review of the literature has been attempted, a hurried perusal of the subject leads me to

believe that tortuosity of the internal carotid artery in man is not as rare as generally believed. The redundancy or tortuosity of the artery lies in one of the three important morphologic planes—sagittal, coronal and transverse.

* Tortuosities in all of these planes have been observed and recorded.

I recently observed in a frontal or coronal section of an adult head and neck prepared for classroom study in the course in clinical anatomy at the Jefferson Medical College, a very redundant and tortuous left internal carotid artery. The common carotid divided slightly higher than at its usual level. The internal carotid pursued its normal course until it reached the level of the plane between the nasal and oral portions of the pharynx; it then described a curve with its convexity directed medially toward the palatine tonsil, and then coursed caudad to the level of the middle of the palatine tonsil, where it again described a medially directed curve, once more to ascend and to gain entrance to the carotid canal. The final ascending limb of the sigmoid-shaped vessel passed in very close relationship to the superior constrictor muscle and the attached surface of the palatine tonsil.

Figure 1 represents diagrammatically a cross-section of the specimen at the level of the palatine tonsil. It will be noted that three internal carotid arteries are lying side by side in the section, representing, of course, the three limbs of the single but sigmoid internal carotid. It is clearly shown that the final ascending limb is in close relationship with the superior constrictor and the attached surface of the palatine tonsil. The most lateral of the three limbs

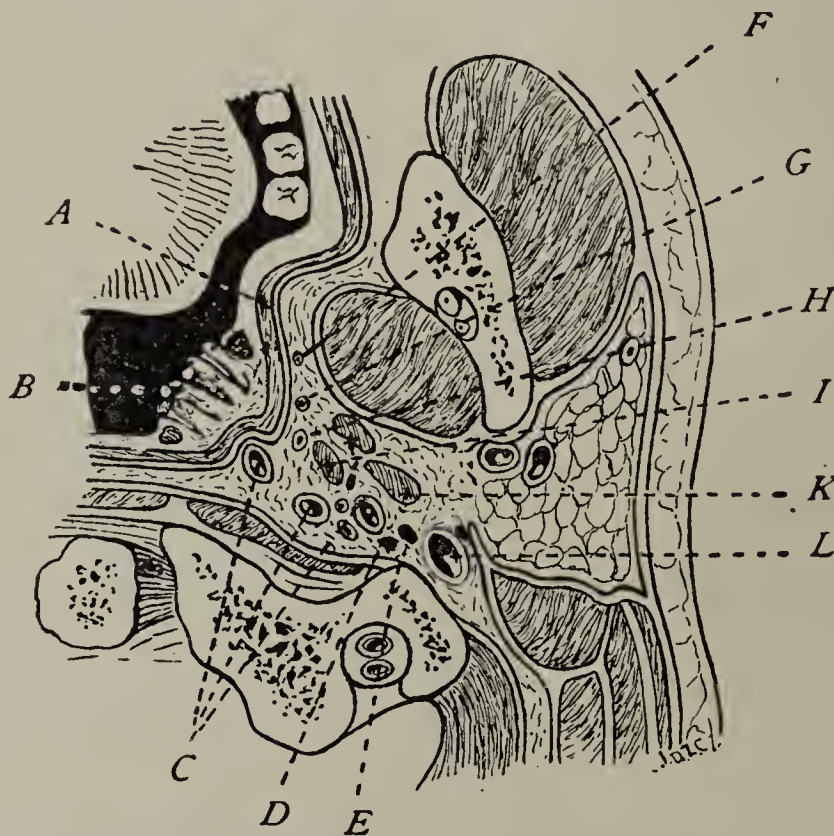


Fig. 1.—Transection through region of palatine tonsil. Particularly note the nearness of the most median limb of the sigmoid internal carotid artery to the tonsillar bed; also the rather intimate relationship of certain other fairly large arteries: A, superior constrictor muscle; B, palatine tonsil; C, sections of the tortuous or sigmoid internal carotid artery; D, vagus nerve; E, hyoglossal nerve; F, tonsillar branch of the external maxillary (facial) artery; G, ascending palatine artery; H, ascending pharyngeal artery; I, styloglossus and stylopharyngeus muscles and glossopharyngeal nerve; K, stylohyoid muscle; L, internal jugular vein.

represents the position of the normal internal carotid artery. In Figure 3, which represents a drawing of the actual specimen, the sigmoid tortuosity in the coronal plane of the internal carotid artery is shown. The final ascending or internal limb of the sigmoid is in contact with the pharyngeal wall.

I made another observation of a tortuous internal carotid artery in the Yale Anatomical Laboratories. In that case the tortuosity lay in the semisagittal plane. The final ascending limb was pressed close to the tonsillar bed.

The importance of the internal carotid in these positions need not be argued. The superior constrictor is thin and the artery essentially in contact with the pharyngeal aponeurosis and the tonsillar capsule. In all likelihood there was strong pulsation in the posterolateral region of the pharynx during the life of these individuals. Unfortunately, no history was obtainable.

4. Owen, Richard: Comparative Anatomy and Physiology of Vertebrates 3: 547, 1868.

5. Quain, Richard: Anatomy of the Arteries of the Human Body, Plate 13, Figure 8.

6. Fisher, A. G. T.: Sigmoid Tortuosity of the Internal Carotid Artery and Its Relation to Tonsil and Pharynx, Lancet 2: 128-130, 1915.

7. Farlow, J. W.: Eight Cases of Large Pulsating Arteries on the Posterior Wall of the Pharynx, Boston M. & S. J. 113: 6-7, 1890.

8. Wood, G. B.: Anomalous Position of the Common Carotid Visible in the Pharynx, Am. J. M. Sc. 124: 478-481, 1902.

Skilern⁹ reports an anomalous sigmoid tortuosity of the cervical portion of the internal carotid artery in a male cadaver about 60 years of age:

Beginning at the base of the skull and extending two thirds of the distance to the bifurcation of the common carotid artery, the vessel (the internal carotid) shows an S-shaped tortuosity, the bends of which extend at no time more than 1 cm. from a line representing the axis of the normal artery. The artery overreached from its normal position of about 2.5 cm. behind and to the outer side of the left tonsil over toward this organ.

Dubreuil¹⁰ refers to tortuous internal carotids, mentioning that one of the curves of the artery may approach the pharynx and tonsil.

Barkow¹¹ describes and illustrates four striking anatomic specimens of sigmoid internal carotids.

Fisher⁶ describes an abnormal internal carotid artery, the tortuosity lying in the sagittal plane:

This occurred in an elderly female in the dissecting room. The condition was bilateral; one description will thus suffice for the two sides. The common carotid divided at its usual level; the internal carotid pursued a normal course until it reached the level of the great cornu of the hyoid bone; it then described a course with its convexity directed forward. This curve lay between the internal pterygoid muscle and the back of the outer surface of the tonsil, the superior constrictor muscle intervening. This curve ended 3 cm. above the angle of the mandible. The artery then bent sharply on itself and ran downward and forward for 1.5 cm.; then bending sharply a second time, it ran upward and backward to reach the level of the first bend and then ran almost directly upward to the base of the skull; the second bend came into relationship with the upper part of the tonsil, the superior constrictor intervening. No other arteries were tortuous in this case.

He describes another case from a dissecting room subject, a middle-aged man, in which both internal carotid arteries were tortuous, the tortuosity lying in the sagittal and partly in the coronal planes. The second bend of the tortuosity was about 1 cm. from the top of the tonsil. Other arteries were tortuous in this case, especially the external carotid, which lay very close to the lower part of the outer surface of the tonsil.

Tortuosity of the internal carotid artery in the transverse plane is very rare. However, a few cases are recorded. Fisher, quoting Stimson, describes "an S-shaped fold or turn about an inch above the bifurcation, which drew the artery into a loop three quarters

of an inch across, placed transversely in the neck, so that the upper portion of the loop was three quarters of an inch superficial to the line of the artery itself." As suggested by Fisher, such a case must have simulated aneurysm and can only occur in the lower part of the course of the artery, since above, the vessel cannot project far externally, owing to the resistant structures by which it is separated from the surface. It is for this reason that aneurysm of the internal carotid artery in the upper part of the cervical segment projects into the pharynx, following the line of least resistance. He believes that this fact also accounts for the sigmoid curve being most commonly situated in the sagittal or coronal planes, an observation that is, doubtless, correct.

Tortuosities of both internal carotid arteries were encountered by Edington¹² and by Rowlands and Swan.¹³ Further reports on anomalous internal carotids are found in contributions by Lake,¹⁴ Roop,¹⁵ Moorehead,¹⁶ Sack¹⁷ and Smith.¹⁸

PULSATING ARTERIES OF THE PHARYNX

The condition of pulsating arteries of the pharynx is not unknown: Klye¹⁹ directs attention to it.

The branches of the ascending pharyngeal may be unusually large or the ascending pharyngeal artery itself show distinctly in the wall of the pharynx. This gives rise to a pulsating artery, owing to the fact that the blood vessel has no muscular support and also that, owing to its superficiality and the liability of the surrounding membrane to inflammatory conditions, there is a marked tendency to aneurysm when such an anomalous condition occurs.

Bosworth²⁰ states that "the ascending pharyngeal artery, although a vessel of some size, is not ordinarily visible on direct inspection of the pharynx, and yet a number of cases have been

reported in which the artery was of such abnormal size, either on one or both sides, as to render its pulsations visible on direct inspection."

Wood⁸ reports two interesting cases of pulsating blood vessels in the pharynx, one in a girl, aged 5 years, in whom "on the right side of the pharynx, projecting at times almost to the median line, is a large pulsating



Fig. 2.—Dissection of deep face region, showing the more important arteries in relation to the external surface of the superior constrictor muscle and the floor of the palatine tonsil. The internal carotid artery in this case pursues a directly vertical course. It should be noted that both the external maxillary (facial) and the lingual arteries have conspicuous cephalically directed knees which come dangerously near the tonsillar wall: a, internal maxillary artery and branches; b, styloglossus muscle; c, stylopharyngeus muscle; d, ascending pharyngeal artery; e, internal carotid artery; f, external carotid artery; g, vertebral artery; h, ascending palatine artery; k, superior pharyngeal constrictor muscle; l, tonsillar branch of external maxillary artery; m, external maxillary (facial) artery; n, lingual artery; o, hyoglossus muscle; t, thyroid cartilage.

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10. Dubreuil: Des anomalies artérielles, Paris, 1847, p. 93.

11. Barkow: Die Verkrümmungen der Gefässe, Breslau, 1869, p. 19; Comparative Morphologie des Menschen und der Menschenähnlichen Thiere, Breslau, 1866, 5, Tab. VII.

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13. Rowlands, R. P., and Swan, R. H. J.: Tortuosity of Both Internal Carotid Arteries, Brit. M. J. 1:76, 1902.

14. Lake, R.: Case of Aberrant Carotids, Proc. Roy. Soc. Med., London, Otol. Sec. 6:21, 1912, 1913.

15. Roop, A. P.: Anomalous Internal Carotid Artery, J. Indiana M. A. 6:162, 1913.

16. Moorehead, E. G.: Tortuosity of Internal Carotid Arteries, Brit. M. J. 1:332, 1902.

17. Sack, N.: Ein Fall von abnormalen Verlauf der Carotis interna im Rachen, Monatschr. f. Ohrenh. 41:277, 1907.

18. Smith, G. M.: Tortuosity of Internal Carotid Artery, Brit. M. J. 1:1602, 1902.

19. Klye, D. B.: Textbook of Diseases of Nose and Throat, Philadelphia, 1914.

20. Bosworth, F. H.: Nose and Throat, New York, 1896, pp. 370-371.

blood vessel about the size of a lead pencil. By forcibly depressing the tongue, this blood vessel can be seen running from below upward and slightly inward until it reaches a point about opposite the uvula, whence it takes a course slightly upward and outward." He also reports an enlarged pulsating artery on the right side of the pharynx in a boy, aged about 7 years. The appearance of the condition was not unlike that described for the girl. Wood suggests an enlargement of the internal carotid artery or an upward continuation of the common carotid trunk, in trying to arrive at some explanation of the condition. He further states that it is not a very uncommon thing in atrophic throats to see pulsations of a small artery (ascending pharyngeal) on both sides of the median line, but that they can scarcely be mistaken for the condition described in the foregoing cases.

Kelly²¹ encountered a number of patients in whom large pulsating vessels in the pharynx were noticed. It may not be amiss to quote him in one of these cases:

The patient, a man, aged 75, complained of indistinct speech. This was found to be due to the contraction of syphilitic cicatrices of the soft palate. In the course of the examination a large pulsating vessel was seen projecting from the angle between the posterior and right lateral walls of the pharynx. It emerged from the posterior wall about the level of the upper border of the epiglottis and ascended vertically, becoming gradually more prominent. When opposite the upper part of the tonsil where its convexity was most marked and its pulsations best seen, it curved upward and disappeared in the tissues at the side of the nasopharynx. It was fully as thick as a pencil and extended laterally over a considerable part of the posterior wall of the pharynx. The mucous membrane covering it was normal. Pressure over the large vessel on the right side of the neck, above the level of the upper border of the thyroid cartilage, checked the pulsation in the pharynx. Nothing abnormal was detected in the condition of the walls of the vessel, nor in those of the temporal or radical arteries. There were no symptoms that could be attributed to its presence. The appearances have remained unchanged during the nine months that have elapsed since his first visit.

Kelly reports a similar case in a woman, aged 75; another in a patient, aged 72, in which there was a marked pulsation with slight difficulty in swallowing, and a fourth case in a patient aged 22. Moreover, he observed a number of cases of pulsation of the lateral walls of the pharynx without bulging.

Kelly concludes that some, if not all, of the cases of large pulsating vessels in the pharynx are due to a tortuous condition of the internal carotids, and regards as highly improbable that so small a vessel as the

ascending pharyngeal could become dilated to such a degree. He cautions that pulsations of the lateral walls of the pharynx often escape notice, owing to their being masked by the involuntary movements of the posterior faucial pillars and adjacent parts accompanying respiration.

That the ascending pharyngeal artery is at times of sufficient size to cause fatal hemorrhage is evidenced by Baker's²² case in which the ascending pharyngeal artery was injured by a tobacco pipe. The injury to the ascending pharyngeal was established by post-mortem examination.

Farlow⁷ reports eight cases of large pulsating arteries on the posterior walls of the pharynx, the patients ranging in age from 14 to 68 years. In commenting on this series he says:

It has seemed strange to me that so large a number of such cases should come to my notice. Possibly I have been, more than usual, on the lookout for them. I am inclined to think, however, that a thorough inspection of the sides of the pharynx will bring to light a greater number of instances than have hitherto been reported.

Barnes,²³ Sharp,²⁴ Sanderson,²⁵ Griffin,²⁶ Schmidt,²⁷ and others report cases in which pulsating vessels project into the pharynx. Some of these authors believe that the ascending pharyngeal artery is enlarged. Schmidt holds that the internal carotid artery is the underlying factor.

PRACTICAL APPLICATION

The extrinsic arteries of the palatine or faucial tonsil and of the pharyngeal (adenoid) tonsil are usually too small or too remote and well surrounded by muscle and loose connective tissue to give rise to the visible pulsation in the pharyngeal wall. Also, the internal and external carotid arteries, as a rule, are too remote from the pharyngeal wall to be factors in this regard. Despite this, however, these vessels do at times come dangerously near the tonsillar fossa, and not infrequently give rise to visible pharyngeal pulsation. Moreover, the intrinsic tonsillar vessels may be excessively large, and aberrant intrinsic tonsillar arteries are now and then encountered. The peritonsillar venous plexus is a considerable one, as is also the pharyngeal venous plexus. The location of these plexuses immediately ectal to the constrictor muscle and its thin covering, the buccopharyngeal fascia, is significant.

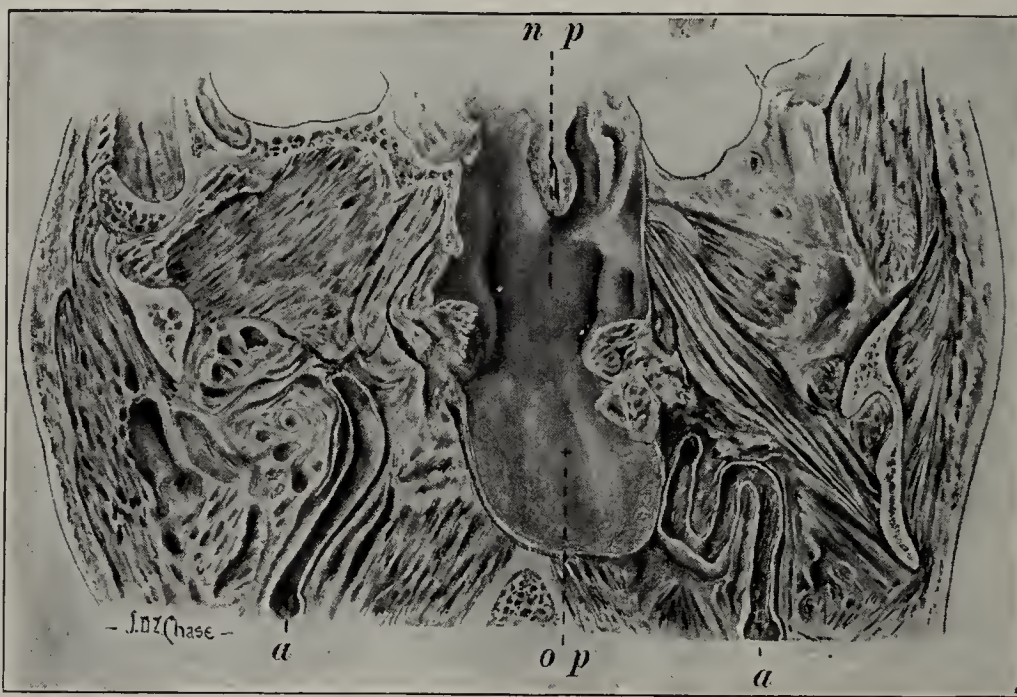


Fig. 3.—Frontal section exposing the posterior wall of the nasal and oral portions of the pharynx. Particularly note the tortuous or sigmoid internal carotid artery on the left side and the fact that the final ascending limb of the artery comes into actual contact with the superior constrictor muscle, thereby being in danger's way in tonsillectomy: *n p*, nasal pharynx; *o p*, oral pharynx, *a, a*, internal carotid artery.

22. Baker, W. M.: Fatal Wound of the Ascending Pharyngeal Artery by a Tobacco Pipe, St. Bartholomew's Hosp. Rep. **12**: 163-166, 1876.
23. Barnes: Lancet **2**: 623, 1875.
24. Sharp: L'Union méd. du Canada, 1896, p. 17.
25. Sanderson: Brit. M. J. **2**: 625, 1887.
26. Griffin: Med. Rec. **2**: 247, 1896.
27. Schmidt: Die Krankheiten der oberen Luftwege, Ed. 2, 1897, p. 19.

21. Kelly, A. B.: Large Pulsating Vessels in the Pharynx, Glasgow M. J. **49**: 28-34, 1898.

The importance of detecting abnormal pulsation on the dorsolateral wall of the oral pharynx, and full appreciation of the location of the important arteries and venous plexuses, before performing tonsillectomy or incising a peritonsillar abscess, cannot be overstated: Injury of the internal carotid artery during tonsillectomy has caused fatal hemorrhage in a number of cases. The same applies to the nasal pharynx and the removal of adenoid vegetations. Brown reports a case of death from hemorrhage in an adenoid operation, the necropsy disclosing an injury to a tortuous internal carotid. Fetterolf also cautions that serious postoperative hemorrhage may result from injury of the tonsillar and the pharyngeal venous plexuses.

An eminent laryngologist told me that recently he refused to perform a tonsillectomy in a case referred to him for operation because, on examination, he found marked pulsation, simulating an aneurysm, of a very large blood vessel in the tonsillar field. He considered the hazards too great to operate since, in addition to the pulsating vessel, the faucial pillars were markedly bound down by adhesions, the results of previous attacks of tonsillitis and quinsy. Despite the obvious presence of a very large and superficially placed artery, the attending physician failed to observe its presence and pulsation, much less appreciating the gravity of operating in the case. Fortunately, the patient fell into the hands of a trained laryngologist for treatment.

Wood, in commenting on one of his cases of visible pulsating vessels of the pharynx (described above), aptly says:

If in such a case a retropharyngeal abscess coexisted, or a suppurative peritonsillitis were to develop in the posterior position, the surgeon having done his duty by giving vent to the pus might easily find himself called on to check a most embarrassing hemorrhage.

CONCLUSIONS

1. It would appear that, in addition to a painstaking inspection, careful palpation of the tonsillar field should be practiced in all cases preliminary to a tonsillectomy, in order to judge of the nearness of large or aberrant blood vessels. The red flag of danger appears when the superior constrictor muscle and the thin buccopharyngeal fascia are inadvertently torn in operative procedures.

2. The large artery frequently visible in the wall of the oral pharynx and in intimate topographic relationship with the palatine or faucial tonsil is usually a redundant and tortuous internal carotid. The common carotid stem in the absence of the internal carotid, the external carotid, and the ascending pharyngeal and the ascending palatine arteries, likewise, at times, give rise to visible pharyngeal pulsation.

3. The redundant or tortuous internal carotid artery and agenesis of the internal carotid proper represent a reversion to more primitive types.

4. Age has no bearing on the development and presence of a tortuous internal carotid artery.

5. Tortuosity of the internal carotid artery seems to occur more frequently in the female. However, more cases must be studied before conclusions of value can be reached. Certainly it would be unwarranted to say that tortuosity of the vessel is sex-linked in inheritance.

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American Trypanosomiasis.—The acute infection is found in the majority of cases in children during their first months, or, at most, during the first year of their life.—Chagas.

MELANO-EPITHELIOMA OF THE PALATE *

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AND

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In a thorough review of the literature we have been able to collect only twenty-four cases of primary melano-epithelioma of the palate. One case at the Mayo Clinic, which was observed in 163 cases of melano-epithelioma of the body in general, and thirty-two primary epitheliomas of the palate, makes a total of twenty-five cases.

The first melano-epithelioma of the palate was reported by Weber,¹ in 1859. The twenty-four cases were reported by Weber,¹ Reid,² Albert,³ Gussenbauer,⁴ Treves,⁵ Maude,⁶ Volkmann,⁷ Martens,⁸ Broeckaert,⁹ Liebold,¹⁰ Fuchs,¹¹ Stein,¹² Eve,¹³ Ball,¹⁴ Seidel,¹⁵ Mayer,¹⁶ Roy,¹⁷ Eisenmenger,¹⁸ von Mikulicz, Braun, Billroth and Eder, who each reported one case, and Ebermann,¹⁹ who reported two cases. All of the cases were verified with the exception of those reported by Billroth, von Mikulicz, Braun and Eder. These were cited by Seidel,¹⁵ who did not give the references to the original articles.

Melanotic tumors have been variously classified as melano-epithelioma, melanosarcoma, melanocarcinoma, melanoblastoma, melanoma and chromatophoroma. Broders and MacCarty²⁰ prefer the term melano-epithelioma whether the tumor occurs in the mucous membrane or in the skin, since they believe that the pigment-bearing cells arise directly as a proliferation of the germinative cells of the skin or the cells of the parenchyma of organs.

Symmers²¹ believes that the term chromatophoroma or melanoma should be used, since the lesion arises from a pigment-bearing cell known as the chromatophore.

* From the Section on Laryngology and Oral and Plastic Surgery, Mayo Clinic.

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ETIOLOGY

Melano-epithelioma, particularly the type originating in the skin, eye, eyelid, mucocutaneous surfaces of the vulva and anus, penis, ovary, epididymis and pineal gland, arises in pigment-bearing cells. In horses, melano-epithelioma is quite common in the anorectal region, where there is an abundance of pigmentary tissue. Liebold has suggested that since the palatal tissue is embryologically derived from the ectoderm, and since this tissue may therefore contain pigment, it may be possible that melano-epithelioma of the palate originates in these cells. The mucous membrane of the human palate is normally nonpigmented; but some animals have a nonpigmented palate, and others may normally have dark palates, such as the horse, cow, dog, deer and fox. The maki, on the other hand, has a pigmented palate. White and dark palates may occur in the same race of animals.

Melanosis of the palate in man may be a precursory sign of future disease, the beginning of a new growth, or a complication of an already existing growth. In only six of the twenty-five cases of melano-epithelioma of the palate were areas of pigmentation noticed previous to the appearance of the growth. In Roy's¹⁷ case the patient had noticed the appearance of a small area of pigmentation following an injury to the palate by a pipe-stem; from this area the tumor developed. In the four cases reported by Ball,¹⁴ Mayer,¹⁶ Eve¹³ and Maude,⁶ a small area of pigmentation was noticed on the palate previous to the appearance of the tumor. Treves's⁵ patient noted an area of pigmentation following an injury to the palate by a dental plate, which he had worn for several years.

SYMPTOMATOLOGY

Practically all of the patients complained only of the presence of a tumor of the palate, and sought examination because of it. The tumors did not cause pain unless they were very large, and there were dysphagia and swelling of the mouth and throat. Difficulty in speaking and chewing were complained of in the cases in which the tumor was extensive. Hemorrhage sometimes occurred because of the vascularity of the tumors and their proneness to injury during the process of eating.

In fourteen patients the cervical glands were involved at the time of the first examination. One patient noticed glandular enlargement before the discovery of the primary tumor on the palate.

The duration of symptoms varied from one month to four and one-half years. The average duration was fifteen months. Seven of the patients were women

and eighteen were men. The youngest was 24 and the oldest 84; the average age was 54.

HISTOPATHOLOGY

Petit²² made a series of sections from melano-epitheliomas in animals and described the mechanism of the formation of pigment. The sections were made of different areas of the tumor, such as the non-pigmented, the partly pigmented and the deeply pigmented, in order to show the formation of pigment in the various stages. It was demonstrated that the melanotic infiltration is produced as a secretion or protoplasmic elaboration of the cell independent of any vascular action. The granules of pigment occur in the cell as the specific granules that are precipitated or concreted in a glandular cell, just as the fat granules are accumulated in a connective tissue cell in the formation of

adipose tissue, with the difference that the fat forms from one to several large droplets, whereas the melanin remains dispersed in the form of granules. Soon after the pigmentation appears, the cell, which is fusiform at first, soon becomes globular and so black that the nucleus is invisible. The pigment is first seen in the cell as small dark granules in the protoplasm. As the process progresses, the cell gradually becomes darker; finally the nucleus and cell outline becomes indistinct and a small ball of pigment remains. These balls disintegrate, and the tumor becomes a blackish mass. Through the destruction of the vessels in the foci of softening, the pigment enters into the blood stream, which carries it over the body, and causes a generalized pigmentation. Like-



Fig. 1.—Melano-epithelioma of the right palate and anterior pillar.

wise emboli of living cells may form in a vein and lead to metastasis.

Microscopically, these tumors show an alveolar arrangement of spindle and oval cells and occasionally giant cells. Some of the cells are pigmented and some are not. The former show varying amounts of brown and black pigment. When the cell becomes filled with the pigment the nucleus and cell outline are indistinct, and only a small dark mass can be seen. Fibrillar connective tissue also shows the presence of pigment granules. Areas of degeneration and hemorrhage are seen in various places in the tumor. The endothelium of the blood vessels may also contain pigment granules. Dipping down from the surface epithelium, areas of epithelial hyperplasia may be traced into the main portion of the growth. Early recurrences may not show pigment.

A tumor which is only slightly pigmented may give rise to a very deeply pigmented metastasis and, con-

22. Petit, G.: Le mecanisme de la pigmentation dans le sarcome melanique, Rec. de med. vet. Paris 95: 121-130, 1919.

versely, a deeply pigmented primary tumor may metastasize in the form of a nonpigmented or only slightly pigmented tumor.

Melano-epithelioma of the palate metastasizes early, usually first in the neighboring lymph glands, and late as a general metastasis. Melano-epitheliomas of the eye and skin, on the other hand, may metastasize very early in the lungs, liver, brain, skin, etc.

DIAGNOSIS

The diagnosis of primary melano-epithelioma of the palate usually is not difficult. The rapidly growing pigmented, nodular, somewhat pedunculated tumor, usually soft in consistency and vascular, is characteristic of this type of neoplasm. The glands of the neck become involved early by metastasis, and later a general melano-epitheliomatosis may occur. An early melano-epithelioma of the palate may be confused with other forms of pigmentation, such as that following small hemorrhagic areas in the submucosa in certain blood dyscrasias. Poisoning with bismuth and lead may also cause a pigmentation of the gums and palate. The following case (271870) is an illustration of a mistaken diagnosis of melano-epithelioma of the palate:

A woman, aged 40, came to the clinic with a small pigmented nodule of the palate which had been diagnosed elsewhere as melano-epithelioma. Two months before she had noticed the growth while she was inspecting her teeth. She consulted her family physician, who suspected melano-epithelioma, and advised her to look elsewhere on her body for evidence of pigmentation or primary growths. Three small areas of bluish discoloration were found on the vulva. There was no history of injury to the palate, but when she was 5 years of age she had fallen over a chair and injured the vulva. Several other physicians corroborated the diagnosis of the first consultant, and gave the usual poor prognosis.

Our examination of the palate revealed a small, slightly elevated, blackish, hard nodule about 5 mm. in diameter in the right side of the soft palate, near its juncture with the hard palate. A general examination did not reveal evidence of other pigmentation of the skin. Three small hemangiomas on the vulva were found.

The patient was advised to have the nodule of the palate widely excised for diagnosis. Encysted in the removed tissue was a small piece of lead 4 mm. long from a lead pencil. Microscopic examination of the tissue did not show malignancy. The lead had become diffused in the tissues and caused a black pigmentation characteristic of melano-epithelioma.

PROGNOSIS AND TREATMENT

Rapidly growing melano-epitheliomas are considered the most malignant type of neoplasm. There are, however, other types that are slow growing and are less malignant, for example, the malignant moles. In

seventy cases of melano-epithelioma of the skin, reported by Broders, the average duration of the lesion before examination was eleven years.

Thirty-eight of these patients were traced following operation. Twenty-four (63 per cent.) died within one year following the last operation; the average duration of life was eleven months and three days.

Seventeen of the twenty-five patients with melano-epithelioma of the palate were operated on; the remaining eight were considered inoperable. Several types of operation were employed, such as resection of the upper jaws and palate, wide excision of the growth by means of the chisel and mallet, curettement, and the cautery. In our case the growth was cauterized with soldering irons, and radium applied. We do not believe that removal of the glands of the neck in an attempt to block the growth from metastasizing is of value; nor is a block dissection of value when a gland of the neck is involved.

Since many of the twenty-five cases were reported shortly after operation, it is not, of course, possible to give a prognosis with regard to end-results. It is evident, however, that surgical intervention or radium either locally or over the neck is usually futile.

REPORT OF A CASE

X. D. (Case 298143), aged 62, a farmer, came to the clinic, Nov. 28, 1919, because of a tumor about 1 cm. in diameter of the right side of the palate which he had noticed one month before by feeling it with his tongue. The tumor had grown very rapidly for the last two weeks. A piece of the growth was removed by the patient's home physician, and microscopic examination revealed melanosis. The patient had not worn dental plates, and there was no history of trauma or pigmentation on the palate. The tumor had bled slightly on several occasions. A slight defect in the speech was the only symptom manifest.

Examination revealed a tumor on the right side of the palate about 3 by 4 cm., extending from the posterior margin of the hard palate half way forward on the palate (Fig. 1). At the right posterior lateral margin it extended down onto the anterior pillar. The growth was pedunculated, irregular, with a nodular surface, but was not ulcerated. It was soft, mottled with bluish-green, pink and black areas, and was very vascular, bleeding easily on manipulation. The pedicle was attached to the posterior margin of the hard palate. There were no enlarged glands and no evidence of pigmentation or metastasis elsewhere. A roentgenogram of the chest was negative. Examination of the urine was negative for melanin, and the Wassermann reaction and the eye findings were negative. A clinical diagnosis of primary melano-epithelioma of the palate was made. The unfavorable prognosis was explained to the patient, but it was decided to attempt the removal of the growth.

December 3, a piece of the growth was removed for microscopic examination; this showed the typical structure of melano-epithelioma (Fig. 2). The tumor was thoroughly

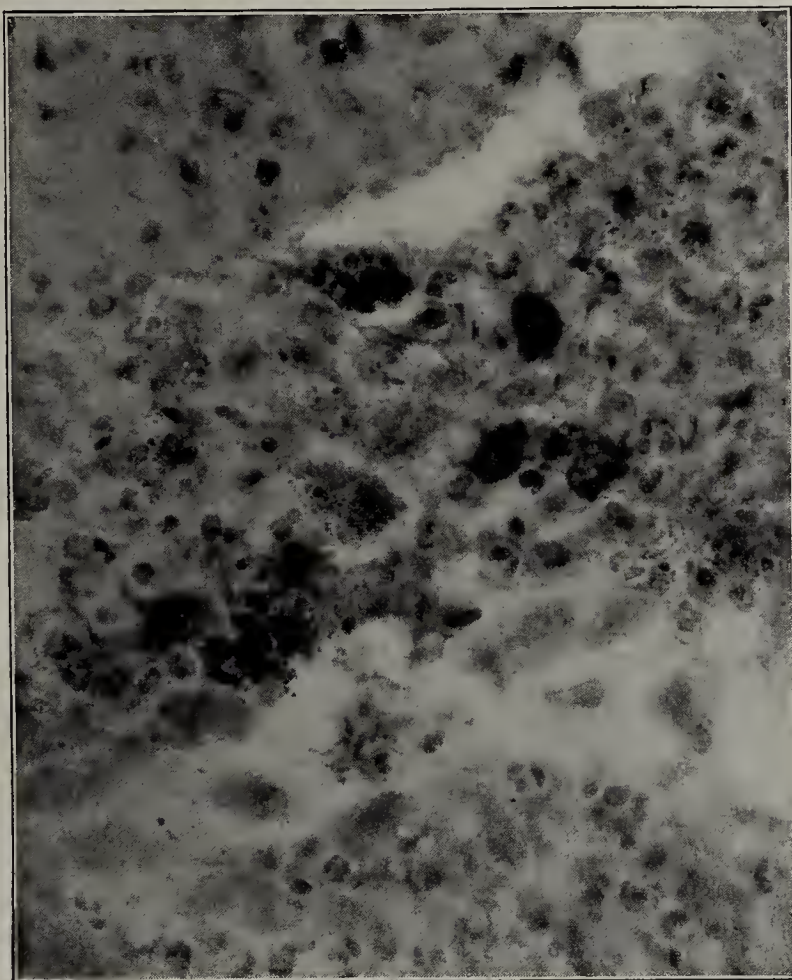


Fig. 2.—Photomicrograph of melano-epithelioma of the palate.

cauterized with soldering irons, and twelve days later 50 mg. of radium was applied to the open wound for ten hours with no screening except the radium container, less than 1 mm. in thickness.

Jan. 20, 1920, the patient returned with the wound of the palate healed and no evidence of recurrence or metastasis. A slightly enlarged, hard gland was palpable in the right submaxillary region. Four thousand milligram radium hours were applied to the right submaxillary and cervical regions with 1 inch distance and 2 mm. of lead screening. The patient was examined again, March 15, 1920. There was no local recurrence or change in the glands, and no general metastasis. Roentgen-ray treatment was given to the right side of the neck.

The patient continued to receive occasional roentgen-ray treatments over his neck, and, Nov. 29, 1920, he returned with a recurring growth on the palate, 1 by 2 cm. A small portion of the growth was covered with mucous membrane, and the remaining part was pedunculated. In the right submaxillary region was a large, hard, freely movable gland about 4 cm. in diameter, and in the right upper deep cervical region a hard, slightly fixed gland about 3 cm. in diameter. Roentgen-ray treatment was applied to the glands.

Feb. 8, 1921, the growth had increased to 2.5 by 0.5 cm., and involved the right side of the palate at the juncture of the hard and soft parts, extending from the alveolar process to the midline of the palate. The growth was soft, vascular and fixed to the underlying bone. It was pigmented except for a small area near the middle. The gland in the right submaxillary region had increased to 4.5 cm., and the one in the upper deep cervical region to 5 cm. in diameter. No other glands were found to be involved, and there was no evidence of general metastasis. The general health of the patient was good. Roentgen-ray treatment was applied to the glands. The patient has not been examined since, but the prognosis is very unfavorable.

ESOPHAGEAL STENOSIS FOLLOWING THE SWALLOWING OF CAUSTIC ALKALIS

CHEVALIER JACKSON, M.D.

PHILADELPHIA

J. P., aged 2 years, referred to me by Dr. Walter Lathrop, was in an almost moribund condition from food and water starvation, on admission at the Bronchoscopic Clinic, Jefferson Hospital. He was unable to swallow solids, and water or other liquids were regurgitated without having reached the stomach. He was extremely emaciated (Fig. 1); the skin was dry and hot; the face was shrunken, the expression anxious; the eyes were sunken and surrounded by deep, dark circles. The little sufferer called constantly for water, which he would try over and over again to swallow; but each

mouthful would immediately come back out of his mouth

Three months before admission, the child had put some lye (afterward found to be of the "Red Seal" brand) in his mouth. He was severely burned about the mouth at the time, and after these burns healed he was able to swallow food of the consistency of rice. Swallowing gradually grew worse until even liquids would not go down. Application for relief being made at the state hospital, the patient was at once sent to me.

Because of the imminent danger of death from water hunger, the child was transferred to the service of J. Chalmers DaCosta, and Thomas Shallow immediately performed a gastrostomy. Water was gotten into the stomach, and, later, milk. The child slowly began to improve; and when there had been sufficient gain in strength, a roentgen-ray examination of the esophagus was made by

Willis F. Manges, who discovered a very narrow stricture at the level of the eighth dorsal vertebra, where there was a probelike lumen about one-fourth inch in length. Above this about 2 or 3 inches the lumen was about one-eighth inch in diameter.

The feeding was placed in charge of Edward E. Graham, and improvement with slight gain in weight for a time gave some hope of recovery; but the conditions due to gastrointestinal and renal complications resulting from the prolonged food and water starvation grew worse, and the child died of uremia about six months after admission, nine months after it had swallowed the lye. It never lost the emaciation shown in Fig. 1, nor improved sufficiently to warrant the beginning of esophagoscopy treatment for the cure of the stricture.

COMMENT

The medical and surgical aspects of this case are not germane to the purpose of this report. I wish to call

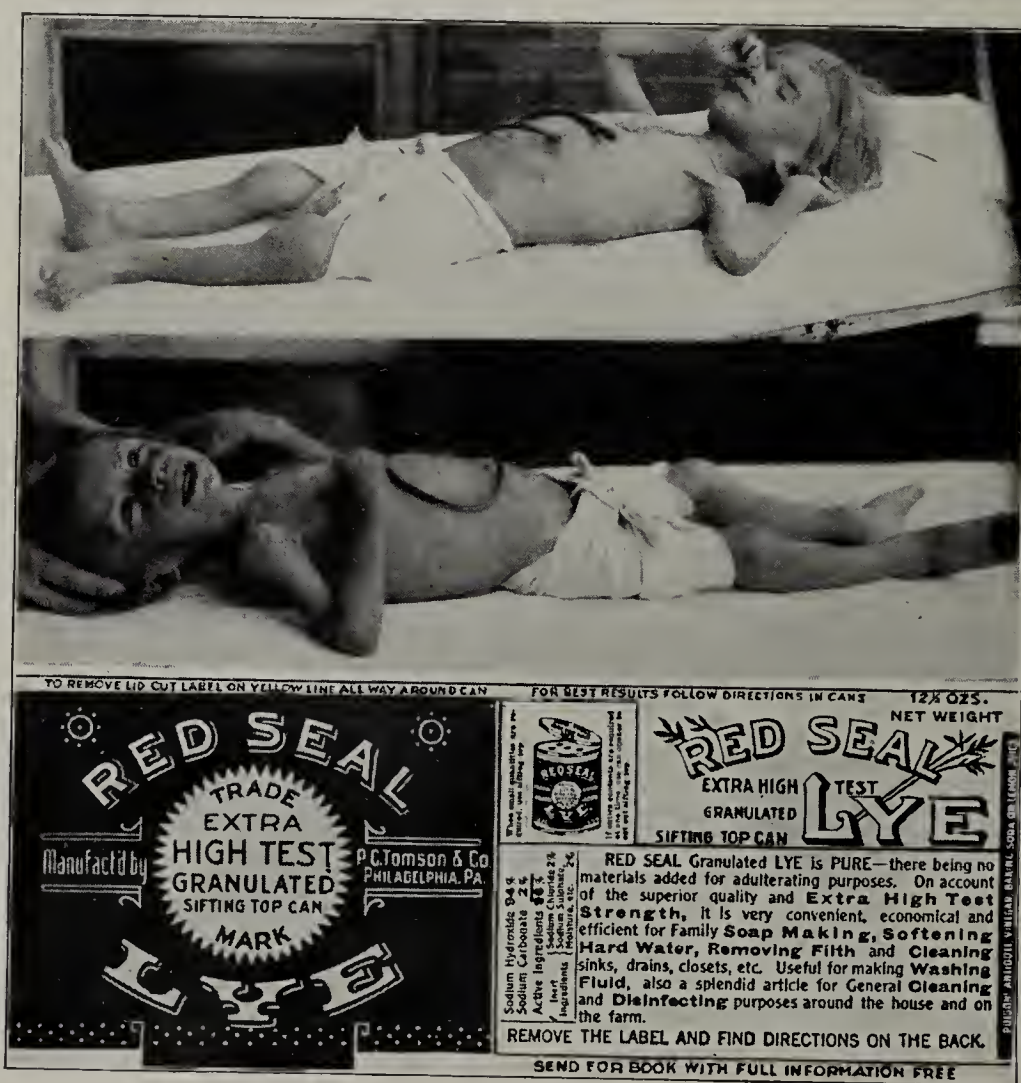


Fig. 1.—From a photograph of a child fatally burned by swallowing Red Seal Lye. The lower part of the illustration shows the inadequacy of the warning common to all labels of lye-containers sold in groceries and used in kitchens. Parents are not aware of the danger of leaving the lye-preparations in the reach of children. This label is removable to get at the directions on the back, and removal usually destroys or removes the tiny, inconspicuous, vertical cautionary wording.

Fads in Treatment of Tuberculosis.—In the treatment of tuberculosis, perhaps, more than in any other disease, failure and disappointment, while discouraging, has not daunted workers. In no disease does fashion in therapeutics play so considerable and at the same time so ignominious a part. But there, nevertheless, appears to be almost a conspiracy to ignore or, at any rate, not to profit by the lessons of failure. There are waves of advocacy of this or that method of treatment, which in turn are condemned with often unnecessary emphasis. Tuberculin, domiciliary treatment, the sanatorium, the dispensary, the colony system, various forms of drug therapy, and other methods have their periods of popularity and disillusion. Yet in almost all there are elements of good.—H. Gauvain, *Brit. J. Tuberc.* 15:1, 1921.

attention to the fact that this child, in spite of the best of medical and surgical care, died as the result of swallowing a powerful corrosive poison (94 per cent. sodium hydroxid) that was purchased in a grocery store, and that the poison label on the container in which it is sold is so minute as to afford no sufficient warning of the great danger of leaving the preparation in reach of children. Moreover, the tiny typed wording reads vertically, which contributes to its being inconspicuous. I do not say that either this vertical position or the smallness of the type is for the purpose of rendering the word "poison" inconspicuous, as, of course, I have no means of knowing. Simply the facts that have a bearing on the frequency of these shocking accidents, and on the need for regulations for their correction, are recorded here.

I have had four cases of esophageal stricture in children and one in a man due to the swallowing of "Red

cine cupboard while the caustic alkalis sold by the grocer go into the kitchen. The subject has been referred to by Hubbard, Imperatori, Arrowsmith and others. All of the men doing esophagoscopy have some of these little children under treatment at all times. Since my first publication, a steady stream of these cases has passed through the Bronchoscopic Clinic. As to the frequency of the accident, Figure 2 will convey some idea. It shows the number of lye-stricture cases under treatment at one time at the Bronchoscopic Clinic; in fact, a number of additional cases were under treatment as outpatients at the same time. We are able to cure many of the little sufferers, and improve many more; but a number are, as in the case herein reported, so badly burned that recovery is impossible.

Efforts at remedial legislation have met opposition from manufacturers. It is time the influential members of the medical profession took the matter in hand in



Fig. 2.—All these children were under treatment at one time in Jefferson Hospital for cicatricial stenosis of the esophagus caused by swallowing commercial preparations of lye that were not labeled with sufficient clearness.

Seal Lye." In two cases the stricture resulted from swallowing "Babbitt's Lye"; in one case from "Merry War Lye"; in one case "Kleanall"; in one case "Snowboy." In many of our cases the name of the preparation was unrecorded or unobtainable. That Red Seal Lye is more often the cause is due not to greater corrosive activity nor to a less adequate label, but probably to the fact that there seems to be more of it sold than of other preparations. The name of the preparation is immaterial. The fact is that not one of the caustic alkalis sold for cleansing purposes, so far as I have been able to discover, has a sufficient warning of the dangerous nature of the contents. In 1910 I¹ called attention to this fact and mentioned that poisons sold by druggists to the laity are subject to legal regulations as to labeling, *and such drugs go into the medi-*

such a way that any one buying these corrosive poisons shall be warned of the dangerous nature of the contents by a label so conspicuous as to compel attention, such as the druggist is required to use in selling any kind of poison.

Endocrinologists.—Certain practitioners calling themselves endocrinologists have erected an extraordinary structure of symptomatic complexes based on meager evidence and a fervid imagination. This has reached its climax in a recent monograph by a psychiatrist, Laignel-Lavastine. There is no way apparently of checking these elaborations, which bear about as much relation to the functions of the ductless glands as did the phrenological imaginings of Gall and Spurzheim to cerebral localization. Epidemics of this sort from time to time hysterically sweep over medicine, dying out in due course, the more quickly if unmolested.—Cushing, Harvey: "The Special Field of Neurological Surgery after Another Interval," *Arch. Neurol. & Psychiat.* 4:622 (Dec.) 1920.

1. Jackson, Chevalier: Esophageal Stenosis Following the Swallowing of Caustic Alkalis, *J. A. M. A.* 55: 1857 (Nov. 26) 1910.

STERILIZATION OF CLOSED CAVITIES BY LAVAGE AND STAINING WITH GENTIAN VIOLET

DESCRIPTION OF TECHNIC

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That sterilization of joints could be brought about by lavage and staining in cases in which the infection was not of too long standing, has been shown in a number of previous publications.¹ The procedure employed for



Fig. 1.—Apparatus for lavage and staining of joints, container closed, ready for sterilization.

this purpose included a preliminary mechanical cleansing of the surface of the synovial membrane, followed by the introduction of a penetrating, persisting, non-irritating substance of moderately strong bacteriostatic power (gentian violet), the whole operation conducted under local anesthesia, through a large bore needle. Though it would doubtless be possible to carry out such lavage and staining with a simple outfit like an ordinary syringe or a gravity apparatus, it is difficult if not impossible to carry out a thorough lavage in this way and to maintain at the same time anything like a satisfactory aseptic technic. That lavage of the most thorough kind is essential has been repeatedly emphasized; it is idle to expect to sterilize a mucous membrane by applying to its surface a bacteriostatic agent unless that membrane has previously been cleansed so that the bacteria on and in it can actually be reached.

In order to make thorough lavage possible and easy, and at the same time to avoid risk of introducing contaminating organisms into the joint as well as to insure that the operation, even of long continued lavage, be neatly done, a special apparatus was devised and has been described in *THE JOURNAL*.² This apparatus met all the requirements, and the results obtained with it were encouraging. It was unnecessarily clumsy, however, and the expense of its manufacture was prohibitive. A simpler apparatus based on similar principles has been devised and may now be obtained from the

Kny-Scheerer corporation, New York. This apparatus is illustrated in Figures 1, 2 and 3.

It was suggested in earlier articles that the principles of lavage and staining, applied with some success to infections within the joint cavity, might be applied also to early infections within the thoracic cavity. A publication has recently appeared³ describing the application of this suggestion in two cases of pyothorax developing after the production of an artificial pneumothorax. The success in these two cases led the author to speak with some enthusiasm of the possibilities of this method in fresh pyothorax. From a personal communication I understand that gentian violet is being used in infections of the thorax in one of the clinics in Madrid, with results which suggest that in certain types of cases it may prove of some value.

The apparatus here described has been devised with the thorax as well as the joints in mind. Bottles larger than needed for the lavage of joints have for this reason been used; a cock has been provided (Fig. 3f) which makes it possible to empty the bottles as often as desired, without otherwise disturbing the apparatus, so that any amount of pus can be aspirated from the chest; and the caliber of all openings in the apparatus has been made one-fourth inch (inside measurement), so that any material which will pass through the largest aspirating needle which can possibly be used will be too small to clog the apparatus.

It must, of course, be remembered that the problem of infections within the chest is by no means as simple as that of infections within the joints. The difficulties presented by the pressure conditions in the thorax must be borne in mind, and the problems that they present have not been worked out. Nor is there the slightest reason to suppose that lavage and staining would be of any avail in an empyema of long standing; the notion that this procedure should supplant open thoracotomy in such cases should not be tolerated. In cases of early effusion, however, the success which has attended the



Fig. 2.—Apparatus with lid removed: A, bottle containing gentian violet; B, bottle containing salt solution; C, empty bottle to receive washings; D, empty bottle to receive aspirated pus from joint; E, cotton filter; F, trap; G, funnel screwed into containing socket.

modest attempts made to apply the method used in the joints to infections in the chest suggests that the procedure should receive further study.

It is necessary, perhaps, to state that if the therapeutic possibilities of gentian violet have been spoken of with some enthusiasm, the sharp limitations to its

1. Churchman, J. W.: Treatment of Acute Infections of the Joint by Lavage and Direct Medication, *J. A. M. A.* **70**: 1047 (April 13) 1918; Static Arthritis of the Knee Accompanying Fracture of the Patella, *ibid.* **72**: 1280 (May 3) 1919; Selective Bacteriostasis in the Treatment of Infections with Gentian Violet, *ibid.* **74**: 145 (Jan. 17) 1920; Gentian Violet in the Treatment of Purulent Arthritis, *ibid.* **75**: 583 (Aug. 28) 1920.

2. Churchman, J. W.: Footnote 1. first reference.

3. Waters: *Am. Rev. Tuberc.* **4**: 875 (Feb.) 1921.

use have by no means been overlooked. It is probably not a very strong bactericidal agent; such value as it has depends rather on its penetrative power, on its persistence, on its lack of toxic qualities and on its marked selective bacteriostatic action. The limitations to which this dye and probably all selective bacteriostatic agents are subject have been repeatedly emphasized in the large number of experiments performed on the subject in recent years; and reference may particularly be made to articles in the May number of the *Journal of Experimental Medicine* (1921) in which attention is called to many of the difficulties—some of them not previously recognized—which attend the transfer of observation of bacteriostatic quality of "antiseptics" into therapeutics. The purpose of my experimental studies has been not so much to establish the value of a given therapeutic agent (though this has, within certain limits, been established) as to determine some of the principles which must be understood before any selective agent can be rationally applied to wounds. The principle of lavage and staining is a sound one; the apparatus devised is effective, and gentian violet is in many ways admirably suited for this particular purpose.

TECHNIC

(a) *The Apparatus.*—

This consists of a system of connecting chambers to be interposed between a pressure-and-suction pump, on the one hand, and the aspirating needle which is to be inserted into the joint on the other. The method of attachment of pump and needle is illustrated in Figure 3. If an electric pump is at hand which will furnish both suction and pressure, the use of the apparatus is somewhat simplified; but this is not necessary, and the Potain syringe as illustrated is quite adequate. The caliber of all tubing and stopcocks is one-fourth inch (inside measurement), so that any material which can be aspirated through the largest needle that can be used will readily pass into or out of the apparatus.

(b) *Sterilization.*—The funnel (G, Figs. 2 and 3) is removed, by unscrewing from its retaining socket, and attached to the vent (Fig. 3 n). Stopcocks m, e, g and l are opened, a 1:1,000 solution of gentian violet is poured into the funnel, and it runs into bottle A. Stopcocks g and e are closed and stopcocks d and h opened. Salt solution is poured into the funnel, and bottle B is in this way filled. While these two bottles are being filled, stopcock l must be left open to allow the escape of air through the vent, o. All stopcocks are now closed, the funnel replaced in its socket (Fig. 2 G), the lid applied (Fig. 1), and the apparatus sterilized in the autoclave.⁴

(c) *Technic of Lavage and Staining of a Joint.*—The apparatus is shown set up ready for use in Figure 3. The lid has

been removed, the funnel screwed into the vent, n, the folding supports, s, unfolded, and rubber tubes attached to outlets, t, u and v. Longer tubes than those illustrated will, of course, be needed; merely the method of attachment is shown in the illustration.

After cleansing and sterilization of the skin with tincture of iodine, the parts are covered with sterile sheets, leaving exposed an area about 5 cm. in diameter where the needle is to be inserted. In this area sufficient 2 per cent. procain is injected subcutaneously to anesthetize the skin and underlying tissues completely. A large caliber needle of the type represented in Figure 4 is then inserted into the joint.⁵ A needle with smaller bore than this should not be used when the larger joints are treated, as it is essential that the needle be sufficiently large to allow the fibrin clots within the joint to pass through it. For smaller joints such a needle is, of course, out of the question.

The point of the needle should be very sharp, and it should be pushed quickly into the joint. Some discomfort will be experienced by the patient as the needle passes through the synovial membrane; but, as a rule, the rest of the operation is almost painless.

After the needle has been inserted stopcocks a, b, j and k (Fig. 3) are opened and suction applied with the Potain syringe. The fluid within the joint runs into the bottle D. This fluid is kept for the bacteriologic examinations, the bottle being removed from the apparatus by simply applying small clamps to the rubber tubes q and r, and lifting it out.

When the fluid has been removed from the joint in the manner indicated, stopcocks b and j are closed, stopcocks d and h opened, and pressure is applied with the pump. Salt solution from bottle B is thus forced into the joint. This should be put in in an amount sufficient to distend the joint and thus reach every nook and cranny of the cavity. In the knee, the

completeness of distention is readily recognized by the prominence of the subquadriceps bursa; this joint usually holds about 75 to 100 c.c. It is interesting to note that the distention of the knee in the manner indicated has usually caused no pain.

In the first cases the joint was anesthetized by the injection of procain; but this procedure was found to be unnecessary. It is true that none of the cases treated was extremely acute, and possibly if this had been the case a general anesthetic would have been necessary. But it is certainly possible to distend a moderately inflamed knee until the subquadriceps bursa stands out like a drum without causing any pain. This observation seems to indicate that the common notion that the pain in an inflamed joint is due to distention must be considerably modified.

When the joint has been thus distended with salt solution, stopcocks d and h are closed, stopcocks c and i opened and suction applied. Salt solution mixed with pus from the joint

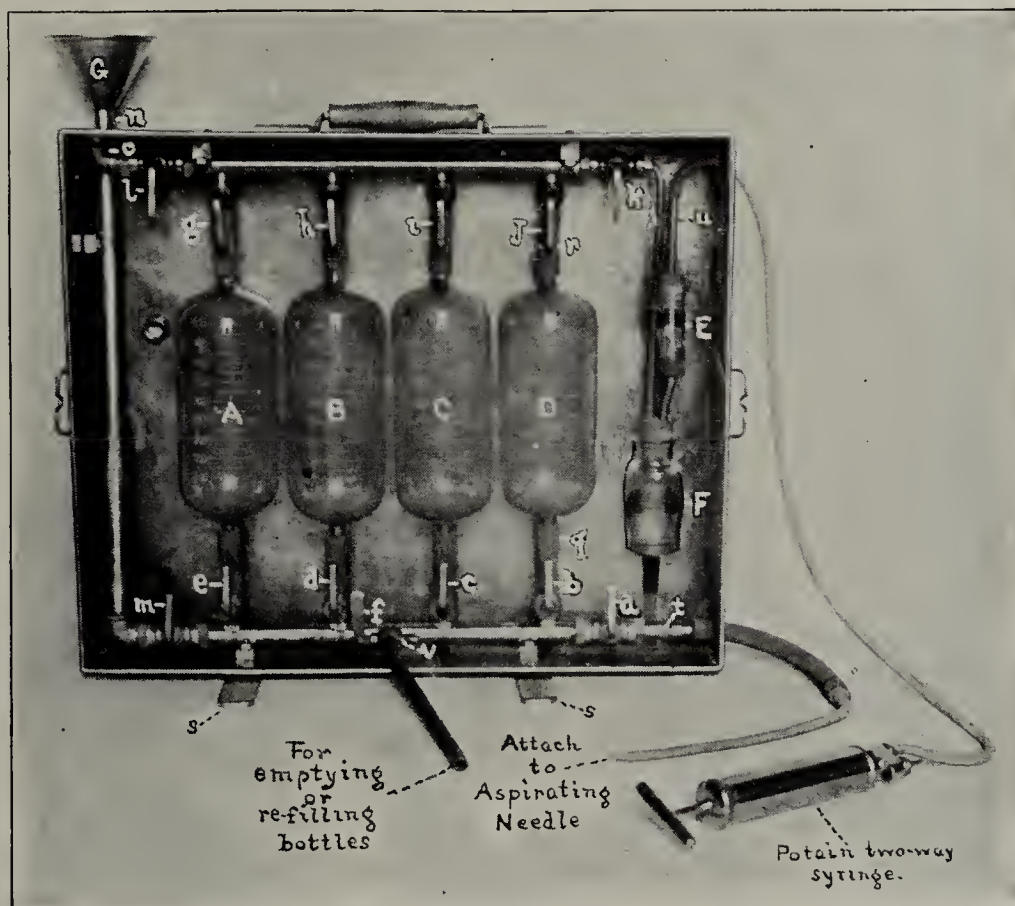


Fig. 3.—Apparatus set up for use. The lettering is described in the text.

4. Of course, the bottles must not be entirely filled with the fluids. Room must be left for the expansion which will occur during sterilization.

5. The illustration represents only the type of needle used. A modification of the point and of the method of closing the opening for the obturator—which make it easier to insert and simpler to use—is now being worked out.

flows back into bottle *C*. This lavage from bottle *B* into the joint and back into bottle *C* is repeated until the fluid returns perfectly clear.

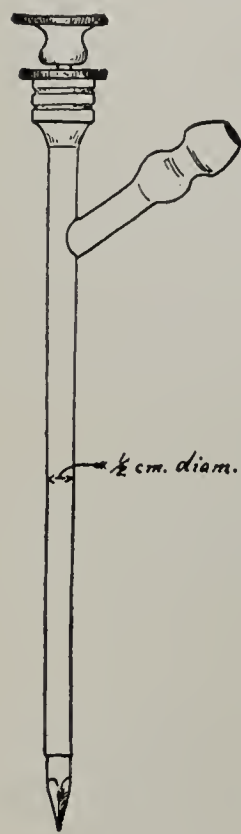


Fig. 4.—Type of needle used for lavage of joints. A modification of this needle is now being made which renders it more effective.

Stopcocks *e* and *g* are then opened, pressure is applied, and the gentian violet from bottle *A* is thus forced into the joint, to distention. The dye is left in the joint for fifteen minutes. It is then withdrawn into bottle *C*, by arranging the stopcocks properly and applying suction. That the synovial membrane is in this manner stained down to the subsynovial tissues has been shown by an experiment on a living human being.⁶

A smaller amount (about half the joint capacity) of 1:10,000 gentian violet is then injected into the joint in the manner already indicated, and this is left in the cavity.

The needle is withdrawn rapidly, a dry gauze square pressed against the puncture hole, and a dry dressing applied. A flannel bandage is placed over the dressing, light pressure being used. The knee is kept quiet for two or three days, and then the dressing is removed. It will be found very slightly tinged by the stain, but the puncture will be found to have closed and will give no further trouble.

If, during the operation, it is found necessary to empty any of the bottles of washings or fill with salt solution or gentian violet, this may be done through stopcock *f*.

(*d*) *Cleansing of the Apparatus.*—All the bottles are easily removed by simply lifting them out, and the metal tubing may be cleansed by fluids poured into them through the funnel inserted at *o* or *n* (Fig. 3).

65 Central Park West.

BRANCHIAL CYSTS AND FISTULAS *

P. K. GILMAN, M.D.

SAN FRANCISCO

In man, four pairs of gill pouches develop from the sides of the pharynx during the early part of the third week of intra-uterine life. Beginning with the anterior pair, the others appear in regular order as elongation of the pharynx allows. These pouches are lined with entoderm derived from the pharynx, and expand until the ectoderm is reached. In the lower forms rupture, followed by fusion of entoderm with ectoderm, occurs and there are formed the gill clefts. In man, this rupture does not take place; but the germ layers separating each pouch proliferate freely; forming columns separated from one another by the pouches. These columns are the branchial arches, covered by cylindric epithelium of entodermal origin.

As the embryo develops, certain of these clefts and arches disappear; others persist and result in adult structures. Lateral cervical cysts and fistulas result from improper obliteration of the second cleft, median fistulas from persistence of a portion of the ductus thyroglossus. The terms lateral and median are applicable only to the course of the sinus and not to the location of the external opening. Again, the position of the external opening does not determine the cleft

from which the tract arose, as this position may vary within considerable limits. Wherever the external opening is, however, apparently all branchial fistulas connect at their inner end in the region derived from the second branchial cleft, near the tonsil or in the lateral wall of the pharynx.

The surface opening of a branchial cleft fistula may lie at any point in the front of the neck between the inner border of the sternomastoid muscle and the midline, and at a level not above that of the hyoid bone or below the suprasternal notch. In our two cases the opening has been small and has manifested itself a short distance above the sternoclavicular articulation.

Fistulas may be complete with both an external and an internal orifice. When the latter is present it occurs near the tonsil or in the lateral wall of the pharynx. In the blind or incomplete type, the opening is single and connects either internally with the pharynx or externally with the skin of the neck. The extent of each type varies within quite generous limits.

Cyst formation occurs in a persistent portion of this embryonic structure. This may develop as such from the start in a portion of the cleft that has failed to obliterate and does not connect with either the pharynx or the skin. On the other hand, just as an incomplete fistula may become transformed into a complete fistula by perforation of the closed end, or a complete become an incomplete one by closure of either end, cystic dilatation may result from a sealing of the lumen with subsequent retention of secretion. Even with the opening patent, dilatations occur and may be extensive and complicated.



Fig. 1 (Case 1).—Anteroposterior view of injected tract.

The route followed by branchial cleft fistulas is apparently a definite one and determined developmentally. In the lateral region of the neck the tract between the external opening and the digastric lies on the deep fascia superficial to the sternohyoid muscle. Passing beneath the digastric muscle, it ends near the tonsil or enters the lateral pharyngeal wall after cross-

6. Churchman, J. W.: Footnote 1, third reference, Figures 4 and 5.

* From the Surgical Clinic, Leland Stanford Junior University School of Medicine.

ing the carotid bifurcation, the glossopharyngeal and the hypoglossal nerve. This complicated course and intimate association with important structures renders removal of the fistula a difficult task, not to be approached lightly.



Fig. 2 (Case 1).—Lateral view of injected tract.

Microscopically, the structure of branchial fistulas is constant. The wall consists of connective tissue arranged in layers about the lumen. In this wall run the blood vessels, often in considerable number. The lining epithelium may vary from squamous to cylindric, depending on its point of derivation, both types having been described as occurring in the same fistula. A more or less clear viscid fluid is given off from the lining. This fluid may become greatly modified by inflammatory processes, as may also the lining epithelium itself.

Fistulas of branchial origin are present at birth in contradistinction to thyroglossal fistulas which, however, may manifest themselves at any time after birth. They are practically always unilateral, and affect most commonly the right side of the neck. The presence of either fistulas or cysts may remain undiscovered for a long period, as they cause little or no discomfort unless the secretion from the fistula is sufficient to prove annoying by its quantity or to cause irritation of the skin surrounding the external opening. The discovery of a cyst is usually accidental, the presence of one of considerable size being not incompatible with apparently normal function.

If any doubt as to the diagnosis exists, a fistula may be injected with an opaque paste. Stereoscopic plates will then show the extent and course of the tract (Fig. 1) when the opening is external. A probe is passed with difficulty and may readily penetrate the wall.

In the treatment of fistulas and cysts, nothing short of complete excision of the structure is efficacious. It

must be complete, or a recurrence will surely follow from even a minute portion of the wall. Attempts to secure obliteration of the structure by injection of destructive solutions is not only unreliable but may be dangerous.

REPORT OF CASES

CASE 1.—*Branchial cleft fistula; incomplete external type; right.*—R. M., an American schoolgirl, aged 13 years, was admitted to the clinic complaining of a discharge from an opening low down on the right side of her neck. The family history was negative, two sisters and one brother presenting no apparent abnormalities. The past history was negative except for a mild attack of measles during the patient's fourth year. The child seemed of average mental and physical development, showing no other abnormality.

The patient stated that she had had a discharging sinus as long as she could remember. The discharge varied in amount and character, at times being clear and white, at others thick and yellow. For days at a time the opening apparently closed and was represented by only a small depression. This depression later pouted at its central point, burst, and discharged a considerable amount of thick fluid. The amount of discharge decreased during several days until finally, before closure again took place, only a few drops of material were evident. This periodic closure and reopening of the fistula did not take place with any regularity.

With the cooperation of Dr. Chamberlain of the roentgen-ray department, a few cubic centimeters of a thin suspension of bismuth were injected into the opening in the neck and sealed in by means of a small pad of gauze held over the opening by adhesive plaster. Stereoscopic plates were then taken and demonstrated beautifully the exact relations of the tract in its course from the skin opening to its point of origin in the lateral wall of the pharynx near the tonsil (Figs. 1 and 2).

At operation the entire tract, still containing the injection material, was exposed through an incision medial to and paralleling the right sternomastoid, and extending from just below the angle of the jaw to and surrounding the opening. This incision first isolated the depression bearing the sinus opening, which was then kept closed in a clamp. By exerting traction on this clamp the tract was readily brought into view at any time, and the contained opaque material rendered its

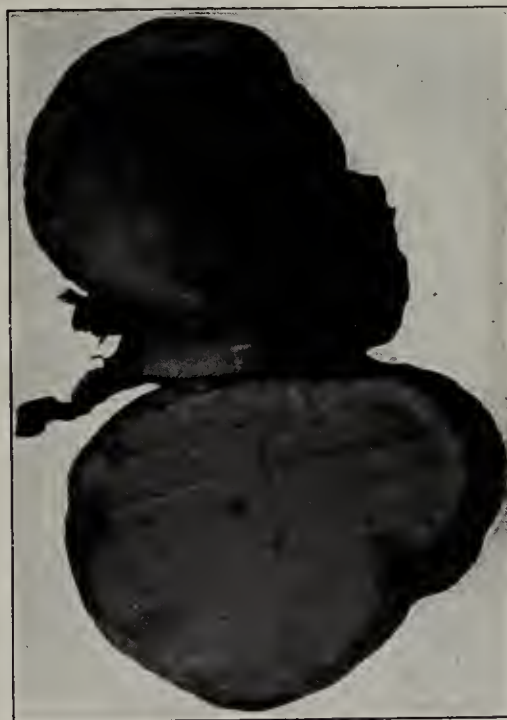


Fig. 3 (Case 2).—Cyst hemisected; contents removed from one half.

identification an easy matter. Blunt dissection served to isolate it, and it was removed entire up to and beyond its point of origin in the pharyngeal wall, the dissection being carried well up to the base of the skull.

The wound healed kindly after removal of a small drain of rubber tissue at the end of twenty-four hours.

CASE 2.—*Cyst of branchial cleft; right.*—A man, aged 25, American, referred by Dr. Mark H. Woolsey, in whose immediate family both diabetes and tuberculosis were present, was undernourished until his nineteenth year when, following an abdominal operation, he began to take on weight. He had suffered from repeated severe attacks of tonsillitis until the tonsils were removed recently. One year before I saw him, the patient noticed accidentally a swelling below the angle of the jaw on the right side of the neck. The lump at times seemed to become smaller, but had on the whole gradually become larger until the present time. Removal of the patient's tonsils two weeks before this admission produced no change in the swelling. The swelling had produced no subjective symptoms.

The general examination of the patient was negative. The neck showed a prominence below the angle of the jaw on the right side, over which the skin appeared normal. Examination of the throat was negative. The neck swelling was about 10 cm. in diameter, was prominent, and fluctuated, giving on palpation an impression of a cyst with thin walls containing thick, semifluid material under moderate tension. The out-

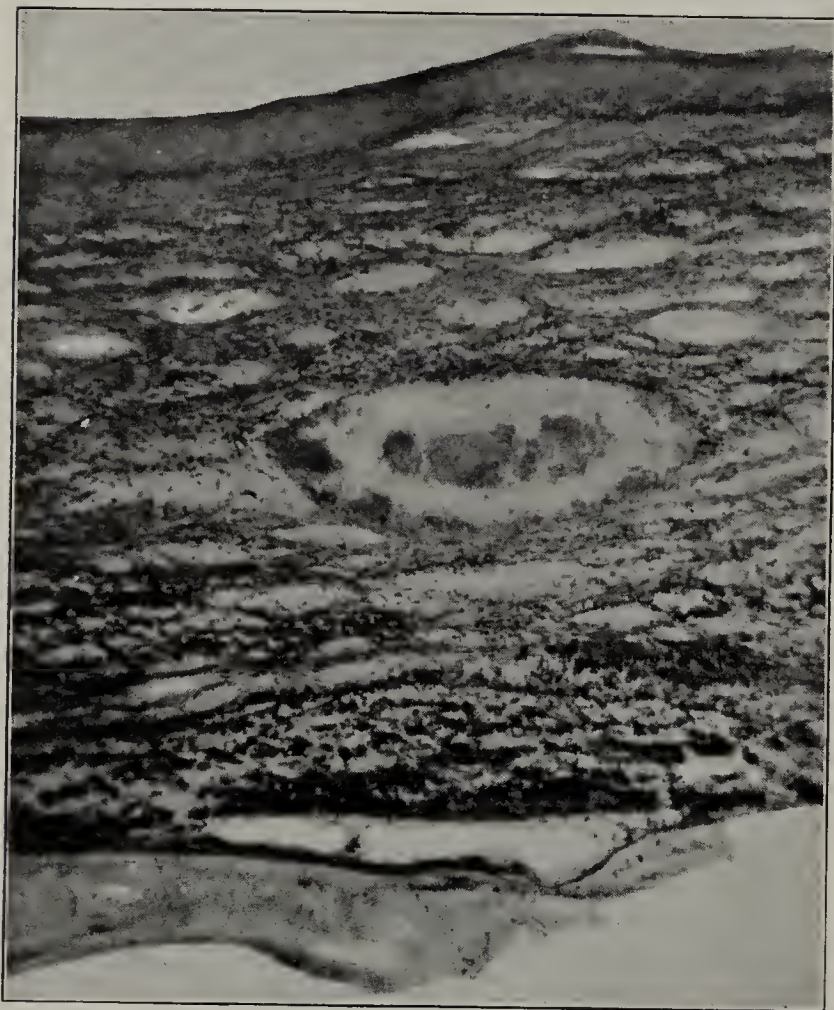


Fig. 4 (Case 3).—Cyst wall: objective A (Zeiss); ocular 2; bellows length, 10½ inches.

lines of the swelling were indefinite and it was evidently covered not only by skin and subcutaneous tissue but also by several deeper layers.

Under local anesthesia, 1 per cent. procain being used, a transverse incision about 3 inches long was made over the swelling at its widest point. The sternomastoid muscle was retracted posteriorly, the stylohyoid was drawn forward and the cyst exposed, lying upon the wall of the pharynx and distorting the posterior belly of the digastric and the styloglossus. The cyst was shelled out by blunt dissection and a mass dissection made of the tissues extending upward along the pharynx to the base of the skull (Fig. 3). The wound healed promptly.

CASE 3.—*Branchial cleft fistula; incomplete external type; right.*—M. B., a schoolgirl, aged 16, came to the surgical clinic because of a discharge from an opening low down on the right side of the neck. The family history was negative; the past history included measles, scarlet fever and severe tonsillitis. According to the patient's mother, a small opening was first noticed in the right side of the child's neck when

she was 3 years old. This had discharged a thin, greenish-yellow mucus ever since. Formerly the discharge was not constant, but lately it had occurred every day, if only a few drops. The patient stated that she could feel the mucus "gathering," and that by then pressing on her neck above the opening she could force out at times half a teaspoonful of fluid.

General examination of the patient—a tall, thin, well developed girl—was negative. To the right of the median line, between it and the anterior border of the sternomastoid and about 2.4 cm. above the sternoclavicular articulation, was a small, almost pin-point opening at the summit of an elevated tag of tissue. Pressure above this opening for some distance caused a further protrusion of the tag. From the small opening was constantly exuding a yellowish mucus a drop at a time. Harder pressure on the neck up under the angle of the jaw caused a spurt of the same material.

This case was practically similar in all its features to Case 1, and was treated in the same manner. The tract followed the course described above and was removed entire, the tissue adjoining the pharynx and well up to the base of the skull being excised to prevent any possibility of recurrence.

STRUCTURE OF SPECIMENS

Examination of the specimens reveals a constant structure. The lining of these cysts or fistulas consists of stratified columnar epithelium, varying at different points in the number of cell layers. No cilia are present. Beneath the epithelial layer occurs in our specimens a more or less unbroken layer of lymphoid tissue. Nodules with germinal centers are encountered scattered throughout. Surrounding this is the supporting layer, made up of strands of fibrous tissue rich in areolar connective tissue spaces of large size. These support a rich network of arterioles and capillaries. Adipose tissue is found scattered in irregular areas in the wall of these structures, and more or less round cell infiltration is present, especially along the blood vessels.

350 Post Street.

HEMATEMESIS AND MELENA IN CHRONIC APPENDICITIS

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NEW YORK

In presenting this article, devoid of laboratory and postmortem work, as it is, may I be pardoned for giving the clinical facts without any scientific substantiation? The reason these are not presented is that I did not and still do not know how to prove the cases excepting by clinical facts and the results accomplished by operation, sufficient time having elapsed to suggest definitely that in all probability we were dealing with cause and effect.

Dieulafoy,¹ whose writings and textbook of medicine should be as well known as Osler's and Strumpell's, says:

There is another factor which must be reckoned in appendicitis than the infective lesions. It is the toxic, for experiments in the laboratory have confirmed the clinical studies. If I am not mistaken, it was from the rostrum of the Académie that the idea of toxic appendicitis was first well established. In this we consider albuminuria, icterus and hematemesis. The vomiting noticeable in appendicitis may be caused not only by the appendicitis or the concomitant peritonitis, but may also be due to toxic gastritis, accompanied in some cases by erosions of the stomach. In such cases blackish streaks will be seen in the vomited matter, indicating slight hema-

1. Dieulafoy: Textbook of Medicine 1:751, 1914.

temesis. Only too often, however, repeated attacks of hematemesis occur, and are of exceedingly grave prognosis. I have called them appendicular vomito negro.

Under the latter term he states, further:

I do not refer to slight hematemesis, which is only an epiphenomenon, and may be lightly passed over. On the contrary, we usually find severe attacks of hematemesis. The black vomit may amount to one-half pint of blood, the attacks may be repeated, and the patient may die from hemorrhage. Ecchymotic patches are found on the mucosa of the stomach and erosions which are of hemorrhagic origin and the result of appendicular toxins. My researches had taught me that the attacks of hematemesis consequent on these toxi-infections are due to ulceration of the arterioles ramifying under the muscularis mucosa, being identical in the gastric erosions which follow strangulation of the gut.

In 1906, a woman, aged 22, interested me:

In her sixteenth year she had her first attack of hematemesis while riding a horse in the park. At the time she was in the second day of menstruation, which had occurred regularly from its onset two and one-half years before. She became faint, lost control of her faculties, fell to the roadway, and vomited a large amount of blood in a few moments. At first it was judged that some injury had taken place in the fall, although there was no evidence of any on careful examination. After a few days it was suggested that the stomach hemorrhage preceded and was the cause of the fall, although why it occurred was not discernible at the time unless it was bound up in some way with the physical activity of riding at the menstrual time. Three months afterward another hemorrhage took place, and this was followed by four hemorrhages in seven months, one of them reducing her markedly. In the meantime she had been in the hands of three well known colleagues and thrice judged as having an ulcer. On the occasion of her second examination by me the only finding possible was a diseased appendix, made entirely by roentgen ray. There was no past history of attacks or any suggestions on local physical examination. Her abdomen was explored by operation and nothing found but a diseased appendix (a very moderate degree of chronic interstitial process) and a deep blush of the pyloric end of the stomach. The appendix was removed, and now thirteen years have elapsed. There have been no more hemorrhages, and the young woman has been entirely well.

Since that time I have seen fourteen cases—making fifteen in all—twelve in women averaging 27 years of age and three in men averaging 25 years of age. In all but four there was a negative appendicitis history, and in one of these it was only mildly suggestive. The diagnosis of disease of the appendix was made mostly by roentgen-ray findings in all of them because of distortion of its caliber or course, and less often by studies of suggestive peristaltic phenomena in the stomach. The physical examination was not conclusive except in two persons. Some of these patients had been in the hands of excellent men, and treatments for ulcer occurred in all but one, who was supposed to have hepatic cirrhosis to account for the stomach bleeding. All had frank hemorrhage histories, and here I might add, many more cases in which the diagnosis was made by finding constantly small amounts of blood in stomach contents of test meals and positive chemical tests of feces plus roentgen-ray examination. Only the frank hemorrhage cases are reported here. These cases gave no ulcer histories; but in seven in which roentgen-ray examinations of the stomach had been made, definite ulcer diagnosis was made in five, and four of these were by the best roentgenologists in the country. In the patients in our charge, disease of the appendix as the cause of hemorrhage was judged in all, all were operated on,

all had some distinctive pathologic condition of the appendix and no gastric lesions, and all of them at the time of operation had the pyloric blush. The last one on whom I am here reporting was operated on more than three years ago. Not one had a hemorrhage from the stomach after the appendectomy.

At the Carpenter lecture, Oct. 21, 1920, Sir Berkeley Moynihan² drew attention to the pyloric blush in these appendix cases. He stated that it was simply a blush, but really it is more than that. The appearance of the stomach from the peritoneal side is one of congestion without visibly enlarged small vessels. Sometimes the blush includes the first part of the duodenum, but always it gives one the impression of an accompanying edema in the stomach wall or under the peritoneum. Specimens of this stomach tissue dehydrated and prepared for section are unsatisfactory for study. The boggiess of the tissue disappears in preparation. This process encircles the whole stomach, sometimes extending to the pars media of the stomach, where it gradually fades out.

Moynihan also failed to give Dieulafoy credit for having drawn attention to this pyloric blush many years before he did.³ That such a contribution came from a French source even an Englishman should recognize, particularly when there were medical men who were aware of this for over twenty years of time before he mentioned it.

In brief, then, there are instances of disease of the appendix which, perhaps for toxic reasons, can cause from slight small bleedings to intermittent frank hemorrhages of alarming amounts of blood from the gastric mucosa, which hemorrhagic condition requires appendectomy for its permanent and complete cure. And in all hematemesis cases, possibility of disease of the appendix should be considered along with the other factors in which bleeding of the stomach occurs.

As is well known, the course of enterotyphlocolitis varies. The condition I shall describe does not fit into the varied yet well understood clinical picture of chronic colitis. Perhaps its one identical symptom is constipation, although a diarrhea may be present. The characteristic pains are absent. The hypochondriac, melancholic, neurasthenic and reflex symptoms are not observable, and the mucus, with or without stools, is also not present. There are no crises of mucous colic attacks, and no intermittence to the symptoms.

The first case I saw was in a man, aged 34:

The family history and personal history were negative. After the onset of a constipation lasting two years, he began passing free blood with the stool, and often blood alone. With this there took place an indefinite distress in the abdomen, with increased flatus and eructations. His weight ran down from 180 to 109 pounds in a year, with occasional gains, which he lost each time. The physical examination was negative excepting for an intensely congested, friable and thickened rectal mucosa as high up as one could see, which was well within the sigmoid. There was no evidence of true ulceration. The small vessels were prominent, and the mucosa bled freely to the merest touch. The roentgen-ray examination disclosed nothing significant, which was confirmed the second time, even the appendix being considered normal.

The patient had three months of transintestinal lavages, twice a week with hypertonic solution, a high lactose, starch and fat diet, and made a partial improvement. The abdomen was then opened, nothing abnormal being found other than

2. Moynihan, G. A. B.: Gastric Ulcer and Its Treatment, read before the New York Academy of Medicine, Oct. 21, 1920.

3. Dieulafoy: Toxicité de l'appendicite (Académie de médecine, 1898; Clinique médicale de l'Hotel Dieu, 1899, Lecture 17.

the appendix, and herewith is the pathologist's report of the appendix: "Specimen 9 cm. long and 1 cm. in diameter. The surface is free from acute inflammatory reaction or adhesions. The wall is somewhat edematous, and measures 4 mm. in thickness. The mucosa is thickened and hyperplastic. The lumen contains a very small amount of fecal material. In the gross there is no necrosis of the mucosa. Microscopically, the mucosa is thickened, the stroma being very dense. The lymph follicles are markedly swollen and hyperplastic. The lumen contains hemorrhage, a mucoid material and some denuded cells from the mucosa. The superficial layers of the mucosa are hemorrhagic. There is a diffuse chronic inflammatory reaction throughout the wall. The most striking change is the tremendous lymphoid hyperplastic and hemorrhagic condition of the mucosa and submucous layers."

This pathologic report answers perfectly for the fifteen hematemesis cases reported, and for three more of hemorrhagic colitis that I have seen.

Following the removal of this man's appendix, his colitis condition cleaned up in a week's time, there has been no more melena, and the rectal mucosa is continuously normal. This, however, was not uniform in the other three colon cases. It was in one more, but in the other two transintestinal lavages, diet, rest and medical attention were required before the rectal mucosa took on a normal appearance. In each, however, a marked cessation of the bleeding with beneficial change took place in the rectal mucosa promptly following an appendectomy.

In brief, then, it seems probable that the so-called hemorrhagic colitis may be a colon expression of an appendicemia, as is the pyloric blush in the stomach; that the removal of the appendix is advisable; that the appendix should be removed as early as possible, because in long standing of the condition the benefit may be only partial, since the colon mucosa has taken on a residential condition from secondary infection, but that even in these when the appendix is removed medical treatments are distinctly more helpful toward a cure; and, lastly, that exclusion of the colon, as Lynch⁴ advises, or appendicostomy or cecostomy, as Mummery and others suggest, is apparently not required in the successful handling of these cases.

21 West Seventy-Fourth Street.

RADIUM TREATMENT OF CANCER OF THE ESOPHAGUS

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Some of the most brilliant and satisfactory achievements of surgery are accomplished by resection of accessible portions of the alimentary tract for cancer. This is notably true in the stomach and colon, when early diagnosis affords standard operative technic the proper opportunity. Conversely, cancer of the esophagus, by its inaccessibility, has a dark chapter of mortality as the chief reward for heroic effort at surgical relief.

Statistics as to frequency are not available, if, indeed, such exist. I believe, however, that the total number of these neoplasms is much larger than is generally thought. At the time I went into military service in 1917, I left five patients with gastrostomy tubes in place for feeding. On my return in May, 1919, they had all died by extension of their cancers. Recently I have had

three cases under observation, and in one of these radium treatment is being used with apparent success.

Radium is efficient in the destruction of cancer in direct proportion to the proximity of its application, and to the mass of the dose. Fortunately, in cancer of esophagus, if timely diagnosis is made the applicator may be placed directly within the lumen of the neoplasm, if even a little water, or the patient's own saliva, can be swallowed. It is for this class of cases that the present plan is proposed. Years ago Samuel J. Mixer of Boston found that, when a silk thread 5 or 6 yards in length was swallowed, and one end retained outside the mouth, the free end passed down into the intestine, and was held there with sufficient firmness to act as a guide for a perforated olive-tipped bougie in its passage through a stricture of the esophagus. This method has been popularized in Sippy's clinic in the passing of perforated metal olives over a piano wire guide. It is of great value in nonmalignant stricture. In cancer it is followed by rapid increase in growth. By its use we have a positive method of placing the radium capsules directly within the lumen of the esophageal cancer.

Early diagnosis is of great importance. Physicians should be more on their guard in this matter. Persistent difficulty in swallowing, occurring in persons of middle age, is sufficient indication for a careful roentgenologic examination.

Afflicted persons often neglect consulting a physician until the obstruction is nearly complete, and only liquids can be swallowed. At this stage it is very easy to obtain the characteristic picture of esophageal stricture by roentgenography of a thick barium mixture. If the patient swallows this while lying down, and at the moment of making the exposure the foot of the table is slightly raised, the lower portion of the neoplasm may also show in outline.

Figure 1 is a detail drawing of the silk thread piano wire guide, and rubber catheter containing the radium applicators. Figure 2 A shows the passing of the first piano wire guide over the taut silk thread. Figure 2 B and 2 C are further steps in the procedure. Figure 2 D shows the thread, the wire guide, the wire carrier, and the catheter that holds the radium applicators, while the patient is having a one hour treatment with 100 mg. of radium.

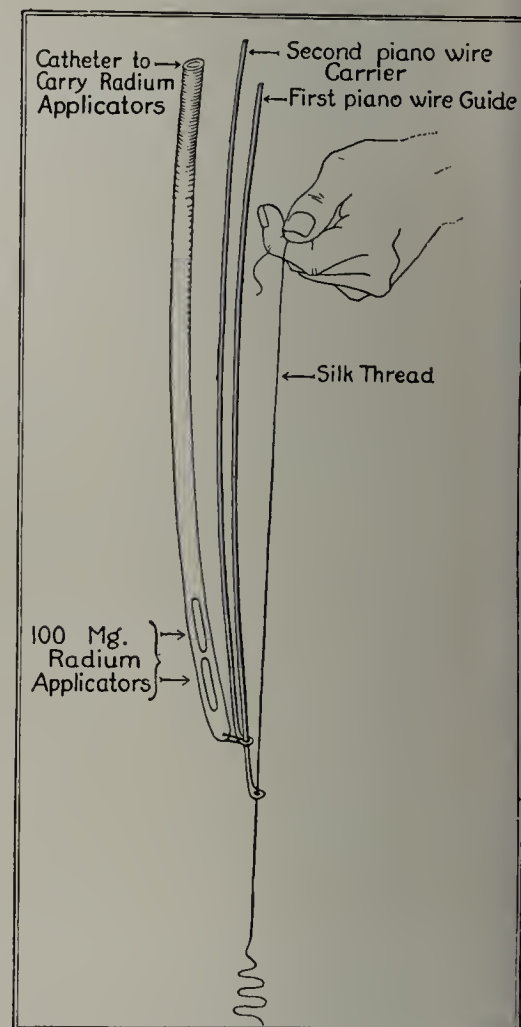


Fig 1.—Silk thread piano wire guide, and rubber catheter containing radium applicators.

4. Lynch: Diseases of the Rectum and Colon, p. 343.

PROCEDURE

A 10-yard spool of the largest size of buttonhole silk twist is threaded on a small tape, and tied loosely around the patient's neck. A couple of feet may be reeled off the spool, and taken into the patient's mouth, and started with a swallow of water. The thread should be fed from the spool slowly, only a few inches at a time, to avoid a tangle above the stricture. By the next day 15 or 20 feet may have been swallowed, and the thread may even project from the anus. It may now be drawn upward until quite taut, being held by the convolutions of the intestine. The loop of the piano wire guide is now threaded on it, and while the thread is drawn taut, and then only, may the wire guide be safely passed through the stricture on the silk thread. If the lumen is not sufficiently large, it may be increased by pushing down perforated shot and metal balls in increasing size, and then in a diminishing size, to dilate the lumen, and also permit safe withdrawal. The radium applicators are pushed into a soft rubber catheter, and this is fastened to the loop of the second piano wire by a silk stitch. This may now be pushed directly into the center of the carcinoma, and the proper dose and time treatment given.

The position of the applicator is of the greatest importance. To be efficient, the radium must be exactly in the center of



Fig. 2.—Method of procedure: *A*, passing of first piano wire guide over taut silk thread; *B*, *C*, further steps; *D*, thread, wire guide, wire carrier and catheter while patient is receiving treatment.

the mass. At first the sense of resistance, as the end of the catheter enters it, may be sufficient. Careful measurement on the first wire must then be made of the previously ascertained distance from the teeth which the second wire must be pushed to place properly the radium applicator. It may be well to confirm this by a roentgenogram and by comparing it with the barium picture of the stricture. When this point is definitely ascertained, a record of the distance from the teeth to the upper end of the wire should be made, for use in future treatment of the case.

COMMENT

Treatment of cancer of the esophagus requires the cooperation of the surgeon with the roentgenographer and the roentgenologist. It is the surgeon who must accept the responsibility of the correct placing of the radium applicators. The radium treatment in these cases has been given by Dr. Ralph C. Walker.

Cancer of the esophagus probably forms metastases rather slowly. The procedure here outlined is logical, and offers the hope that one more fateful disease may at times have a favorable prognosis.

SPECIFIC ACTION OF ATROPIN IN RELIEVING CERTAIN IRREGULARITIES OF HEART BEAT

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NEW YORK

Nothing has done more to dispel the therapeutic nihilism that was rife in the profession twenty years ago than the direct observation of therapeutic results

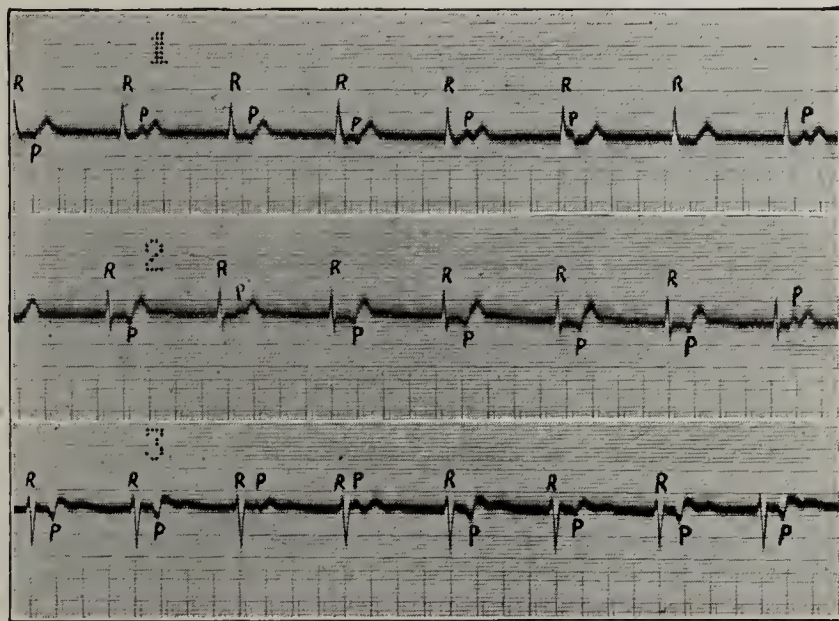


Fig. 1 (Jan. 31, 1921).—Nodal rhythm. The ventricles always contract first. After the wave *R* and before *T* is the auricular wave *P*. The auricles contract at the same time as the ventricles.

in heart disease by instruments of precision, notably the electrocardiograph. The case here reported illustrates the absolute effect of atropin in relieving a rare

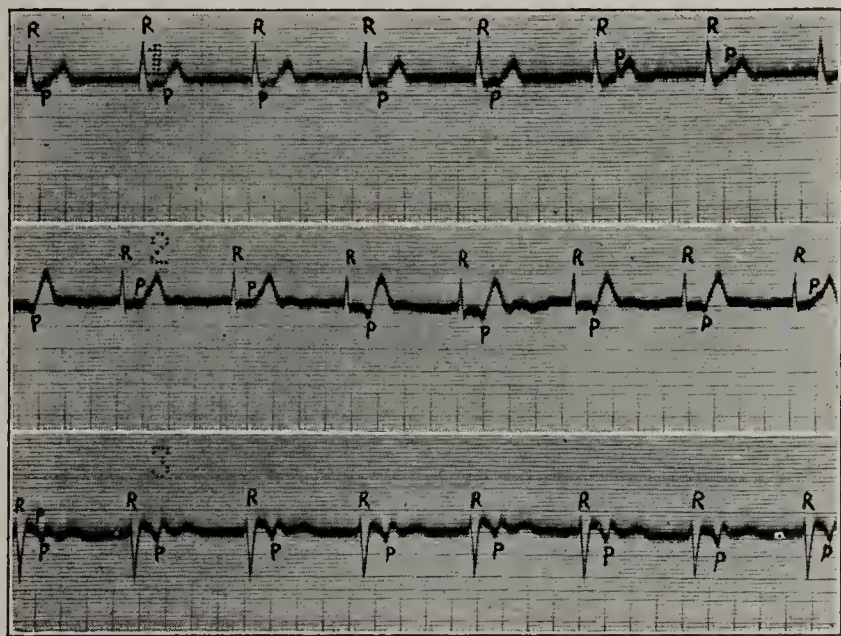


Fig. 2 (February 2).—Same as in Figure 1, but with slower rate.

but nevertheless instructive condition. No cardiologist encounters a case of true nodal rhythm often, but a woman suffering from this condition was referred to me last winter by Dr. Louis Monk. She had no characteristic clinical symptoms, for this is a disorder that cannot be suspected by its physical signs. Her heart was regular, but she complained of much precordial distress and shortness of breath. The pulse was regular, and rather slow. Still, she complained of

consciousness of the heart beat. The electrocardiogram showed a nodal rhythm. This tracing was not carefully examined until after she had left the office, and when she came back, February 2, another electrocardiogram was taken, and $\frac{1}{50}$ grain of atropin was administered and then another tracing was taken, which showed many normal beats. Her physician was advised that atropin, not digitalis, was the proper remedy, and she was put on this with marked benefit. The accompanying tracings were made at various stages. The tracing of April 4 shows a normal heart beat. The whole aspect of the patient has changed, and she expresses great satisfaction on her improvement. The orthodiagram shows a fairly normal heart, considering the size and build of the patient.

The whole story of the striking effect of atropin in relieving this condition is told by these pictures of the heart beat. The P and R waves only are marked. The large T waves are not lettered.

In the record taken on January 31, when the patient first came to the office, the ventricles were regular and 72 to the minute. The auricular waves, marked P, follow after the ventricular waves R, and so this is a true nodal rhythm. In Figure 1 the P waves are sometimes downward and sometimes upward, so that they must start in different parts of the auricles at different times. Those that are turned downward may be caused by the contraction being conducted backward to the auricles from the ventricles.

In Figure 2, taken February 2, the heart action is the same as in the record of January 31, except that the ventricular contractions are a little slower. The contraction is more frequently conducted backward from the ventricles to the auricles.

Figure 3, taken, February 2, after $\frac{1}{50}$ grain of atropin sulphate had been given by hypodermic injection, also shows many beats of the ventricle that are not

February 15, after the patient had been taking atropin for two weeks, the condition was very little different from that in Figure 3, except that the ventricles beat more often in the normal way after the auricles. The nodal rhythm was slower and the auricular rhythm faster, so that the auricles usually beat first and controlled the heart.

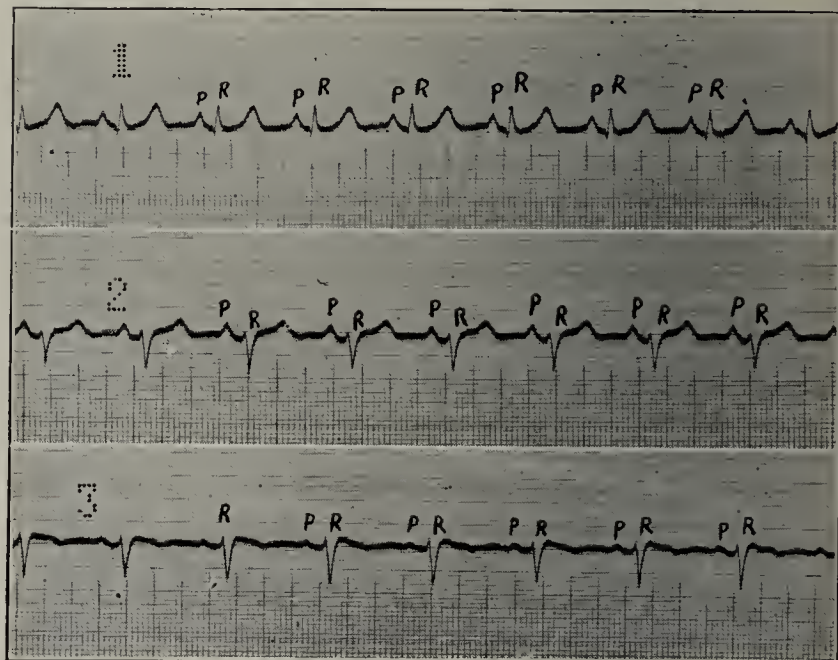


Fig. 4 (April 4).—Normal rhythm, the P wave always coming before R, and the rate being faster.

April 4, the heart beat had come to be perfectly normal. Figure 4 was taken then. With each beat the auricles come first and are followed by the ventricles after the usual interval.

109 East Sixty-First Street.

THE SPECIFIC PRECIPITIN REACTION OF THE LENS*

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It is a remarkable fact, discovered by Uhlenhuth and verified by others,¹ that the lens of different species gives the same immune reactions. A lens antiserum, produced let us say by injecting a rabbit or guinea-pig with beef lens, will react in precipitation, anaphylaxis and complement fixation tests not only with beef lens but also with the lens of other mammals, of birds and amphibians. With fish lens the reaction, however, is very faint. We see that the specificity of the reaction is determined not by species as in the immune reactions of blood, of serum proteins, as well as of bacteria, but by the organ from which the antigen is derived.

So far the lens is the only clean-cut example we have of this organ-specificity as contrasted with species-specificity in antigen-antibody reactions. In fact, so perfect is this lens-specificity that a lens antiserum

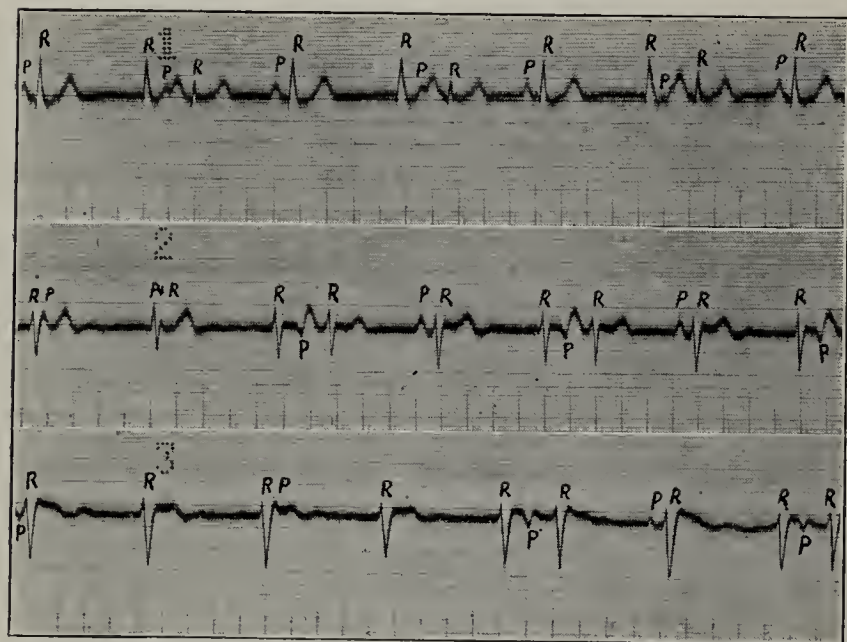


Fig. 3 (February 2, after medication).—Sometimes the beats are nodal and sometimes of the normal type, with the P wave coming before R.

caused by beats of the auricle, but that start in the node. These come sometimes singly and sometimes two or three in succession. At other times the ventricles beat in response to the auricles in the usual way. The time between the beats of the auricles varies. When it is longer than the time between the beats of the nodal rhythm, then a nodal beat occurs first; when it is shorter, the beat of the auricle occurs and gives rise to a ventricular beat in the normal way.

* From the John McCormick Institute for Infectious Diseases.
1. Uhlenhuth: Zur Lehre von der Unterscheidung verschiedener Eiweissarten mit Hilfe spezifische Sera, Koch Festschrift, 1903, p. 49. Andrijew: Ueber Anaphylaxie mit Eiweiss tierischer Linsen, Arb. a. d. k. Gsndtsamte 30: 450, 1908. Kraus, Doerr and Solma: Ueber Anaphylaxie durch Organextrakte (Linsen), Wien. klin. Wchnschr. 21: 1084, 1908. Uhlenhuth and Haendel: Untersuchungen über die praktische Verwertbarkeit der Anaphylaxie zur Erkennung und Unterscheidung verschiedener Erweissarten, Ztschr. f. Immunitätsf. u. exper. Therap. 4: 761, 1909. Krusius: Zur biologische Sonderstellung der Linse, Ztschr. f. Immunitätsf. u. exper. Therap. 5: 699, 1910; Ueber empfindlichkeitsversuch vom Auge aus, Arch. f. Augenh. 67: 6, 1910. Königstein: Zur Biologie der Linse, Arch. f. Augenh. 68: 414, 1911. Römer and Gebb: Beiträge zur Frage der Anaphylaxie durch Linsen-eiweiss, Arch. f. Ophth. 81: 367, 1912.

reacts with the lens of the species, yes even of the very animal, that furnishes the serum, but not with any other proteins, and antisera produced by injecting animals with blood or serum do not react with lens solutions.

The observations on the immune reactions of the lens have been made by means of specific precipitation tests of lens solutions, study of the anaphylactic effects of reinjection of lens solutions in guinea-pigs previously injected or sensitized with such solutions, and complement fixation tests, associated of course in any case with proper control procedures.

I have studied the precipitins that develop in rabbits on the injection of lens solutions in 0.9 per cent. salt solution. The principal experiments so far have been made with approximately 10 or 20 per cent. solutions by weight of beef, horse, rabbit, sheep and swine lens, removed with special care to avoid admixture with blood or serum. Rat lens and chicken lens seem to be more toxic, but I have not studied that phase in detail. As a rule, four or five injections have been given intravenously at four day intervals, first of 2 to 4 c.c. of solution, increasing gradually to between 12 and 16 c.c. the last time. The highest precipitin titer of the serum after such treatment appears to be reached about the eighth day after the last injection. Contrary to the experience of Uhlenhuth, it does not seem difficult to obtain strong antiserum, and all the tests tabulated were made with sera that would cause precipitates in lens dilutions of at least 1:5,000 and often much higher. The injection of rabbits with solutions of rabbit lens, however, does not seem to have the same antigenic effect—"horror autotoxicus"—as the injection of lens of other species. Contradictory results are reported on this point, and further study is required.

The tests are made by the contact method and the results read after one hour at room temperature. The accompanying table shows all the lens solutions used (beef, chicken, dog, guinea-pig, horse, human, monkey, rabbit, rat, sheep, swine) to react in the same way with beef, horse, sheep and swine lens antisera; further, that none of these lens antisera react with the blood serum of either the corresponding or any of the other species represented, and, conversely, that no serum antiserum reacts with any lens solution. The organ-specificity of the lens holds good throughout. The lens does not appear to contain any species-specific antigens.

The aqueous and vitreous humors appear frequently to contain lens substance, because in most instances these fluids in low dilutions or full strength react with lens antisera. Uhlenhuth mentions that he obtained faint reaction with the vitreous and lens antiserum, but says nothing about the aqueous. These humors may react with serum antiserum also—not always—and then the law of species-specificity obtains. It is, of course, possible that in some of my specimens lens substance may have become mixed with either humor as a result of the handling incidental to the withdrawal of the humor; but I believe that in most instances this did not occur, as the withdrawal was made with special care to avoid undue pressure or suction.

The presence of lens substance in the vitreous and aqueous humors raises interesting questions in regard to the relations of these humors to the lens. Is the lens substance in the humors derived from the lens or on the way to be incorporated into the lens? If the last part of the question is answered affirmatively, what is the source of the lens material?

In the absorption experiments so far made the solution of any lens of those used in immunizing the rabbits removes all the precipitins from any of the lens antisera mentioned, but here also further work is desirable. I may mention, too, that the serum of rabbits injected with extract of beef cornea reacts with beef serum, beef vitreous and beef aqueous, but not at all with beef lens or any other lens, indicating that the cornea contains species-specific proteins only.

LENS PRECIPITIN REACTIONS *

	Lens Antisera				Serum Antisera					Human Normal Rabbit Serum
	Beef	Horse	Sheep	Swine	Beef	Horse	Sheep	Swine	Human	
Beef lens.....	+	+	+	+	0	0	0	0	0	0
Chicken lens.....	+	+	+	+	0	0	0	0	0	0
Dog lens.....	+	+	+	+	0	0	0	0	0	0
Guinea-pig lens.....	+	+	+	+	0	0	0	0	0	0
Horse lens.....	+	+	+	+	0	0	0	0	0	0
Human lens.....	+	+	+	+	0	0	0	0	0	0
Monkey lens.....	+	+	+	+	0	0	0	0	0	0
Rabbit lens.....	+	+	+	+	0	0	0	0	0	0
Rat lens.....	+	+	+	+	0	0	0	0	0	0
Sheep lens.....	+	+	+	+	0	0	0	0	0	0
Swine lens.....	+	+	+	+	0	0	0	0	0	0
Beef aqueous.....	+	+	+	+	+	0	0	0	0	0
Dog aqueous.....	+	+	+	+	0	0	0	0	0	0
Human aqueous.....	+	+	+	+	0	0	0	0	+	0
Rabbit aqueous.....	+	+	+	+	0	0	0	0	0	0
Sheep aqueous.....	+	+	+	+	0	0	+	0	0	0
Swine aqueous.....	+	..	..	..	0	0	0	+	0	0
Beef vitreous.....	+	+	+	+	+	0	0	0	0	0
Dog vitreous.....	+	+	+	+	0	0	0	0	0	0
Human vitreous.....	+	0	+	+	0	0	0	0	+	0
Monkey vitreous.....	+	+	+	+	0	0	0	0	0	0
Rabbit vitreous.....	+	+	+	+	0	0	0	0	0	0
Rat vitreous.....	+	+	+	+	0	0	0	0	0	0
Sheep vitreous.....	+	+	+	+	+	0	+	0	0	0
Swine vitreous.....	+	+	+	+	0	0	0	+	0	0
Beef serum.....	0	0	0	0	+	±	+	0	0	0
Horse serum.....	0	0	0	0	±	+	0	0	0	0
Human serum.....	0	0	0	0	0	±	0	0	+	0
Monkey serum.....	0	0	0	0	0	0	0	0	±	0
Sheep serum.....	0	0	0	0	+	0	+	0	0	0
Swine serum.....	0	0	0	0	±	±	±	+	0	0
Rabbit serum.....	0	0	0	0	0	0	0	0	0	0

* All lens antisera active in all lens dilutions of 1:5,000 at least. Serum antisera active in homologous serum diluted from 1:4,000 to 1:12,000. In some cases these antisera react with the serum of related species. +, strong reaction; ±, slight reaction; 0, no reaction.

SUMMARY

The precipitin reactions of the lens of certain mammals (and of the chicken) are lens-specific and the lens, at least of the mammals in question, does not appear to contain any species-specific precipitinogens; hence the lens protein may be regarded as chemically distinct and as identical in diverse species. Perhaps further studies by means of lens-specific reactions may prove of interest.

Hospital Case Records.—The matter of case records is of such great importance that I deem it proper to consider it first. A close analysis of the reason for keeping accurate case records cannot help but reveal the rapidly extending field opened up by the recent developments along these lines. The amazing changes which a reform in the records of any hospital will effect will be sufficient reward to an institution making the effort. To any hospital that has lost itself in a maze of confusion and is floundering in the slough of despondency, let me advise them to try the following scheme: Have a "records committee" formed from the staff and management, set aside a room to be devoted to the business of records alone, appoint a registrar, employ a stenographer to be trained as a medical statistician, have weekly committee meetings and plan a definite campaign.—*Hospital Progress* 2:43, 1921.

SPLENECTOMY IN SPLENIC ANEMIA AND BANTI'S DISEASE*

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Splenic anemia is characterized by an enlarged adherent spleen, a secondary type of anemia, and leukopenia. The etiology of splenic anemia is unknown; rather, let us say, if we know the cause the condition is not called splenic anemia, but is considered part of the disease of which it is one of the manifestations. This syndrome in children was described by Gretscl, in 1866, and various observers had called attention to sporadic cases; not until the publication of Osler's paper, in 1900, however, was the attention of the American medical profession drawn to the disease, and our knowledge of it may be said to date from that time.

While splenic anemia has quiescent periods, it eventually terminates in death, often from an intercurrent malady which the condition invites. The anemia is subject to considerable variation. When extreme, it is usually the result of intercurrent gastric hemorrhages. Leukopenia is a rather constant feature; the white cell count is usually well under 5,000, the average being 3,500, although occasionally it is much higher. We have operated on several patients in whom the white cell count had run rather steadily above 10,000. Pathologically the spleen shows generalized fibrosis and thrombophlebitis with atrophy of the pulp cells.

In 1883, Banti described an enlargement of the spleen associated with portal cirrhosis of the liver. He believed that the changes in the spleen, which consisted of a gradual conversion of the parenchyma into fibrous tissue with atrophy of the cellular elements and degeneration of the blood vessels, were the result of an infection. The fact that an unknown cause is essential to the diagnosis at once shows the lack of essentials in Banti's understanding of the subject. Most observers are now of the opinion that Banti's disease is merely a late stage of splenic anemia, presuming that the etiologic agents which are removed by the spleen from the blood stream affect not only the spleen, but also the liver terminally. As we discover one by one the various initiating causes of these changes in the spleen the number of cases of Banti's syndrome is reduced. Banti not only laid stress on unknown etiology, but also on the terminal changes in the liver. It may be stated, however, that the type of cirrhosis produced is portal, showing that the cause of the disturbance is carried to the liver through the portal vein. The evidence at hand leads to the belief that both the anemia and the cirrhosis of the liver are the result of the pathologic condition of the spleen, rather than of toxic material supposedly removed from the blood, and that the exciting cause of the splenomegalia may have little to do with the changes in the blood and liver. As there is enlargement of the spleen in many cases of primary cirrhosis of the liver, there is need for more accurate observation in order to clear up points which must otherwise be conjectural. At the present we may argue that if the discovery of an enlarged spleen is made first, and of the portal cirrhosis later, the condition is splenic anemia. On the contrary, if there is a history of alcoholism or pepper addiction and the condition of the

liver is noticed first and that of the spleen later, we may say that the trouble is primary in the liver and that the splenomegalia is secondary to the liver changes. In the two extremes this method of classification will answer clinically, but unfortunately in many instances the history and physical findings are confusing and indeterminate.

Warthin and Dock have made careful observations in some cases of splenomegalia of the splenic anemia type which had progressed to the secondary condition with the changes in the liver described by Banti. In the cases presented by them are splenic fibrosis, hepatic cirrhosis, stenosis, and calcification of the portal system causing passive venous chronic congestion and hyperplasia of the hemolymph nodes which are closely associated in function with the spleen. Warthin and Dock lay great stress on thrombophlebitis and believe that the generalized thrombosis is secondary to portal thrombophlebitis and that this condition itself is the result of chronic infection. Warthin summarized the findings thus: "Splenic anemia and Banti's disease must be regarded as coordinated symptom-complexes and not individual disease entities," a statement with which I quite agree.

The spleen is enlarged in cases of biliary cirrhosis also, especially in the mixed forms. I have been impressed with the futility of the morphologic classification of the hepatic cirrhoses. There are many cirrhotic pictures, just as there are many patterns of wall paper or carpets. Brushing aside the familiar classification of the cirrhoses of the liver in which variations in the morphology lead to unnecessary confusion, there are fundamentally but two hepatic cirrhoses:

1. Portal cirrhosis, in which the toxic material reaches the liver by way of the portal vein and in which the connective tissue is deposited around its branches. Death is caused by portal-circulatory obstructions, ascites, and gastro-intestinal hemorrhages without jaundice until shortly before death.

2. Biliary cirrhosis, caused by infection of the biliary ducts in which the connective tissue is deposited around the ducts and causes jaundice, but without ascites or hemorrhages until shortly before death.

We understand best the atrophic type of portal cirrhosis of Laënnec, but there are many cases, probably half or more, in which the liver is typically cirrhotic, is not decreased in size, but is even increased, as seen in the beer drinker's liver in contradistinction to the hobnail, or gin livers. While the liver in portal cirrhosis may be large or small, it usually is rough; at times, however, deposits of fat smooth out the surface roughness and lead to confusion of type.

REDUCTION OF THE PORTAL CIRCULATION BY SPLENECTOMY

In portal cirrhosis the spleen may play a prominent part in the etiology, and splenectomy in properly selected cases may be of great benefit. By splenectomy not only the supply of toxic material, if there be such, is cut off from the general circulation but also the portal blood stream is reduced by subtraction of the amount of blood poured into the portal vein from the spleen, about 25 per cent. of the total under normal conditions. After the removal of some of these huge spleens an enormous reduction of the portal circulation takes place, so that the hepatic cells may be relieved of a sufficient overload to enable them to function normally, and moreover the liver under favorable circumstances

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

has the power of regeneration. Our experience with portal cirrhosis of the liver secondary to splenic anemia encouraged us to remove the spleen in some cases of primary portal cirrhosis. In all, eleven patients with portal cirrhosis were subjected to splenectomy with four deaths in the hospital. All of these patients were in the last stages, with ascites, hemorrhage from the stomach, and so forth. Only in such grave cases did we consider the operation justifiable. After removal of the spleen the omentum was spread in the denuded splenic area and fastened in the abdominal wound in order to give the additional benefits of the omentopexy of Talma-Morison and Drummond which we have occasionally found of great benefit in relieving the ascites and other evidences of portal obstruction. Four of these patients were markedly benefited. One patient is now alive after five years. In early operations the operative mortality would be small and the end-results much better.

Biliary cirrhosis usually of the obstruction type of Adami must be considered in this connection. As pointed out, the connective tissue in this disease is deposited around the biliary ducts from infection, commonly from the extension upward of common duct infections from gallbladder disease. Infection from obstruction pancreatitis extending to the biliary ducts is also an occasional source of biliary cirrhosis. Sometimes the infection of the duct is focal in origin, and is carried to the biliary channels by the blood stream. The biliary cirrhosis may be complicated by portal cirrhosis, perhaps secondary to the pathologic condition of the spleen which has been caused by, or is a part of, the primary biliary cirrhosis. It is difficult in some cases of biliary cirrhosis to exclude latent hemolytic icterus as a contributing factor. In twenty of thirty-two cases of hemolytic icterus in which we performed splenectomy, gallstones were present, usually bile pigment stones the result of the enormous amount of pigments derived from the unnecessary red blood cell destruction in the spleen. Splenectomy was performed in six cases of primary biliary cirrhosis with greatly enlarged spleens. In these cases the cause of the biliary infection, so far as could be learned, had been removed previously, such as gallstones, and focal infections, without marked relief. All of the five patients who recovered were greatly benefited; three are alive two years; two, three years, and one, five years after splenectomy.

Hemorrhage from the stomach, so disturbing a feature of splenic anemia, is not always relieved by splenectomy, but is greatly reduced in frequency, and the majority of the patients never have hemorrhage after splenectomy. There are two known causes for hemorrhage of the stomach in these cases, first, esophageal and gastric varicosities, the result of portal obstruction, and second, toxic conditions, undoubtedly hepatic in origin, which result in extensive superficial gastric mucous erosions of the Dieulafoy type. The prospects of relief by splenectomy, however, depend not only on whether the spleen is the primary cause, but especially on the condition of the liver. We have seen patients with very advanced cirrhosis of the liver who have been relieved of the ascites and gastric hemorrhages and have recovered marvelously after removal of the spleen. In one such case, the patient, a physician, operated on by C. H. Mayo, had what appeared to be a terminal condition of splenomegalia and hepatic cirrhosis. He is well and in active pursuit of his profes-

sion more than eleven years after splenectomy. Balfour, in an article on gastric hemorrhages of splenic origin, reports in detail a case in which the removal of a moderately enlarged spleen checked gastric hemorrhages of many years' duration from which the patient was almost exsanguinated. Five previous operations of various kinds had failed to cure. The patient has remained well for more than four years. We have since had a similar experience. Sherren, Cushing and others have called attention to the fact that after the removal of the spleen for splenic anemia an occasional patient has a recurrence of hemorrhages. Of our seventy-one patients splenectomized for splenic anemia, eight died from gastro-intestinal hemorrhage during the next ten years. As Balfour points out, the hemorrhages are often the result of toxic substances produced in the liver, and the removal of the spleen will not always restore the liver to normal.

SPLENECTOMIES

Up to Jan. 1, 1921, 249 spleens were removed in the Mayo Clinic for all causes, with a mortality of 10+ per cent.

Splenic Anemia.—Of the 249 splenectomies, seventy-one were for splenic anemia of unknown origin, with nine deaths. In addition splenectomy was performed in thirty-eight cases for splenic anemias of known origin. These cases deserve some attention.

Chronic Sepsis.—We have removed eleven spleens which had become greatly enlarged in the course of chronic general sepsis following septic arthritis, tonsillitis, phlebitis, and osteomyelitis, with three deaths in the hospital. The other patients were cured or greatly benefited.

Syphilis.—Splenomegalia is often found with chronic syphilis, especially in the cases in which thorough treatment fails to maintain a negative Wassermann reaction. Some observers who have had wide experience with syphilis have believed that the large majority of cases of so-called splenic anemia are syphilitic in origin. In the syphilitic spleen, generalized fibrosis and thrombophlebitis are found as well as specific changes, especially modified forms of gumma; frequently *Spirochaeta pallida* can be demonstrated. We have removed the spleen in six cases of this kind, with one death in the hospital. Patients who had resisted thorough syphilitic treatment, and in whom chronic anemia was a manifest sign, were at once made amenable to treatment and quickly recovered.

Characteristic portal cirrhosis of the liver may be an end-result of syphilis, and finally death results from circulatory obstruction, ascites, hemorrhage from the stomach, and so forth, quite like the other cases of splenic anemia.

Splenic Anemia in Children and von Jaksch's Disease.—Von Jaksch has described an enlargement of the spleen in infants due to malnutrition which usually disappears on proper feeding, but some of these patients do not get well and the enlarged spleen and chronic anemia are carried into early childhood. We have removed eight spleens in such children without an operative death, and when the condition has not been too advanced cure has followed. The spleens removed have shown the characteristic generalized fibrosis and thrombophlebitis.

Malarial Spleen.—Chronic malaria results in a splenomegalia with generalized fibrosis and thrombophlebitis that we recognize as a form of splenic anemia;

ultimately some of the patients develop cirrhosis of the liver, ascites, hemorrhage from the stomach, and the characteristics described by Banti. The removal of the greatly enlarged spleen of this type relieves the anemia. The experience of Jonnesco in Roumania and of Mourdas in Russia, as well as that of other observers, has shown that the malarial treatment becomes much more effective and that patients who were apparently incurable have been restored to health following splenectomy. The mortality has been considerable following splenectomy in these cases, but this is also true of the entire group of splenic anemias since the spleen is often adherent and may require unusual skill and care for safe removal. This is shown by the mortality in our series, which was much higher than that in any of the other pathologic conditions for which the spleen was removed. It is understood, of course, that the removal of the spleen does not cure the malaria, but removes a very serious complication, which is one of the means by which the death of the patient is brought about.

Chronic Splenomegalia.—Finally, there is a type of chronic splenomegalia more common in women than in men, which exists for years without great detriment to the patient beyond the weight of the enlarged spleen. In the cases that I have observed, however, chronic anemia has eventually developed, and in a few in which I have operated I have found the definite changes characteristic of splenic anemia. I think we must conclude that all such cases are quiescent types of splenic anemia. The confused state of our knowledge at least brings one thought to mind, that the patient with an enlarged spleen should be looked on as potentially ill, and unless the cause can be shown and relieved, splenectomy may be considered. There is no sharp dividing line between these cases and certain varieties of benign tumors, splenic apoplexy, and cystic disease without traumatism in which a definite pathologic condition exists in the blood vessels and may give rise to acute conditions such as intraperitoneal rupture of the spleen.

The mortality and end-results are satisfactory, considering the nature and condition of the patients subjected to operation. All of the patients we operated on were otherwise incurable and progressing to a fatal issue. The death rate from splenectomy in such cases will be high, and not all patients who recover will be greatly benefited. The later in the course of the disease the splenectomy is performed, the closer terminal and incurable conditions will be found. How can we expect to cure all the pathologic conditions found at necropsy? We cannot turn back the hand of time in disease, but early operation will give a low mortality and cure a higher percentage of patients than have been cured in the group which I have considered here.

TECHNIC OF OPERATION

In performing splenectomy in the Mayo Clinic, the technic of Balfour is employed. The patient is placed on a table, tilted slightly to the right. The midline incision of Ochsner and Percy is employed. It gives ready access to the spleen, and permits necessary operative procedures on the gallbladder and appendix and makes it possible to remove a specimen of the liver for microscopic examination. The spleen is rapidly loosened manually from its attachments to the diaphragm and to the outer parietes. It is drawn down into the abdomen, and the space is

packed with a large, warm, moist gauze compress. While the spleen is retained in the abdomen to act as a barrier against the intestinal protrusion, the vascular connections between the spleen and the stomach are ligated, care being taken not to injure the stomach, which happened in two cases in our experience, one patient dying as the result of septic leakage. The inferior margin of the spleen is tilted out of the abdominal incision and the attachments at the splenic flexure of the colon detached and ligated. The spleen is then lifted out of the abdomen and the omental and peritoneal attachments anteriorly are divided with a sharp knife, inspected, tied, and separated, exposing the vascular pedicle accurately. The spleen is turned partly turtle in order to expose the pancreatic notch of the spleen on the outer aspect of the pedicle, and the tail of the pancreas is freed. The splenic pedicle is then grasped in such a manner as to compress the artery between the thumb and the finger and is held during a few heartbeats in order to allow the venous blood to drain from the spleen back into the general circulation. Two forceps are then placed on the proximal side, and one next the spleen, and the pedicle is divided. A catgut tie is made in the groove of the deeper forceps as they are removed, and a second tie in the groove of the second forceps as they are removed. With fine catgut on a needle the separated peritoneal tissues and other loose tissues along the upper surface of the pancreas are drawn together and some small bleeding vessels in that situation are secured. The pack is then removed. As a rule there will be but little hemorrhage of the deeper attachments. Occasionally, however, there is bleeding; the catgut suturing should then be carried down through these spaces in a snaking stitch in order to compress the bleeding points which usually cannot be caught in this deep situation and tied separately. Care should be taken in coming to the diaphragm not to tear a hole through into the pericardium or pleura, an accident which happened in one of our cases, fortunately without bad result. If the needle is caught in the bleeding tissues on the under surface of the diaphragm with about 15 cm. of catgut slack in the fingers, the needle may be allowed to pass up with the diaphragm on expiration and be caught as it comes back during inspiration.

ABSTRACT OF DISCUSSION

DR. ALBERT J. OCHSNER, Chicago: It seems as though these splenic conditions which Dr. Mayo has described are, in fact, the result of a physiologic attempt of the spleen to do its work, and that it has gotten the worst of it. We suppose that the spleen receives blood which is defective to a slight extent, and passes it out into the general circulation in a purified condition. Many irritants may enter with the blood. The most important are the irritants from malaria and alcoholic poisoning. The inability of the blood-forming organs to produce normal blood forces the spleen to dispose of great quantities of abnormal blood. In Banti's disease, in splenic anemia, undoubtedly the enlargement is the result of an attempt to do more work than the spleen should be called on to do. The other changes, the increase of connective tissue, the arteriosclerosis, the destruction of the lymphoid nodules, are undoubtedly the result of the overload of the poisonous substances that have entered the spleen. In pernicious anemia there is some infection that has interfered with the blood-producing organs and has produced a blood that overloads the splenic activity. In these cases of Banti's disease and in splenic anemia, it is likely that this irritation has been of such long standing that we have overlooked it. As Dr. Mayo stated, usually a time comes when there is not enough of the normal spleen left, and then this condition

changes and the anemia occurs, because then the spleen begins to destroy blood that it should not destroy. I have followed and examined the spleens in 129 cases. My observations agree, so far as the conditions are concerned, very closely with those of Dr. Mayo. I am thoroughly convinced that his conclusion is correct. When we supply new blood by blood transfusion, the blood-producing organs are relieved of their work temporarily. They may be relieved to such an extent they will begin to do their work again normally. Then the spleen kills off some of the good blood. Take out the spleen, and in a certain percentage of cases the other lymphoid organs will be able to take care of that work, and things go on very well.

DR. WILLIAM J. MAYO, Rochester, Minn.: We know that the spleen is not necessary to life; no great harm comes to an individual if the spleen is removed, and possibly indications for its removal will be found much more frequently in the future than in the past. The operation is not so dangerous as it is pictured, but a definite technic is necessary. The midline incision of Ochsner and Percy is altogether the best. It permits the ready removal of the spleen, the inspection of the gallbladder and appendix, and the exploration of the abdomen for associated lesions. It permits also the removal of a piece of the liver for microscopic examination, which is often desirable in order to obtain additional information. The technic of splenectomy followed in our clinic is that described by Balfour (*Surgery, Gynecology and Obstetrics* 23:1 [July] 1916).

TREATMENT OF FURUNCULOSIS IN INFANTS *

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*AND

CASSIE BELLE ROSE, M.D.

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Any one who has had much to do with the treatment of furunculosis in infants, especially those cases which occur in malnutrition babies which we so frequently see in hospitals, must have been impressed with the inadequacy of the treatment advised and have been dissatisfied with the results obtained. While furunculosis does not often lead to death, it certainly does prolong the state of malnutrition and indirectly may cause a certain amount of infant mortality.

For many years it has been our custom to treat these cases without the application of antiseptic ointment as is so frequently advised. The furuncles are opened as they appear, before and after which the skin is very thoroughly cleansed with 50 per cent. alcohol. Moist applications of 50 per cent. alcohol are applied frequently thereafter, and the children are given 1:10,000 mercuric chlorid bath if the condition is at all extreme. In this method of treatment a great deal depends on careful and continued observation of the case and attention to the individual furuncles as rapidly as they develop. We have felt that the results obtained by this method are less likely to be followed by extensive distribution than when antiseptic ointments are used.

We have not been able to obtain anything like specific results from vaccine treatment or from the use of yeast in these babies, so that we have long since abandoned such therapeutics.

From the success that has attended the use of the roentgen rays in similar conditions in adults we felt

that we might by a combination of the two methods obtain better results than with either alone.

The roentgen-ray treatment of carbuncles and localized pyogenic infections of the skin of adults is reported only a few times in the literature, but with favorable results. Dunham¹ and also Ruggles² recommend a full therapeutic dose (filtered) covering the entire carbuncle at one exposure. No report was found on the roentgen-ray treatment of similar conditions in babies.

Roentgen-ray treatment suitable for acne might also be considered helpful for furunculosis. For this disease Pancoast³ recommends an erythema dose divided into from two to four sittings over a period of three weeks, followed by a rest interval. MacKee⁴ and also Hazen⁵ recommend a little less than an erythema dose, unfiltered.

Encouraged by these reports, and by the results of the work with pyogenic infections of the skin of adults, both carbuncles and acne, done by one of us (C. B. R.), we attempted the roentgen-ray treatment of furunculosis in babies.

The difficulties to be considered were, first, the well known susceptibility of young children to roentgen rays; second, that furunculosis often occurs in babies otherwise sick; and third, that furunculosis is often of long standing, although the individual furuncles may not be.

In the work with carbuncles in adults, it was learned that if the inflammatory condition had been of long standing, a roentgen-ray dose, which on a normal skin would produce a simple erythema, might in these cases cause a severe burn.

With all these facts in mind, we tried to determine with the first child the quality of ray and the minimum dosage that should be used to secure results.

REPORT OF CASES

CASE 1.—The furunculosis had existed for four weeks. At this time there happened to be, besides others, four furuncles in about the same stage on the right leg. One was left untreated as a control. The second was given a soft unfiltered ray (3 milliamperes, 6 inch spark gap, 9 inch focal distance, no filter, for one minute). The third was given the same dosage for two minutes. On the fourth a hard filtered ray was used (6 ma., 9 inch spark gap, 4 mm. aluminum filter, 9 inch focal distance, for one minute). None of the furuncles received any other treatment. Five days later all four furuncles were definitely drying up, but the fourth one apparently showed slightly the greatest amount of improvement. No new furuncles appeared following this treatment, and the child was sent home.

CASE 2.—In the five treatments given, the same hard filtered ray was given as that used for the fourth furuncle in Case 1. At the first sitting three separate furuncles were irradiated, only the lesion being treated. Two of the furuncles disappeared. A second treatment of the third furuncle was followed by success. The third and fourth treatments were given over the left side of the head covering a circular area 3 inches in diameter. These two treatments were eight days apart. No beneficial result was noted after the third treatment. Four days after the fourth treatment there was partial epilation over this area, and only a few furuncles remained. The fifth treatment was over one small furuncle above the right ear. The lesions cleared up after this, and the child was sent home a week later without furuncles.

CASE 3.—Four treatments were given. For the first treatment, given Nov. 24, 1920, the soft unfiltered dosage given to

* From the wards and roentgen-ray department of the Presbyterian Hospital, Chicago.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Dunham: *Am. J. Roentgenol.* 3: 259 (May) 1916.
2. Ruggles: *California State J. Med.* 14: 46 (Dec.) 1916.
3. Pancoast in Musser and Kelly: *Practical Treatment*.
4. MacKee: *New York M. J.* 103: 441, 1916.
5. Hazen, H. H.: *The Roentgen-Ray Treatment of Acne Vulgaris*, J. A. M. A. 69: 977 (Sept. 22) 1917.

the second furuncle in Case 1 was used, applying it over only one small furuncle on the back of the head. Subsequently, several furuncles appeared in the same region. The second and third treatments were given four days apart (December 9 and 13) and covered a circular area 4 inches in diameter. A hard filtered ray was used (6 ma., 9 inch spark gap, 4 mm. aluminum filter, 9 inch focal distance, for one minute). Partial epilation occurred, but the furuncles subsided. The general pustular condition remained active, however, till Jan. 17, 1921, after which it receded for a time. Later, two more small furuncles appeared on the face and were irradiated, February 3, the same soft unfiltered ray being used as in the first treatment of this case. One of these furuncles was opened subsequently, February 11, after which no new furuncles appeared. The child was sent home, February 15.

CASE 4.—The patient entered the hospital, Nov. 23, 1920, with a "diarrhea and erythematous papulopustular eruption on the buttocks." December 6, several furuncles appeared about the head. December 18, one roentgen-ray treatment was given, covering a circular area on the left side of the head, 3 inches in diameter. For this a fairly hard filtered ray was used (5 ma., 7 inch spark gap, 4 mm. aluminum and sole leather filter, 9 inch focal distance, for one minute). The next day the furuncles were greatly reduced. None appeared after this, and the child went home, December 23.

CASES 5, 6, 7 and 8.—In the next four cases a soft ray and no filter was used, the dosage being 3 ma., 6 inch spark gap, 9 inch focal distance, for one minute. This dosage was decided on because the hard filtered ray had twice produced epilation. In Case 5, following two of the treatments, each of which covered a circular area 4 inches in diameter, a rise in temperature up to 103.5 F. occurred, and it was considered a possibility that the roentgen-ray treatment had been a factor in its production. A later treatment, however, of the same child, of the same intensity, and over the same sized area, was not followed by a temperature reaction.

The total number of treatments in these four cases was sixteen, part over individual furuncles only, and part over larger areas. Individual furuncles frequently subsided, but treatment did not prevent the appearance of new crops. No epilation occurred.

Several cases have been treated in like manner subsequently, but these are representative of the results obtained in our wards and private practice during the last year.

SUMMARY OF RESULTS

In any statement summarizing the results of roentgen-ray treatment of furunculosis in babies, it is to be remembered that these lesions frequently vary in intensity without apparent cause. The general impression as to the results of the roentgen-ray treatment in these cases has been, on the whole, favorable; but from the roentgen-ray standpoint the series has been far too small to draw any definite conclusions as to the ultimate results as compared with other methods of treatment. We believe, however, that the results so far have shown that it is better to use a soft ray and no filter. These lesions are very superficial, and therefore easily reached, and hard filtered rays have produced epilation, even with short exposures, and may therefore be considered too dangerous to recommend in the treatment of superficial skin lesions in children.

From the results obtained from this small number of cases, certain reactions have occurred so regularly that they suggest that the roentgen rays may be employed in certain restricted ways for furunculosis in infants. It should be stated first that our original hope that roentgen-ray treatment of individual furuncles would produce a certain immunity to future recurrence was not justified. In no single case has this been true. However, when the furuncles are in

the early stage of development and not very deep, the local results have been surprisingly gratifying; they have not been such as entirely to do away with the surgical procedure, but they have certainly reduced the necessity for opening the abscesses very greatly. When the process has been very superficial and over an extended area, the results have been most gratifying. We therefore feel that the proper use of the roentgen rays may add materially to the efficacy of our treatment of furunculosis in babies.

104 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. FRANK C. NEFF, Kansas City, Mo.: Did you include the late pustular or stage of pemphigus which is epidemic in hospitals for the new-born? These children undoubtedly have a reduced resistance to infection.

DR. MYER SOLIS COHEN, Philadelphia: Results from vaccines have been rather unsatisfactory, and I think we can see an explanation for that in some work that was done very recently. Dr. George D. Hirst, Dr. Cohen and I discovered that the fresh blood of animals immune to a disease killed the organisms causing that disease, while the blood of animals that are susceptible to a disease does not kill those organisms. We found that the blood of animals which are immune to diphtheria kills the diphtheria bacillus. These tests were made in vitro. A curious finding is that the ordinary contaminating organisms do not grow in the blood during the test. Only those organisms will grow against which the blood lacks bactericidal power. A method which can be used in babies, in whom it is difficult to get so much blood, is to take the pus from the furuncle and grow it on an agar plate, and the organisms that grow, grow separately. Then dilute 1:10,000 and 1:100,000 and allow each dilution to run into a separate capillary tube. Touch a piece of muslin into it and allow it to run out. This leaves a layer of organisms in the capillary tube. Allow the blood to flow into the tube and seal and incubate for twenty-four hours and then the organisms against which the blood has bactericidal power have disappeared, while the other organisms have grown vigorously. Make the vaccines from those cultures and inoculate in the usual way, and the patient will get well. In no series of pyelitis cases in which this procedure was done did any case fail to respond to the treatment.

DR. CLIFFORD G. GRULEE, Chicago: We have had a great many cases of pemphigus in the new-born, but I have not had the temerity to use roentgen-ray treatment on the skin of the new-born. As to the vaccines, it has been quite a while since I abandoned them, but I never felt from my experience that I could get any regular results. I thought they were merely happenings, the results being such as I might get without them; hence I have long since abandoned vaccines, as it is painful to the child to give them. As to the results of Dr. Cohen, I have had no experience with his methods.

Occupational Skin Diseases.—In an investigation by the United States Public Health Service into the causes and prevalence of skin diseases arising from occupational hazards many employees were found to be suffering from occupational diseases, mostly of the skin, without either the plant physician or the men themselves realizing that the trouble was more than individual. In one plant, where khaki cloth was made up, inspection disclosed a woman who complained that a slight cut from her scissors had resulted in eczema; a boy who carried bales of the cloth on his shoulders claimed that the dust from the bales had given him the same disease, and a number of women stitchers, whose duties required that they handle and sew the cloth continuously, were affected with conjunctivitis. Analysis of the dust showed that it contained a large percentage of chrome yellow and sulphur dioxide. In another plant, where 1,000 men at machines used large amounts of "cutting" oils, superficial investigation revealed that about one fourth of those examined were suffering from eruptions and other skin troubles.

THE CURE OF INFANTILE RICKETS BY SUNLIGHT

PRELIMINARY NOTE

ALFRED F. HESS, M.D.

AND

LESTER J. UNGER, M.D.

NEW YORK

Encouraged by our results in curing rickets by means of the ultraviolet ray,¹ we have recently attempted to attain similar results by the direct action of the sun's rays. Infants have been exposed for a half hour to several hours, varying the period of treatment according to the intensity of the sun and the sensitiveness of the skin. The legs, arms, trunk and face were in turn exposed. It is remarkable how well infants under 1 year of age react to this outdoor treatment, if carried out gradually and under careful supervision. Five infants, three between 6 and 12 months, and two between 12 and 18 months of age, were treated in this manner. The exposures obviously could not be carried out with regularity, as we were dependent on the weather; but experience showed that daily treatment is not essential. In one of the cases which responded most favorably, the patient could be given the sunlight treatment only on seven days between April 3 to 19; during this period exposure was given for a total of twenty-five hours. In every instance there has been marked improvement in the rickets as evidenced by the calcification of the epiphyses noted by means of the roentgen ray. The alteration resembled that which follows the administration of cod liver oil, and, in one instance, occurred thirteen days after heliotherapy was begun. The general condition of the infants was also benefited, as were other signs of rickets, such as beading of the ribs and flabby musculature. In one case, calcification of the epiphyses of both wrists was evident, when as yet but one arm had been exposed to the sun—evidence that the action of the rays is systemic and not local.

As stated elsewhere, it has been our experience that rickets is encountered occasionally on every food, without exception; on a dietary containing a large quota of milk, and therefore rich fat; on a diet lacking fat and the fat-soluble vitamin; on raw or pasteurized milk. It has been noted on a diet of fluid milk, dry milk, condensed milk, protein milk and human milk. On every one of these diets a few babies have been found, in the course of routine roentgen-ray examinations, to have some rickets, whereas others have remained normal. This peculiar phase of the etiology we shall, however, discuss at some future time. The babies which we cured by means of the sun's rays were on regular dietaries, such as whole milk and cereal, or dried milk, cereal and orange juice. This diet was not altered during the course of treatment. The fact that some were receiving the same dried milk for the entire period renders it evident that the curative effect cannot be attributed to a qualitative alteration in the milk, such as might be occasioned by a change in the fodder of the cows. Such an effect has been suggested in view of the influence which the fodder

of the cows has been found to exert on the anti-scorbutic content of the milk.

We have elsewhere considered the rôle of the actinic rays in an interpretation of the seasonal variation of rickets, and expressed the opinion that it is the dominant factor in this incidence. We do not wish to infer, however, that diet is not of importance in the etiology of rickets, but rather that a hygienic factor—sunlight—is also of importance. In almost all of the investigative work on animals which has been so fruitful in the last few years, attention has been focused solely on dietetic factors.

It is unnecessary, in this preliminary note, to discuss in detail the theoretical and practical deductions to be drawn from these observations. They are obvious. It is clear that they have important bearing on the geographic distribution of rickets, and on measures for its prophylaxis and cure, as well as on investigations designed to elucidate its etiology. Indeed, it would seem that the action of the sun's rays will have to be taken into account in metabolism studies on animals and man which concern themselves with the body exchanges of the inorganic salts.

16 West Eighty-Sixth Street—162 West Eighty-Fifth Street.

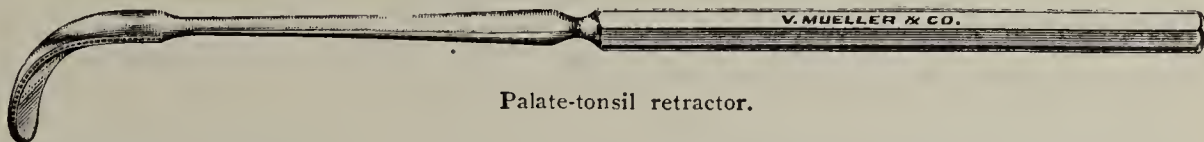
Clinical Notes, Suggestions, and New Instruments

A PALATE-TONSIL RETRACTOR

JOSEPH B. GREENE, M.D., ASHEVILLE, N. C.

At the risk of adding one more instrument to the large number already used in tonsil operations, I am presenting one which has been particularly useful to me. In fact, I find it so very helpful in the dissection of the faucial tonsil that I would hesitate to attempt the operation without it. The instrument is about 9½ inches in length, with a curve at the distal end which accurately fits over the upper lobe of the tonsil. The edges of the curve are slightly serrated in order the better to retract the mucous membrane of the soft palate.

After the tonsil is seized with forceps, the assistant retracts the soft palate with gentle pressure and in this way brings into accurate view the line of attachment of the palate to that of the tonsil. The operator then with a sharp knife or scissors



incises the mucous membrane at its point of attachment to the tonsil, thus sparing not only the muscular tissue but also the mucous membrane. With the tonsil thus separated at its mucous attachment, the following steps in its removal can be made either by sharp or blunt dissection as the operator may prefer. As most surgeons experience their greatest difficulty at the beginning of the dissection, it is obvious that any instrument that will make this step easier adds distinctly to our armamentarium. This instrument finds its greatest usefulness in the so-called friable and submerged tonsil found particularly in children. As this instrument forces the mucous membrane over the tonsil, it can be readily seen that less traction will be required on the tonsil forceps, thereby lessening the danger of losing the hold by tearing. It is the experience of all of us that when the forceps once tear out by traction, each subsequent hold becomes distinctly more difficult and uncertain.

Another class of tonsils in which this instrument is of great value is in retracting the palate of adult tonsils which have been subjected to frequent inflammations, particularly those which have been the site of peritonsillar abscess.

305 Haywood Building.

1. Hess, A. F., and Unger, L. J.: An Interpretation of the Marked Seasonal Variation of Rickets, *Am. J. Dis. Child.*, to be published.

A DEVICE FOR STEADYING THE NEEDLE DURING
INTRAVENOUS WORK

HAROLD A. ROSENBAUM, M.D., CHICAGO

In giving intravenous medication or in drawing blood from a vein it not infrequently happens that, after the vein has been successfully entered, an accident happens and the needle passes on through the vein or is withdrawn superficial to the vein. This difficulty is more likely to happen in infants or children, in whom there is frequent resistance to the procedure.

If, after the vein has been entered, a bulbous body around the needle could be slipped toward the point of the needle as far as the skin, and if this bulb would not slip back when pressure was applied to the needle, it would be possible to hold the needle in position in the vein by pressure toward the vein. This guard would prevent the needle from passing on through the vein when pressure was applied and, obviously, the needle would not be withdrawn.



Scarf-pin clasp on needle in position before vein is entered.

The ordinary scarf-pin clasp serves this purpose very well and is large enough for any needle up to a 15 gage. It must be slipped on the needle with the adjusting globoid portion of the clasp opposite the point of the needle. When entering the vein the clasp is well up on the needle, and as soon as the vein has been entered an assistant slips the clasp down to the skin. For longitudinal sinus work in infants, needles are now used which have a stationary bulb the proper distance from the point as required for this operation. Such a needle is manifestly impracticable with intravenous work in general because a varying length of the needle is used, depending on the depth of the vein and on the angle of approach. These easily adjustable clasps may be found at any jeweler's or haberdasher's.

Michael Reese Hospital.

POSTINFLUENZAL EPILEPSY

REPORT OF CASE

LOUIS HANNAH, M.D., SYLVANIA, GA.

After searching the literature at my command for all neuro-psychic complications and sequelae of epidemic influenza, I was greatly surprised to find no mention of epilepsy or epileptiform psychoses until I came across the report of such a case by Clark.¹ Although Dr. Clark has apparently undisputed claim to priority in announcing and describing this condition in connection with influenza, it is perhaps worth while to report a second instance of its occurrence, which came to my attention recently, and which has some points of divergence from the prior description.

REPORT OF CASE

A boy, aged 22, whom I first examined, March 5, 1921, presented as his chief complaint sudden attacks of vertigo, loss of consciousness, and tonic spasms of the muscles of both face and arms, which lasted from a few seconds to half a minute each time. His father stated that there were muscular twitching of face, lips and arms; pallor of face, change of facial expression, widening of the palpebral clefts, dilatation of the pupils, and at times sudden suspension of conversation; and there was always a momentary relinquishing of any act or performance in which the patient was engaged at the instance of a seizure. He would always immediately drop anything held in his hand, when seized by one of these spells, and on one occasion narrowly averted a serious accident in driving an automobile, when he momentarily released the steering wheel. No real convulsions, stertor, foaming at the mouth, or biting of the tongue were ever exhibited. There were no auras in this case, with the possible exception of a sensation of dizziness, and the patient was only conscious,

after attacks, of having fallen, or if seated at the time, of having experienced some unusual manifestation. These attacks always occurred during the day, and had numbered from one to two weekly, gradually increasing to from three to twelve daily, since two years before, when the first spell was initiated by an attack of influenza and pneumonia. The first epileptiform seizure appeared simultaneously with the occurrence of influenza, although one year previously the patient had also experienced an attack of influenza and pneumonia, without any such complication or sequela. He has never had any grand mal attacks, the attacks described being strictly of the petit mal type. The only other symptoms were nervousness, restless sleep, occasional night sweats, and recently aching of the head and limbs, due to malaria.

The past history was of no importance, exclusive of influenza and pneumonia. The general appearance of the patient was that of a well-developed, robust boy, of plethoric diathesis. His physical record was perfect, and, until stricken with the present disorder, he was engaged in farming. He had gained 30 pounds in the last six months. His record in school was excellent. The family history was negative, except for a neurotic tendency.

The physical examination proved negative generally, and all deep reflexes were normal. The systolic blood pressure was 130; diastolic, 90.

Laboratory tests of the blood revealed: hemoglobin, 80 per cent.; malaria positive; eosinophilia present; Wassermann test negative. The spinal fluid was negative chemically microscopically, macroscopically and culturally. The urine was negative, except for large amounts of indican, which was found persistently at different times. The feces contained a large number of *Uncinaria americana* ova. The Detre tuberculin test (Ryan modification) was negative.

The treatment in this case was first directed to the removal of hookworms, and following the administration of 48 minims of oil of chenopodium, the feces was rid of all ova. The patient was then given three weeks' course of antimalarial remedies. Later, $\frac{1}{2}$ grain of yellow mercurous iodid, three times a day, was prescribed; also a daily dose of a $1\frac{1}{2}$ grain tablet of luminal, which the patient was directed to increase to two daily if necessary. Several examinations of stools were subsequently made, with negative results until April 23, when, after diligent search, an occasional hookworm egg was discovered. A second course of anthelmintic treatment was then promptly instituted; but further examinations of stools have not since been made. Luminal in $1\frac{1}{2}$ grain daily doses is still being prescribed, while other medicines have been discontinued.

COMMENT

The progress of this case has been marked by some improvement, the patient not having had any attacks for two or three days at a time, and the attacks have decreased in severity. While at first the patient continued apprehensive of his affliction and was incapacitated for farming, he is at present very optimistic and is able to do practically as much work as before he became affected, being seldom interrupted in his occupation. A peculiar thing about these attacks, as stated by the patient, is the fact that they are much milder when he is out in the field plowing. As yet, I am somewhat concerned about the ultimate prognosis in this case, since the petit mal type of this affection is the most difficult to cure. However, one could hardly reach conclusions in the course of less than three months' observation.

Although we are extremely dubious as to the etiologic relationship of influenza to epilepsy, it is certain that the former condition precipitated the unusual attacks just described. As to etiology, my first impulse was to ascribe a major factor to hookworm infestation; but recovery did not ensue after the complete eradication of ova from the stools, until the subsequent administration of luminal was begun. It is possible that, in addition to intestinal uncinariasis, the patient may have a somatic type of the infection. We know that hookworm larvae have been found in various organs of the body, and it is not impossible that, in this instance, they may be lodged in the brain and so perpetuate symptoms after expulsion of worms from the intestines. I am not informed of any treatment that might be directed to such parasites in the brain.

1. Clark, L. P.: Influenza and Epileptiform Attacks, J. A. M. A. 73: 1767 (Dec. 6) 1919.

The points of diagnosis in this case are the persistent repetition of sudden attacks of unconsciousness, coming as a bolt out of a clear sky and affecting an individual apparently in perfect health between the seizures; the absence of a discoverable cause for the disorder; pallor of the face; widening of the palpebral clefts and dilatation of pupils; suspension of speech; and tonic spasms, with muscular twitching. Also, the persistence of indican in the urine is, when taken in conjunction with other symptoms, corroborative of epilepsy.

PHENOLTETRACHLORPHTHALEIN ESTIMATION IN THE DUODENAL CONTENTS*

MAX KAHN, M.D., Ph.D., NEW YORK

Director of Department of Laboratories, Beth Israel Hospital

In order to study the efficacy of the method of Lyons to stimulate the flow of bile into the duodenum, I resorted to this technic:

A duodenal tube of the Einhorn type was passed into the duodenum on a fasting stomach. When it was made certain that the duodenal tube was in the proper site, 8 c.c. of a solution of phenoltetrachlorphthalein (prepared according to the method of Rowntree, Marshall and Chesney) was injected intravenously. At the same time 25 c.c. of a saturated solution of magnesium sulphate was introduced through the duodenal tube into the duodenum.

The contents of the duodenum were pumped off in 5 c.c. fractions every ten minutes. It was found that traces of the phenoltetrachlorphthalein appear in the duodenal contents within twenty minutes of the administration of the drug, and that the administration of the magnesium sulphate intraduodenally markedly stimulates the flow of the bile by relaxing the sphincter at the ampulla of Vater as measured by the phenoltetrachlorphthalein output.

By this method it is possible to study the functional capacity of the liver, and work along this line has already been inaugurated. The former method of phenoltetrachlorphthalein function study of the liver by analysis of the fecal output was tedious and unpleasant, and thus fell into disrepute.

By the method of Lyons, one stimulates the excretion of bile into the duodenum. One cannot tell, however, whether the emptying of the gallbladder is influenced by means of the magnesium sulphate administration. Apparently most of the bile secreted (or excreted) after the magnesium administration comes directly from the liver, for the appearance of the drug in the duodenal contents is too rapid to assume a collection of it in the gallbladder previous to its elimination into the alimentary canal.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

ORTHOFORM.—Orthoform-New.—Methyl Metaamino-paraoxybenzoate.— $C_6H_3NH_2.OH.CO.O.(CH_3)$, 3:4:1.—The metaaminoparaoxybenzoic acid ester of methyl alcohol.

Actions and Uses.—Orthoform is a local anesthetic, but penetrates the tissues very slowly on account of its insolubility. It has no action on the unbroken skin. It is practically non-toxic in the usual doses.

Orthoform is used internally to relieve the pain of gastric ulcer. It has been applied locally as an analgesic to wounds of every description. It has been used in dentistry, in nasal catarrh, hay fever, etc.

Dosage.—Internally, from 0.5 to 1 Gm. (8 to 15 grains) in emulsion; locally, in substance as a dusting-powder or mixed

with milk sugar for insufflation, dissolved in ether and mixed with oil for pencillings, or as an ointment with wool fat, etc.

Manufactured by Farbwerke, vorm Meister, Lucius and Bruening, Hoechst a.M., Germany (H. A. Metz Laboratories, Inc., New York, distributor). U. S. patent Nos. 610,348 (expired) and 625,158 (expired).

Orthoform occurs in a fine, white, crystalline powder, neutral in reaction, and melting at from 141 to 143 C., odorless and tasteless. It is almost insoluble in water; freely soluble in alcohol; soluble in ether. It is decomposed by boiling with water or by warming with alkalis or their carbonates, into methyl alcohol and paraoxybenzoic acid or the alkali salt of it. When crystallized from chloroform it sometimes assumes the form of white crystals, melting at from 110 to 111 C., returning on melting to the ordinary form.

The filtrate obtained after shaking a small quantity of the orthoform with water produces a fugitive color with ferric chloride and should not give a reaction with silver nitrate. A solution of 0.1 Gm. orthoform dissolved in 2 Cc. of water by the aid of hydrochloric acid is colored yellowish red on addition of sodium nitrate and then deposits a yellow precipitate, deepening to red on exposure to the air. It is decomposed by heating with water; it is incompatible with alkalis and their carbonates.

AMIDOPYRINE.—Amidopyrina.—Pyramidon.— $C_6H_5N.CO.N(CH_3)_2.C:C(CH_3).N(CH_3)$.

Dimethylamino-phenyl-dimethyl-pyrazolon, differing from antipyrine, $C_{11}H_{12}N_2O$, in that a dimethylamino group, $N(CH_3)_2$, has replaced a hydrogen atom of the pyrazolon nucleus.

Actions and Uses.—Amidopyrine acts as an antipyretic and anodyne, like antipyrine, but is effective in smaller doses. The action, while somewhat slower at the beginning, is more lasting. It is claimed to be comparatively free from harmful influences on the blood, heart or kidneys. It is said to be useful, particularly in the chronic fevers of tuberculosis, as well as in the acute febrile conditions incident to typhoid fever, erysipelas and pneumonia. In the treatment of infectious fevers, it, like other antipyretics, should be cautiously employed. See general article, Phenetidins Derivatives.

Dosage.—From 0.3 to 0.4 Gm. (5 to 6 grains), most conveniently in the form of tablets, a single dose usually sufficing for twenty-four hours.

Amidopyrine is prepared by the reduction of nitroso-antipyrine to amino-antipyrine and treating this with methyl chloride or methyl iodide.

Amidopyrine occurs in small, colorless, odorless crystals; almost tasteless; permanent in the air. Amidopyrine is soluble in water; freely soluble in alcohol, ether and benzene. Its aqueous solution saturated at 70 C. deposits oily globules of amidopyrine on boiling. The aqueous solution is faintly alkaline to litmus paper. Amidopyrine melts at 108 C.

Ferric chloride solution colors the neutral or slightly acidulated aqueous solution of amidopyrine (1:20) a bluish violet color; nitrous or nitric acid produces a fugitive, blue-violet color; silver nitrate produces an intense violet coloration, followed by the formation of a black precipitate of metallic silver; a similar color is produced by platinum chloride, by ammonium persulphate, by lead dioxide, and by iodine test solution. In general, the incompatibilities of amidopyrine are the same as those of antipyrine. Oxidizing agents (also acacia) often produce colored solutions.

To 10 Cc. of an aqueous solution of amidopyrine (1:20), add 1 Cc. of hydrochloric acid and 5 Cc. of mercuric chloride test solution. A white, crystalline precipitate results.

Incinerate about 1 Gm. of amidopyrine, accurately weighed. Not more than 0.1 per cent. of ash remains.

Amidopyrine-Calco.—A brand of amidopyrine, N. N. R.

Manufactured by The Calco Chemical Co., Bound Brook, N. J. No U. S. patent or trademark.

MESOTAN.—Salmester.— $C_6H_4.OH.CO.O.(CH_2.O.CH_3)$.—Methyl-oxymethyl salicylate, an ester of salicylic acid, analogous to methyl salicylate.

Actions and Uses.—Mesotan is an active counterirritant, used especially in rheumatic conditions, similarly to the local application of methyl salicylate. It is more irritant than the latter, and lacks its odor. It is absorbed from the skin, but its action is predominantly local, relieving pain and swelling. It is not an efficient means for producing the systemic actions of salicylates.

Dosage.—For application mesotan is diluted with 1 to 4 parts of olive oil or cotton seed oil, and painted over the affected area usually twice daily. Friction should not be used, and dressings, if any are necessary, should be light and permeable. The site of application should be changed, if possible, after each treatment; or the area may be rested for two days after four days of treatment.

Manufactured by The Bayer Co., Rensselaer, N. Y. (Winthrop Chemical Co., Inc., distributor). U. S. patent No. 706,018 (Aug. 5, 1902; expired). U. S. trademark No. 39,017.

Mesotan is a clear, yellowish, faintly aromatic, oily fluid, specific gravity 1.2 at 15 C. and boiling at about 162 C. It is but slightly soluble in water, but readily soluble in the usual organic solvents and miscible with oils in all proportions. Above 100 C. it is decomposed, yielding salicylic acid, formaldehyde and methyl alcohol, and it is likewise decomposed to a certain extent by moisture in the air.

The aqueous solution of mesotan gives a violet color with ferric chloride and, after heating or exposure to moisture, it responds to the usual tests for formaldehyde. Concentrated sulphuric acid colors it red.

Mesotan should be kept in a cool place and preserved dry in well-stoppered bottles.

* Portion of a paper read before the Williamsburg Medical Society, May 9, 1921.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 2, 1921

THE UTILITY OF ANTIPLAGUE VACCINES

Little more than a quarter of a century has elapsed since Yersin and Kitasato independently described the bacterium of bubonic plague in 1893. Within four years thereafter, Haffkine first reported the possibility of protective vaccination against the disease caused by *B. pestis*. The announcement was followed by a number of investigations designed to test the type of vaccine most suitable for the purpose. Haffkine's procedure involved the use of killed broth cultures of the micro-organism. The German Plague Commission, consisting of Gaffky, Pfeiffer and Dieudonné, recommended a vaccine of killed agar cultures. Subsequently Kolle and others, believing that such products do not bring about protection against subsequent inoculation with highly virulent cultures, advocated the use of highly attenuated living cultures of the plague bacterium for the purpose of effective immunization. Such a procedure is obviously fraught with dangers unless suitable precautions are taken and a proper control is rigorously instituted.

Antiplague inoculations have been carried out extensively in India for many years. The Indian Plague Commission reported that vaccination in man diminishes the incidence of the disease, but that it does not furnish absolute protection. Apparently the duration of immunity does not exceed a few months. The immune substances are not demonstrable until ten days have elapsed. Karsner and Ecker¹ assert that objections have been made to the earlier favorable statistics on the ground that sufficient attention may not have been given to the relative prevalence of infected rats or other variable hygienic conditions which are likely to play an important part in the prevalence of plague infection.

In the recent series of articles in *THE JOURNAL* dealing with serums, vaccines and nonspecific therapy, Teague² has presented current evidence to warrant the tentative conclusion that protective inoculations diminish the incidence of plague in human beings and lower the percentage of mortality in those that contract plague in spite of inoculation; but they do not

serve as a factor in eradicating plague permanently from a district or country. The foregoing remarks apply only to bubonic plague. Pneumonic plague, though caused by the same organism, is clinically and epidemiologically an entirely different disease. It has not been shown that prophylactic inoculations cause a decrease in either the incidence or the mortality of pneumonic plague. The serum of immunized animals has been tried as a therapeutic agent in plague and seems to have had some success for this purpose, whereas it is certainly unable to confer any complete or durable immunity.

The promising possibilities which the studies in the immunology of plague have disclosed are liable to engender an unwarranted sense of security or even victory over a disease that can count its victims by the millions in India alone in the last two decades. In any event, the rat and the flea remain untouched. McCoy and Chapin of the U. S. Public Health Service venture even to assert that the utility of vaccines and serums in antiplague work is at best not proved. They contend that vaccination is not known to have ever controlled a plague outbreak. Hence the government experts have uttered the renewed advice that popular and professional interest should not be allowed to become diverted from antirrat measures. We reiterate their slogan: If people want to be vaccinated for plague, let them; but the important thing is to kill the rats.

HAVE SPERMATOOZOA FUNCTIONS OR EFFECTS OTHER THAN FERTILIZATION?

It has commonly been held that in the process of fertilization Nature exhibits one of her least economical sides, the endeavor to secure perpetuation of the species apparently warranting the utmost extravagance. Plants cast their fructifying pollen into the air on the chance that some may fall on the germ cells or receptive organs of other plants of the same species, regardless not only of the wastefulness of the process but also of the receptive mucosa of the hay-fever subject. Fish cast spermatozoa into the ocean currents, which carry but an infinitesimal fraction to the waiting ova. The mammal injects a million or two spermatozoa, only one or at best a few of which may carry out the fertilizing function. What becomes of the remainder? Are they excreted as waste material, or may they, perhaps, have some function or produce some effect in the recipient organism? Zoologists have found that in some of the invertebrates the spermatozoa invade the entire body of the female, and in some species they reach the ovum by penetrating the cuticle from outside and migrating to their goal. The ancients have in times past assumed that the male elements invade the female tissues, and Kohlbrugge¹ has found that this speculation may have reached correct conclusions. In various rodents that he has studied, such as mice, bats and rabbits, he found that the spermatozoa penetrate the epithelium of the generative

1. Karsner, H. T., and Ecker, E. E.: *The Principles of Immunology*, Philadelphia, 1921, p. 294.

2. Teague, Oscar: *Biologic Therapy*, XV, Vaccination Against Plague, J. A. M. A. 76: 243 (Jan. 22) 1921.

1. Kohlbrugge: *Arch. f. Entwicklungsmech.* 35: 165, 1912.

mucosa and invade the underlying connective tissue. There is every reason to believe that if such a process occurs in several mammalian species it occurs in all, but, so far as we know, no observations have been made on the fate of the sperm cells in the human species.

The question naturally follows, What effects, if any, are produced by spermatozoa that invade the female tissues? In the rodents studied, Kohlbrugge found that the cells invaded seemed to be stimulated to growth, suggesting that this may influence the uterine mucosa in its preparation for receiving and embedding the egg, and in forming the decidua. One also thinks of the possibility of immunologic effects, for it has been established that sperm cells contain proteins so special that they may readily induce immunologic reactions in the same species as the one that has produced them, in which respect they resemble the proteins of the crystalline lens, or the placenta. Waldstein and Ekler² have tested this possibility and found that rabbits develop a distinct Abderhalden reaction for testicular proteins shortly after cohabitation, which seems to establish the thesis. To be sure, the use of some other immunologic method might furnish more convincing evidence in view of the unsatisfactory status of the Abderhalden reaction, but in this particular sort of work its results are by no means without significance. At the least, these observations show that some significant change has been produced in the female blood plasma following reception of the sperm, which is similar in at least one respect to the effect of subcutaneous injection of sperm. Furthermore, it has been shown in other experiments that sperm has a marked capacity to produce antibodies, even when implanted in the tissues in a collodion sac, or when an entire testicle with its dense capsule is implanted.³ An observation with striking possibilities has recently been reported by Dittler,⁴ who found that by immunizing female rabbits with sperm they are made sterile for some time, although after a few months they become again capable of impregnation. Similar results have been obtained by others who immunized with testicle extracts. As immunization with sperm from other species failed to produce sterility, and as the serum of the rabbits injected with rabbit sperm was found to be spermatotoxic and agglutinative, Dittler believes that the sterilization depends on immunization against the sperm of the homologous species.

These various facts raise many questions and stimulate probably more speculation than they warrant. For example, if spermatozoa invade the female tissues and cause the formation of specific antibodies which are capable of preventing fertilization, may not such a process participate in the problem of sterility? May not the traditional sterility of the prostitute depend sometimes on such a process rather than on inflammatory sealing of the tubes? May not such spermatotoxic substances so modify the sperm or the fertilized egg as to

lead to abnormalities of importance in teratology? Guyer has shown that antilens serum when injected into gravid animals may lead to the production of offspring with defective eyes, and the defect so produced is transmissible to subsequent generations,⁵ and we might expect spermatotoxins to produce equally disastrous effects on the fetus. It is to be hoped that the importance of this subject will lead to the investigations necessary to answer the questions that it raises.

BACTERIA IN THE NOSE AND THROAT

It was to be expected that the rapidly growing interest in the important problems of infections through the respiratory tract should call forth more fundamental studies of the physiology and bacteriology of the nasopharynx. An elaborate system of sensitive mucous membranes and peculiar adjacent structures forms a unique nidus for all sorts of microbial invaders. What are the commonest of these? How long can they thrive there? What are the defenses of the organism against them, and how can the undoubted natural immunity be broken down? To this sort of inquiries thoroughgoing investigations obviously must be devoted.

Bloomfield⁶ of the Johns Hopkins Hospital has gained the conviction from his now extensive bacteriologic examinations of the throats of healthy persons that certain organisms are almost constantly present in the individual from day to day. In this normal flora, gram-negative cocci and nonhemolytic streptococci are included. The more accidental or occasional organisms include staphylococci, diphtheroids and others, which not infrequently may be introduced into the mouth, but are transients and are promptly eliminated. Bloomfield states that they usually disappear in a few days, just as foreign organisms do when introduced experimentally. Mechanical flushing is a potent force in the protective mechanism of the upper air passages. According to the Baltimore investigator, the normal surfaces of the latter afford an unfavorable environment for foreign organisms, both pathogenic and non-pathogenic, and special conditions are needed to make possible their prolonged or permanent presence. Such conditions, as a rule, consist of the production of disease, or at least a focus of diseased tissue in which the organisms may colonize.

That the special conditions here postulated do arise is implied in the unlike facility with which different organisms can be implanted. Some rarely survive the period of introduction more than a few hours. On the other hand, Moss, Guthrie and Marshall⁷ have readily produced a carrier state in healthy persons by inoculation of the throat with avirulent diphtheria bacilli.

5. The Experimental Production of Congenital Defects, editorial, J. A. M. A. **75**: 1346 (Nov. 13) 1920.

6. Bloomfield, A. L.: The Significance of the Bacteria Found in the Throats of Healthy People, Bull. Johns Hopkins Hosp. **32**: 33 (Feb.) 1921.

7. Moss, W. L.; Guthrie, C. G., and Marshall, B. C.: Experimental Inoculation of Human Throats with Avirulent Diphtheria Bacilli, Bull. Johns Hopkins Hosp. **32**: 37 (Feb.) 1921.

2. Waldstein and Ekler: Wien. klin. Wchnschr. **26**: 1689, 1913.

3. Metelnikoff and Strelnikoff: Ztschr. f. Immunitätsforsch. **17**: 186.

4. Dittler: München. med. Wchnschr. **67**: 1495, 1920.

Some still harbored them after fifteen months. They could not be prevented from developing by antitoxin. It is comforting to know that the bacteria showed no tendency to become virulent as the result of this type of "animal passage." Accordingly, it may be assumed that the carrier of avirulent diphtheria bacilli does not constitute a menace to the health of the community.

Bloomfield⁸ attempts to reconcile what may seem like conflicting views on the theory that the carrier state depends on a focus of diseased tissue which affords a breeding place for the bacteria. The tonsil may come into play here. He finds no evidence to indicate that any adaptation takes place between the bacilli and the mucous surfaces, leading to actual growth and multiplication on these surfaces. They react just as the normal mucous membranes do.

In this connection the vasomotor reactions of the mucous membranes of the pharyngeal and nasal cavities may be recalled. Mudd, Goldman and Grant⁹ have shown that vasoconstriction and ischemia are caused reflexly in these membranous surfaces by chilling of the outside of the body; and the temperature change may amount to several degrees. What such reactions may mean for the establishment of infections of the nose and throat remains to be seen.¹⁰

THE COST OF TUBERCULOSIS

The arguments in support of movements for the conservation of human life and the improvement of the public health are no longer based solely on humanitarian considerations or purely philanthropic motives, however worthy and defensible these may be. The waste of human life through untimely death or disabling disease is an economic loss capable of being estimated in tangible figures in some cases, and always deserving of careful consideration. To the individual the conservation of the capacity for personal achievement, a performance in which good health plays an undeniable part, makes the strongest appeal. To the nation and the public at large the enormous cost of lowered efficiency and preventable or remediable disease is becoming more and more apparent. During the war our people were startled by the degree of physical insufficiency revealed by civilized man in many parts of the world. Hence one can well understand former President Taft's reminder that human vitality lies at the foundation of national strength; that is, underneath our power to furnish the money, munitions, food, ships, machinery and morale which won the war we find the great fundamental requirement of sound bodies and minds.

Statisticians¹ have recently computed the losses in expectation of life in the case of tuberculosis. The importance of the disease from this standpoint is indicated by the extent to which it shortens the average span of human life. According to the studies made by the Metropolitan Life Insurance Company and the National Tuberculosis Association, tuberculosis is a powerful antilongevity force among insured wage earners for whom dependable statistics are obtainable. White males lose 3.5 years in all, or 7.6 per cent. of their entire expectancy. The heaviest losses occur among the colored people; they lose an average of about five years of life because of the inroads of this disease. On the whole, males lose more heavily than females from tuberculosis. Again, we are told¹ that at age 20, when productive life is well started for most persons, tuberculosis reduces the expectancy 3.7 years among white men, 2.3 years among white women, 4.4 years among colored men and 3.7 years among colored women. At age 40, the years lost are from one-third to one-half as many as at age 20, and at age 60 and thereafter the losses cease to have an important effect on longevity, although the death rates from tuberculosis continue to be high, even at these advanced ages.

What may this loss in expectation of life represent in terms of estimated money losses? If we agree with the experts who have busied themselves with this problem that a loss of one year of life is equivalent to a money loss of not less than \$100 in national wealth, a tenable figure can readily be arrived at. Tuberculosis mortality cuts approximately two and one-half years from the complete life expectation of every individual under present mortality conditions. This represents, on the basis just cited, a loss of \$250 per person in our population of more than a hundred millions, the figures run into billions of dollars. As Dublin and Whitney have summarized the data: The present generation would add that much more net wealth if tuberculosis were not a factor in mortality. Since the average lifetime is approximately fifty years in the United States, this loss means an annual charge in excess of five million dollars from the curtailed longevity of individuals because of tuberculosis.

But this is not all. Sickness and disability for work represent outlays and losses that are scarcely calculable in concrete ways. The New York City Association for Improving the Condition of the Poor has found that a tuberculous family was under care, on the average, for a period of two years, four and one-half months, and that during this time the families suffered a wage loss of \$836, and the association contributed \$1,181 in relief and care.

Data such as these deserve to be familiar to the members of the medical profession, on whom more than all others the burden of defending public health work now

8. Bloomfield, A. L.: The Mechanism of the Carrier State with Special Reference to Carriers of Friedländer's Bacillus, *Bull. Johns Hopkins Hosp.* **32**: 10 (Jan.) 1921.

9. Mudd, S.; Goldman, A., and Grant, S. B.: *J. M. Res.* **40**: 53 (May) 1919; *J. Exper. Med.* **32**: 87 (July) 1920; Vasomotor Reactions of the Nasal Cavity and Postnasal Space to Chilling of the Body Surface, *Am. J. Physiol.* **55**: 297 (March) 1921.

10. Mudd, S.; Grant, S. B., and Goldman, A.: The Etiology of Acute Inflammations of the Nose, Pharynx and Tonsils, *J. Lab. & Clin. Med.* **6**: 175 (Jan.) 1921; **6**: 253 (Feb.) 1921; **6**: 322 (March) 1921.

1. Dublin, L. I., and Whitney, Jessamine: The Costs of Tuberculosis, *Quart. Pub. Am. Statistical Assn.*, December, 1920; *Am. Rev. Tuberc.* **5**: 178 (April) 1921.

rests. The slow progress in the warfare on tuberculosis is sometimes discouraging to those who are expected to support it in concrete ways. It is not always possible to rally their indispensable support by an appeal to the noticeably decreased mortality from the disease in the last quarter century. It is true that in 1890 the death rate per 10,000 living in the U. S. Registration Area was 24.5, and in 1915, only 12.3. Despite such differences the disease is still rampant. To many the failure of science to discover the eagerly anticipated "cure" which the popular mind has been led to expect since the days of Koch's original tuberculin has been disheartening. Figures to which the dollar sign can be prefixed speak with great force. The figures cited in connection with the costs of tuberculosis should be counted on to help in securing a continuance of the efforts to eradicate or ameliorate the great scourge.

Current Comment

TRYING TO KILL THE MILK COMPOUND INDUSTRY

Until within recent years, vast quantities of skim milk were wasted or its food value used in uneconomical and unscientific ways. Then there developed an industry for the purpose of making such skim milk more available to the consuming public by adding to it edible fats or oils from other sources. These milk compounds, obviously, could not and did not take the place of milk as an infant food; they did, however, furnish an inexpensive and valuable food, and because of these qualities they quickly attained public favor. Since they have become popular—or possibly *because* they have become popular—certain competing interests have attempted to bring about legislation which, for all practical purposes, would eliminate milk compounds from the market. Such legislation was attempted in the states of Washington, New York, New Jersey and Pennsylvania, but the bills failed of enactment. More recently, such legislation has been pushed in Wisconsin, and the law has passed both houses of the Wisconsin legislature. The fight is now being carried to Congress, and three bills have been introduced which, if enacted, would practically destroy the milk compound industry of the United States. With the trade fight—for such it is—the medical profession is not concerned. Those that are attempting to destroy the business, however, are doing so largely under the guise of protecting the public health. The arguments are fallacious. Such compounds of skimmed milk and vegetable oil as are on the market, so far as we know, are frankly and honestly labeled, and are advertised for what they are. In at least some instances, the label specifically declares that they should not be used for infant feeding, but recommends them for cooking and baking, and expressly defines them as mixtures of evaporated skim milk and vegetable fat. In skim milk we have protein in one of its most valuable forms. If wholesome edible fats of vegetable origin can be added to skim milk and

thus make mixtures that are available as inexpensive food or cooking accessories, every consideration of public health and economics favors such mixtures, provided they are frankly and honestly labeled for what they are. The present legislation pending in Congress directed toward the extermination of milk compounds of this character is without justification from the public health standpoint.

THE ANTIPHLOGISTIC ACTION OF CINCHOPHEN

Since the work of Luithlen¹ in 1911 and 1913, pharmacologists have known that calcium salts prevent mustard oil chemosis in rabbits, and that indifferent colloids, such as gelatin, silicic acid and serum, and even venesection, exert a beneficial influence on croton oil inflammation of the skin in cats. Januschke² added quinin, antipyrin, morphin and salicylate, and Wiechowski and Starkenstein³ included cinchophen in the list of antiphlogistic agents. Later, Starkenstein⁴ elaborated especially on cinchophen, claiming extraordinary antiphlogistic powers for this substance in various clinical conditions. However, the great variety of drugs that have been found to act similarly indicates that there is nothing peculiar or specific about cinchophen in this respect. Its alleged greater efficiency as an antiphlogistic agent would require confirmation by more convincing evidence than has been offered thus far. This doubt has been confirmed recently in a report by German pharmacologists and chemists in connection with their studies of poisoning by war gases. Lacquer and Magnus⁵ have demonstrated that the mortality of cats suffering with pulmonary edema from the inhalation of phosgen was greater when they were treated with cinchophen and salicylate than that of the untreated controls. Heubner and Gildemeister⁶ could not confirm the antichemosis action of cinchophen in cats, as claimed for rabbits by Starkenstein and Wiechowski. On the other hand, 5 per cent. calcium chlorid injected subcutaneously half an hour after poisoning was found to alleviate the pulmonary edema from phosgen, increasing the survival of cats from 20 per cent. in the untreated to 40 per cent. in the treated series; and both calcium chlorid and strontium chlorid prevented mustard oil chemosis in these animals definitely. A weaker solution (1 per cent.) of calcium chlorid was about as effective, increasing the survival of phosgenized cats from 12 to 45 per cent. Therefore the extent to which cinchophen actually contributes to the relief of chemosis even in rabbits after the factors of antipyresis and natural recovery are taken into consideration may be doubted. The work of Magnus and his associates shows the danger of transferring results directly from one species to another, and especially from animals to human individuals with such conditions

1. Luithlen, F.: Wien. klin. Wchnschr., 1913, No. 17: 1911, No. 20.

2. Januschke, H.: Wien. klin. Wchnschr., 1913, No. 22.

3. Wiechowski and Starkenstein: München. med. Wchnschr., 1913, No. 2.

4. Starkenstein: Therap. Monatsh. 31: 49, 189, 1917; Therap. d. Gegenw., 1918, p. 289; München. med. Wchnschr., 1919, p. 205.

5. Lacquer, E., and Magnus, R.: Ztschr. f. d. ges. exper. Med. 13: 200, 1921.

6. Heubner, R., and Gildemeister, M., quoted by Lacquer and Magnus (Footnote 5).

as pulmonary edema and congestion, without due consideration of well known factors that can modify the progress of disease. The same applies to a recent statement of Meyer and Gottlieb,⁷ who seem to regard the experimental results with antiphlogistic agents, including cinchophen, to agree with the beneficial therapeutic results reported in rheumatic and catarrhal inflammation, angina, laryngitis, bronchitis, pleuritis, etc., and not merely as symptomatic, but actually as etiologic or causal remedies.

PRESUMING TO SPEAK FOR SCIENTIFIC MEDICINE

From a newspaper standpoint, the Eighteenth Amendment and the Volstead Act are still "front page" topics, and any pronouncement on the question of prohibition is "live news." These facts doubtless explain and excuse the publicity which the newspapers are giving to the "Allied Medical Associations of America," which is having a convention this week in Atlantic City. It is not necessary to tell physicians what the Allied Medical Associations of America is—or should it be *are*? This hybrid organization was dealt with at length in the Propaganda Department of THE JOURNAL, July 5, 1919. At that time the organization was reported as adopting a resolution declaring that "properly brewed lager beer is absolutely essential in the treatment of certain cases." At its present meeting the newspapers report that the Allied Medical Associations of America is calling on its members "to unite in an effort to repeal the Volstead Act." THE JOURNAL's previous article on this "association" closed with these words:

Any resolution or expression of opinion by this organization, or others of its type, when dealing with the broader problems of public health, is wholly without scientific significance, whether such resolutions are good, bad or indifferent.

While written in July, 1919, not a word needs changing to make it applicable to July, 1921. That the press and the public may be able to evaluate the Allied Medical Associations of America it should again be emphasized that that organization does not represent scientific medicine in America.

NO SHORTAGE OF PHYSICIANS IN THE UNITED STATES

At the recent meeting of the American Institute of Homeopathy in Washington, the statement was made, according to newspaper reports, that "the United States is suffering a shortage of 25,000 physicians," and that special efforts should be made "to induce young men to study medicine." As has been repeatedly stated in these columns, there is no shortage of physicians in the United States, at least so far as numbers are concerned. Based on figures of the recent census and on figures in the last American Medical Directory, the United States still has one physician to every 726 people. It is true that with the improvements in medical education in the United States during the last fifteen

years, there has been a reduction in the number of medical colleges; but there is still an adequate quota to supply easily the number of physicians annually needed. Even under the higher educational standards, the annual number of graduates is again rapidly increasing—an increase which has not required any "special effort to induce young men to study medicine." Meanwhile, the only demands for physicians are coming from rural or sparsely settled districts, to which physicians are not attracted, or where they cannot, or think they cannot, make a living. These communities will not be provided with physicians by a return to lower standards of medical education, or by swelling unduly the enrolments in medical schools. The problem will be solved if the physicians in towns and cities who are barely making a living can be induced to locate in rural districts. The number of physicians in the United States is adequate; the problem is one of distribution. But that is another story.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Annual Meeting and Barbecue.—The Coffee County Medical Society held its annual meeting, June 2, at Bass Pool. In addition to the presentation of a practical scientific program, an elaborate barbecue was served to the members and guests of the society.

CALIFORNIA

Personal.—Dr. Harold W. Wright, San Francisco, has been elected president of the California Society for Mental Hygiene. —Dr. William A. Sampson, San Francisco, was recently appointed as head of the Potrero Emergency Hospital, San Francisco. Beginning July 1, the hospital will again receive surgical cases.

Drive for Radium Fund.—A campaign was launched last month to raise \$50,000 for the purchase of radium, which will be used in two new cancer wards to be established at the San Francisco Hospital. Persons suffering from cancer at present are taken to the University of California for radium treatment.

CONNECTICUT

Yale Medical Alumni Association.—At the annual meeting of the Yale Medical Alumni Association held, June 20, Benjamin Austin Cheney, '88, '90, Med., was chosen as president; Simon B. Kleiner, '15, Med., secretary. It was reported that work on the new medical and pediatric laboratory would be started by July 1.

Honorary Degrees Conferred at Yale.—At the commencement exercises at Yale University, June 22, the honorary degree of Doctor of Science was conferred on Dr. Hideyo Noguchi, member of the Rockefeller Institute for Medical Research, scientific investigator and author; and on Madame Marie Curie, scientist and discoverer of radium.

Legislative News.—A bill entitled "An Act Concerning Defrauding General Hospitals," which gives hospitals the same protection that is given hotels, was recently passed by the legislature and has been signed by the governor. Another act, which only awaits the governor's signature, provides for the establishment of a state clinical standard thermometer to be supplied by the state and certified by the National Bureau of Standards.

DISTRICT OF COLUMBIA

Personal.—Dr. Isaac S. Stone, Washington, was given the honorary degree of Doctor of Laws by Georgetown University, at its annual commencement exercises, June 14. Dr.

7. Meyer, H. H., and Gottlieb, R.: Experimentelle Pharmakologie, Ed. 5, Urban and Schwarzenberg, 1921.

Stone is now professor emeritus of gynecology in that university.—Dr. J. A. Hill, New Hampshire, has been made assistant director of the census.—Dr. Michael E. Gardner has been appointed chief of the bureau of preventable diseases and director of the bacteriologic laboratory of the health department.

Willis Antibeer Bill.—Senator Willis of Ohio introduced a bill in the Senate to prevent the sale of beer for medical purposes. The measure is identical with the Volstead bill introduced in the House and favorably reported by the judiciary committee with the exception that it limits the amount of wine to be prescribed by a physician to one-half pint every ten days. The Willis antibeer bill was presented as a result of the refusal of the Committee on Rules of the House to make the Volstead bill a special order of business in the House of Representatives so that it could be quickly passed by that body. The plan now is to rush the Willis measure through the Senate and send it to the House so as to enact it into a law before the Secretary of the Treasury issues rules and regulations for the sale of beer on a physician's prescription, thus opening up many breweries in the country for the manufacture of medicinal beer. One of the points brought out by Senator Willis in the presentation of his legislation against beer for medicinal use is that not a single reputable physician has appeared before the House Committee of the Judiciary and testified that this beverage is a necessity in the cure of the sick. One other provision in the Willis measure affecting the dispensing of liquor by physicians prohibited the issuance of more than 100 prescriptions within ninety days to any physician for the use of spirituous or vinous liquors as medicine unless an emergency exists.

GEORGIA

University Institute Clinic.—Emory University School of Medicine, Atlanta, realizing the importance of the control of venereal diseases, has through the solicitation of Dr. Joe P. Bowdoin, U. S. Public Health Service, organized an institute-clinic for a week of intensive work confined to these diseases. Six hours each day for six days will cover the subject for this experimental course. It is offered free by the university. Already over 300 physicians have matriculated, representing all sections of the state.

Georgia School for Backward Children.—The school will soon open at Gracewood, with Dr. George H. Preston in charge. Equipment for the institution is now being purchased, and the coming legislature will be called on to pass the necessary maintenance fund. The state has purchased the Tuttle-Newton Orphanage, about 8 miles from Augusta. It is built on the cottage plan; the buildings are constructed of concrete and concrete block; a farm of about 300 acres and pasturage, with a splendid dairy, is ready. The exact opening date has not been fixed.

FLORIDA

Reorganization of Health Board.—The state board of health recently appointed by Governor Hardee met, June 7, at Jacksonville, with all members present, and completed its organization. Dr. Calvin P. Young, Plant City, was elected president. Col. Raymond C. Turck, Jacksonville, was appointed state health officer, to succeed Dr. Ralph N. Greene, resigned.

IDAHO

Hospital News.—The last legislature appropriated \$70,000 for a model hospital at the Northern Idaho Sanitarium, Orofino, and the state is advertising for bids for the construction of the building.

ILLINOIS

Outline for Birth Registration Test.—The department of health has just received for distribution 2,000 copies of a bulletin entitled "An Outline for a Birth Registration Test." Those interested in assisting the department to obtain complete birth reports may obtain the pamphlet by request.

Meeting of Alumni Association.—At the annual meeting of the Alumni Association, University of Illinois College of Medicine, held, June 10, at the Hotel Sherman, Chicago, Lewis J. Hammers, Lexington, '02, was elected president; William M. Crosier, '07, Alexis, president-elect; John C. M. Krasa, '13, Chicago, secretary-treasurer.

Additional Health Officers in State Service.—An important measure enacted by the fifty-second general assembly is the provision for approximately twenty-five state health officers to be known as district health superintendents. With the

additional personnel referred to, public health administration in Illinois will compare more favorably with that in some of the other progressive states.

Smallpox Epidemics.—Rather sharp outbreaks of smallpox have occurred in several communities during the last few months. In some instances the epidemics reached serious proportions, owing to the diagnosis of primary cases as chickenpox and the consequential failure to resort to vaccination. District health officers from the state department of health were assigned as medical referees and to investigate the smallpox situations at Gray's Lake, Dupon, Illinois City, Ottawa and Harvard. Quarantine officers were also assigned for duty at most of these places. General vaccination and rigid quarantine rules that were established brought the epidemics under immediate control.

Better Babies Conference Announced.—The state department of public health announces the dates for the sixth annual Better Babies Conference to be held in connection with the Illinois State Fair at Springfield, Aug. 19-27, 1921. Arrangements have been made for examining at least 1,000 children and ample provisions made for the comfort and safety of mothers and children. All examinations will be made by specialists in infant and child welfare. In addition to the general Better Babies Conference to be held in connection with the state fair at Springfield, a number of local conferences, to be conducted under the direction of the state department of public health, has been arranged.

KANSAS

New Head of Kansas Medical School.—Dr. Ralph H. Major has been elected head of the internal medicine department at the University of Kansas School of Medicine, Rosedale; Dr. Major was formerly assistant at the Henry Ford Hospital, Detroit.

KENTUCKY

Personal.—Dr. Arthur T. McCormack, Louisville, secretary of the state board of health, was elected president of the Medical Veterans of the World War at their national convention held recently in Boston.

MAINE

Incorporation of Public Health Association.—The Maine Public Health Association filed its certificate of incorporation, June 10. The president is Dr. Elmer D. Merrill, Foxcraft.

MARYLAND

Appointment of Professor of Medicine in Johns Hopkins.—Dr. G. Canby Robinson, Baltimore, has accepted the post of professor of medicine at the Johns Hopkins Medical School and physician-in-chief of the Johns Hopkins Hospital, to succeed Dr. William S. Thayer. The appointment becomes effective July 1. Dr. Robinson is now professor of medicine and dean of the medical faculty of Vanderbilt University, Nashville, Tenn., and has been borrowed from that institution for one year, with a distinct understanding that he is to return at the end of the year. Dr. Robinson is a graduate of the Johns Hopkins Medical School, class of 1903.

Changes in the Johns Hopkins University Faculty.—At the commencement of the Johns Hopkins University, June 21, announcement was made of fifty-seven changes in the faculty. In the Medical School and School of Hygiene and Public Health, twenty-one new instructors and assistants were added to the medical staff, and eight new faculty members for the School of Hygiene.—Dr. Wade H. Frost, former surgeon in the United States Public Health Service, was appointed professor of epidemiology and head of the department of epidemiology and public health administration in the School of Hygiene and Public Health.—Dr. Allen W. Freeman, Columbus, Ohio, was made resident lecturer in public health administration.—Announcement was also made of the gift of \$3,000 by Rev. Dr. George Scholl and Mrs. Scholl as a memorial to their son, the late Dr. George Barr Scholl. The income of the fund is to be devoted to medical research.

Personal.—Dr. Allen W. Freeman, state health officer of Ohio, will succeed Sir Arthur Newsholme as resident lecturer in the School of Hygiene and Public Health of the Johns Hopkins University. Dr. Freeman is expected to assume his new duties July 1.—Dr. Calvin Goddard (Johns Hopkins Medical School, class of 1915) has been appointed second assistant director to the Johns Hopkins Hospital to succeed Dr. A. J. Lomas, who recently resigned. Dr. Goddard is a resident of Birmingham, Ala.—Dr. William H. Welsh, director of the School of Hygiene and Public Health,

Johns Hopkins University, and Dr. Florence R. Sabin, professor of histology in the Johns Hopkins Medical School, will attend the dedication of the new buildings of the Peking Union Medical College, at Peking, China, in September.—Dr. Hugh Hampton Young, director of the James Buchanan Brady Institute, Johns Hopkins Hospital, sailed, June 25, for Europe. He will first go to Paris to attend a medical convention.—Dr. Jacob Hall Pleasants, for several years chairman of the Board of Supervisors of City Charities for Baltimore City, and two other members of the board, have resigned in a body, expressing the conviction that their usefulness as members of the board is at an end.—Dr. Harry M. Stein has resigned as superintendent of the University Hospital and will leave, July 1, to enter private practice. Dr. T. M. Jones, a graduate of the University of Maryland Medical School, 1911, will succeed him as superintendent.—Dr. John J. Erwin, formerly of Fairmont, W. Va., has been appointed superintendent of Mercy Hospital and will take charge of the hospital, July 1. Dr. Erwin has been a member of the staff at Mercy Hospital for the past year.—Dr. J. H. Shrader of Washington, D. C., has been appointed director of the Bureau of Food and Chemistry, Baltimore City Health Department, his appointment to become effective July 1.

MICHIGAN

Physician Kills Man During Professional Call.—It is reported that Dr. Frank S. Collier, Vickburg, was arrested, June 20, on a charge of killing Robert B. Thompson, Kalamazoo. Dr. Collier was called to treat a member of the family who had fainted during a violent family quarrel, and becoming involved in the fight, was struck by Thompson, and it is alleged that Dr. Collier drew a revolver and shot him.

MINNESOTA

Hospital News.—A sanatorium will be erected in Hennepin County as a memorial to Mrs. Lenora Hall Christian, at a cost of \$160,000, for the treatment of tuberculous children. Heliotherapy will be a feature in the care of the children.

Organization of Former Members of Field Hospital No. 135.—A permanent organization of the club originally organized at Recey-Sur-Ource, France, June 25, 1917, was effected in St. Paul, June 14. Its members, who fought through two years of the war together, are nearly all of St. Paul.

Personal.—The degree of Doctor of Laws was conferred on Dr. Charles H. Mayo, Rochester, at the commencement exercises of Northwestern University, June 15.—At the commencement exercises of the University of Minnesota, the degree of Master of Science in Surgery was conferred on the following Fellows in the Mayo Foundation: Leo P. Bell, James M. Hayes, Ernest M. Johnstone, George D. Mahon, A. H. Osterberg, Frederick R. Sanderson and G. E. Dutton.

Antirabic Treatment Discontinued.—The last legislature abolished antirabic treatment because only one outbreak of rabies in animals has occurred within the state in the last eighteen months. The preparation of antirabic vaccine has been so developed that the material is at present being prepared and sold at a reasonable price. The state board of health will continue to advise regarding treatment and will make laboratory diagnosis in suspected cases of rabies in animals when human beings have been exposed to infection.

Transfer of Health Board Work to State Hospital.—On recommendation of the state board of health, the last legislature transferred the poliomyelitis after-care work to the State Hospital for Indigent Crippled and Deformed Children. Physicians are asked to report all suspected cases of acute poliomyelitis and epidemic meningitis directly to the Division of Preventive Diseases, University Campus, Minneapolis. Suspected cases of epidemic encephalitis are also to be reported. An epidemiologist will be sent to assist in diagnosis and control of disease. Antimeningitis serum will be sent immediately on notification of meningitis cases.

MISSOURI

Medical College Law Suspended.—The referendum on the medical college law passed at the last session of the legislature was completed, June 19, and the operation of the law will be suspended until November, 1922, when it will be submitted to a vote of the people. The law removes from the statute the word "reputable" as applied to medical colleges, the referendum being invoked to retain this word in the law. In the campaign for signatures an aviator was employed to carry petitions to the capital and a fast automobile run was made over a distance of 100 miles in order to get some signa-

tures to the secretary of state before the expiration of the time limit.

Mock Funeral of Medical Standards.—Fourteen East St. Louis (Illinois) physicians attended a meeting of the St. Louis Medical Society, May 31, and in a serio-comic vein performed the funeral rites over the imaginary casket which was supposed to contain the remains of the high standard of medical education in Missouri. The occasion furnished an opportunity for stimulating interest in the referendum and reviewing the progress of scientific medicine in Missouri during the last quarter of a century. Dr. Joseph Grindor and Dr. Albert H. Hamel, St. Louis, spoke on this subject. Dr. Jonathan L. Wiggins and Dr. Henry A. Cables of East St. Louis made interesting talks on the fight in Illinois for high medical standards.

NEBRASKA

Postgraduate Course at Omaha.—The University of Nebraska College of Medicine in conducting a postgraduate course for physicians in the University Hospital, Omaha, from June 20 to July 1, inclusive. Emphasis is placed on physical diagnosis, including neurologic examinations; diseases of the stomach and intestines, and fractures.

NEW JERSEY

State Medical Meeting.—The one hundred and fifty-fifth annual convention of the Medical Association of New Jersey was held, June 14-16, at Atlantic City, under the presidency of Dr. Philander A. Harris, Patterson. The following officers were elected for the ensuing year: president, Dr. Henry B. Costill, Trenton; vice presidents, Drs. James Hunter, Westville; Wells P. Eagleton, Newark, and Alexander McAllister Camden; corresponding secretary, Dr. Harry A. Stout, Wenonah; recording secretary, Dr. William J. Chandler, South Orange; treasurer, Dr. Archibald Mercer, Newark. Dr. David C. English, New Brunswick, was unanimously reelected editor of the state society's journal. The society decided to fight any effort to lower the standard demanded of practitioners of every sort through legislation which would weaken existing laws.

NEW MEXICO

State Board of Medical Examiners.—At the regular meeting of the board, April 11-12, the following officers were elected to serve two years: president, Dr. William T. Joyner, Roswell; vice president, Dr. William H. Lovelace, Albuquerque; secretary-treasurer, Dr. Robert E. McBride, Las Cruces. The other members of the board are: Dr. James A. Massie, Santa Fe; Dr. Harry A. Miller, Clovis; Dr. Creighton H. Ferguson, Tucumcari, and Dr. Carey B. Elliott, Raton. The board adopted a resolution amending the rule that medical colleges in Class C, as classified by the American Medical Association, will not be recognized by the state board of medical examiners.

NEW YORK

Personal.—Dr. Herman G. Weiskotten, county necrotomist and professor of pathology at the College of Medicine, Syracuse University, was elected president of the alumni association of the college, at the annual meeting, held June 4. It was decided at the meeting to start a campaign in the fall to raise a \$1,000,000 endowment fund for the support of the college.

New York City

Personal.—Dr. William R. Williams and Dr. Henry C. Thacher sailed for Europe, June 18.

Awards of Prizes for Essays.—The New York Diagnostic Society announces the following prize essay awards for the 1920 contest: first prize, \$300 in gold to Dr. F. Thompson Leys, second prize, \$150 in gold to Dr. Clinton Lake Potter and third prize, \$50 in gold, to Dr. Homer E. Smith. The subject was "Group Diagnosis," and sixty-one essays were submitted.

For Speech Defects.—The New York Free Clinic for Speech Defects has had its charter amended, changing its name to the National Hospital for Speech Disorders. The hospital is located at 143 East Thirty-Seventh Street, and has just initiated a campaign to raise a building and endowment fund of \$1,000,000. It is planned to make the institution a training center in this field as well as a thoroughly equipped hospital for the treatment of all speech disorders. The hospital is a combination of school, clinic, hospital and social center. It receives patients from all parts of the country.

NORTH DAKOTA

State Medical Meeting.—The annual meeting of the North Dakota Medical Association was held, May 26-27, at Fargo. The following officers were elected for the ensuing year: president, Dr. Harley E. French, University; president-elect, Dr. Eric P. Quain, Bismark; vice presidents, Drs. William C. Fawcett, Starkweather, and John H. Rindlaub, Fargo; secretary, Dr. Hezekiah J. Rowe, Lisbon; treasurer, Dr. James P. Aylen, Fargo; recommendations to the governor for appointment on the board of health and state medical examiners: Drs. Henry G. Woutat, George M. Williamson, Grand Forks, and Dr. Victor J. LaRose, Bismark. Minot was chosen as the place of meeting in 1922.

OHIO

Physician Sentenced for Violation of the Law.—Dr. Moritz Loewenthal, Cleveland, has been sentenced to pay a fine of \$2,000 and serve four years in the Atlanta penitentiary for violation of the Harrison Narcotic Law by providing morphin for addicts.

Personal.—Dr. John A. Kappelman has resigned as health commissioner of Canton, Ohio. Since September, 1919, the personnel of the state health department has been increased from six to sixteen, and the health appropriation increased from \$15,000 to \$50,000 per year, while the death rate decreased from 11.6, in 1919, to 10.2 in 1920.

Gift for Medical College.—Dr. Charles P. Thwing presented his resignation as president of Western Reserve University, June 14, after a period of thirty-one years' service, to devote his time to authorship. At the same time it was announced that Samuel Mather had presented the university with a check for \$500,000 to be used for the construction of a building for the medical college. It is estimated that the medical college and its endowment will cost \$5,500,000.

OREGON

Hospital News.—The corner stone of the new Wilcox Memorial Hospital, Portland, was recently laid, and it is expected that the building will be ready for occupation about the first of the year 1922. It is to be a maternity unit of the Good Samaritan Hospital, and was made possible by the donation of \$125,000 by Mrs. Thomas Wilcox, in memory of her husband.

New County Medical Society.—At the reception smoker given, May 10, in honor of Dr. Alpha E. Rockey, Portland, there was formed the Jackson County Medical Association. At the last meeting, May 18, a permanent organization was effected, with the following officers: president, Dr. Elijah B. Pickel, Medford; vice president, Dr. Francis G. Swedenburg, Ashland; secretary-treasurer, Dr. P. Holt, Medford.

PENNSYLVANIA

Philadelphia

Statue of Dr. Leidy Unveiled.—June 18, graduates of the University of Pennsylvania paid a lasting tribute to the late Dr. Joseph Leidy, who at one time was professor of anatomy at the institution, when they unveiled a bronze statue in his memory at the university's medical laboratory building. A group of his former pupils was responsible for the idea of honoring the celebrated physician, and when they announced their plan, they were joined by hundreds of other graduates, who, though they failed to come in contact with Dr. Leidy during their time at the university, nevertheless learned to revere him. The statue stands at the foot of the stairway in the medical laboratories building, and it is a striking character study of the honored teacher.

Resignations at University of Pennsylvania.—Dr. Alonzo E. Taylor and Dr. George M. Piersol, professors in the Medical School of the University of Pennsylvania, have resigned and their resignations have been accepted at the monthly meeting of the board of trustees. Dr. Taylor will go to the University of California, where he is to conduct special research work on the subject of nutrition. Throughout the war Dr. Taylor and Herbert Hoover collected interesting material on this subject while investigating European food conditions. That material will furnish the basis for a series of experiments to be made by Dr. Taylor. Dr. Piersol has been professor of anatomy at the university for thirty years, and has now reached the retirement age and desires to devote himself to research in his specialty.

Personal.—Dr. Edward F. Corson has been elected associate in dermatology, Jefferson Medical College, and chief of clinic, dermatologic dispensary, Jefferson Medical College Hospital.—Dr. A. Strauss has been elected demonstrator in

dermatology, clinical assistant to the dermatologic dispensary and chief of the syphilis clinic.—Dr. Henry G. Munson has been elected instructor in dermatology and assistant dermatologist to the Presbyterian Hospital.—Dr. D. Mitchell Sidlick, Camden, N. J., has been elected instructor in dermatology and assistant clinical dermatologist to the Children's Hospital, Philadelphia.—Dr. Maurice Brown has been elected instructor in dermatology, and Dr. Maurice L. Mallas has been elected assistant demonstrator of dermatology.—Dr. H. Brooker Mills sailed, June 25, for Europe, as a delegate from the American Child Hygiene Association, to attend the meetings of the International Conference on Child Welfare to be held in London the first week of July. Dr. Mills will also attend the section on diseases of children of the British Medical Association, the third week in July in Newcastle-on-Tyne, as a delegate from the American Medical Association.

SOUTH DAKOTA

State Medical Meeting.—The South Dakota State Medical Association held its convention, May 24, at Aberdeen. The following officers were elected: president, Dr. George I. Adams, Yanktown; vice presidents, Drs. Gilbert G. Cottam, Sioux Falls, Francis E. Clough, Lead, and Robert L. Murdy, Aberdeen; secretary-treasurer, Dr. Frederick A. Spafford, Flandreaux. The constitution recommended by the American Medical Society, with a few changes to meet local conditions, was adopted.

TENNESSEE

Tuberculous Children to Be Excluded from Public Schools.—The last legislature passed a law excluding children having tuberculosis from attending the public schools of the state, and providing that under certain conditions the city or county board of education shall make provision for their education.

Legislation with Regard to Venereal Diseases.—The last legislature made compulsory the reporting of every case of venereal disease and also the reporting of the transfer of treatment of each case, both by the physician who had the case and the one who receives it. The law enables physicians to have patients cited before the city court for penalty if they fail to comply with the law that makes reporting for treatments compulsory. The law is now in operation. A clinic has been provided at the Knoxville Public Health Center for a diagnosis and treatment, absolutely free of charge, of those who are unable to pay.

TEXAS

Medical Scholarships.—A gift of \$25,000 to be used for the creation of two scholarships—one for the Texas Woman's College and one for the Medical College of the University of Texas, at Galveston—was subscribed by Mr. and Mrs. Williams, Galveston, in honor of their son Wingo, who completed his course in Texas University and at the Medical College at Galveston. The fund will be known as the Wingo Williams Memorial Scholarship Fund.

CANADA

Personal.—Dr. Harley Smith, Toronto, has returned from a visit to the Mediterranean and France.—Dr. Victor Moorhouse, Toronto, is removing to Winnipeg.—Dr. Charles A. Hodgetts, Ottawa, has been appointed director-general of the Canadian branch of the St. John Ambulance Association, and will have charge of the activities of the association from coast to coast.

Coroners in Toronto.—With the recent death of Dr. Arthur Jukes Johnson of Toronto, the office of chief coroner for Toronto is to be abolished, and the holding of inquests hereafter will devolve on magistrates. Under the present system, the office of coroner in Ontario has always been considered a plum of patronage for the political party in power and coroners have therefore been appointed by the government. Under the new arrangement, when adopted, some sixty coroners who are always members of the medical profession will be affected in Toronto alone, and likely four will be retained to do the work heretofore divided among the sixty. Four pathologists will be appointed to do the postmortem work.

GENERAL

Personal.—Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research in New York, on June 15 received the honorary degree of Doctor of Science from Brown University.—Dr. Oswald T. Avery of the Rockefeller Institute received the honorary degree of Doctor of Science from Colgate University.

Meeting of the Medical Library Association.—The twenty-fourth annual meeting of the American Medical Library Association, the members of which include all the larger medical libraries of the country, was held in Boston, June 6-8. In addition to the address of the president and other papers, the program contained the report of a committee on standard classification, and the system used in the Boston Medical Library, and this, as explained by the chairman, was adopted as being the most practical solution for meeting the perplexing problems of classification. Visits were made to the various libraries in Boston. Of particular interest was an exhibit of rare medical items from the library of Dr. Edward C. Streeter of Boston, spread in the exhibition room of the Boston Public Library. The exhibit was specifically epidemiologic, the essential literature on fevers from Hippocrates to Lancisi, with a few sections such as plague, syphilis and venesection superadded. The permanent headquarters of the Medical Library Association are in the Medical and Chirurgical Faculty Building, 1211 Cathedral Street, Baltimore.

Dedication of Peking Medical College.—Plans have been announced for the dedication of the new building of the Peking Union Medical College, erected by the China Medical Board of the Rockefeller Foundation. The ceremonies will fill the week, September 15-22, and will include an international medical conference to which scientists from America and European countries, as well as from the Far East, have been invited. At the same time will occur the inauguration of the director of the college, Dr. Henry S. Houghton, and regular sessions of the institution's board of trustees, which is composed of representatives of the Rockefeller Foundation and of six missionary societies, which have maintained an earlier medical college in Peking. The Peking Union Medical College had its beginning in the Union Medical College, founded in 1906 by the joint efforts of six British and American missionary societies. The property of the earlier school was transferred, 1916, to the China Medical Board of the Rockefeller Foundation which has purchased additional land, and erected, in an interesting adaptation of classic Chinese architecture, a series of hospital and laboratory buildings. The institution comprises not only the medical school, but also a 250-bed hospital with outpatient clinics, a nurses' training school, and a premedical school—an institution of junior college grade with a distinct faculty and group of laboratory and classroom buildings.

LATIN AMERICA

Gift of Collection of Mosquitoes.—The Brazilian Museum Nacional recently presented the medical faculty of the University of Buenos Aires with a collection of Brazilian mosquitoes.

Election of Officers.—The Brazilian Sociedade de Neurologia, Psiquiatria e Medicina Legal recently elected Dr. Rodrigues Caldas, vice president; Dr. U. Vianna, secretary-general, and Drs. H. Carrilho, Adauto Botelho and O. Gallotti, secretaries, and Dr. W. de Almeida, treasurer. Prof. Juliano Moreira is the perpetual president of the society.

Founding of Brazil Gynecologic Society.—The *Folha Medica* announces the organization of the Sociedade de Obstetricia e Gynecologia do Brazil, with Rio de Janeiro as its headquarters and the *Revista de Gynecologia*, now in its fifteenth year, as its official organ. The officers elected are Prof. F. Magalhães, president; Dr. F. Vaz and Dr. Oliveira Motta, vice presidents; Dr. Clovis Corrêa da Costa, secretary-general, and Drs. Lafayette Vieira and Arnaldo de Moraes, secretaries, with Dr. Alvaro Gusmão, treasurer, and Dr. Didimo Napoleão, director of the museum.

Personal.—Dr. J. A. Presno y Bastiony, director of the *Revista de Medicina y Cirugia* of Havana, has been commissioned by the government of Cuba to visit the medical centers of Europe to study recent progress in methods of teaching anatomy and operative medicine.—Dr. Rocha Vaz is acting as professor of clinical medicine at the University of Rio in place of Dr. Azevedo Sodré who has been elected member of the house of deputies from the Rio district. The latter is editor of the *Brazil-Medico*. Dr. Oscar Clark is serving in the same way in the place of Prof. Aloysio de Castro who is at present on a mission to Uruguay.—Dr. H. de Souza Araujo has been appointed in charge of the public health work in the Para district of northern Brazil as part of the new organization of Prophylaxia Rural of which Dr. Chagas, now visiting in this country, is the chief.

Tribute to Morquio.—The twenty-fifth anniversary of the incumbency by Dr. Luis Morquio of the chair of pediatrics at the University of Montevideo was celebrated with much cere-

mony recently by his pupils and other friends, including a delegation of five pediatricists from Argentina. Morquio's name is well known to the readers of THE JOURNAL from the summaries of his numerous contributions on diseases of children in Latin-American and French journals, and as co-editor of the *Revista Médica del Uruguay*, and director of the *Archivos Latino-Americanos de Pediatría*. In the morning a plate bearing his name was placed on the infectious diseases pavilion of the Children's Hospital, and a souvenir bound volume of his works was presented. The deans of the medical faculties of Rio de Janeiro and of Buenos Aires delivered addresses at the afternoon tribute gathering, the ceremonies concluding with a banquet in the evening.

FOREIGN

Italian Hospital at Alexandria.—The sum of 20,000 liras (Egyptian) having been subscribed, work has already been begun on the Italian hospital planned for Alexandria. There is already an Italian hospital at Cairo.

Publication of Theses in Prussian Universities.—The *Deutsche medizinische Wochenschrift* states that the universities of Prussia have decided to publish at the close of each college year a volume containing summaries of the theses presented during the year, instead of publication of the theses individually.

Vaccination Against Typhoid.—The Academy of Medicine at Paris has officially voted in favor of vaccination of the general population against typhoid, especially in endemic foci, and in epidemics. In the latter case it was specified that children and the aged should be included in the vaccination. The resolution also specified that in reporting cases of typhoid it should always be specified whether the subject had been vaccinated before, and the number of times and the modes.

Expositions on Child Welfare in France.—The American Red Cross has just terminated successful expositions on child and infant welfare held at Lille, Roubaix and Tourcoing in the Department of the Nord. These three cities form practically one group, being connected by short trolley runs, and are important industrially, but are still seriously crippled by the damage done during the period of German occupation. The entire Department of the Nord is notable for its large families, and serious attention is being given to maternal and infant hygiene and the physical development of the child. The medical director, Dr. T. C. Merrill, and the assistant physician, Dr. Hazel Bonness, were elected honorary members of the three syndicats médicaux of Roubaix, Lille and Tourcoing.

The Carnegie Hero Medals in France.—The *Vie Médicale* relates that the French branch of the Carnegie Foundation for awarding medals in token of appreciation of heroism heads the list with the names of three French roentgenologists: Dr. Leray, who succumbed last March to the effects of his excessive roentgen-ray work for the wounded during the war; C. Infroit, who suffered one amputation after the other for injuries dating from his pioneer work as roentgenologist at the Salpêtrière. He had undergone twenty-four operations, and for the last year or two before his death in 1920 had worked with artificial arms. These two martyrs were given a gold medal. The third recipient, M. Vaillant, is still in charge of the roentgen-ray laboratory at the Salpêtrière. He has had ten operations performed in the last ten years, including amputation of several fingers, a hand, and the left arm. He has been given the sum of 50,000 francs in addition to the gold medal awarded the three.

Deaths in Other Countries

Dr. Charles Porak, until his retirement a leading obstetrician of Paris, chairman of the permanent committee of the Académie de Médecine on welfare work for infants and young children, aged 76.—**Dr. C. A. Wiebel**, one of the organizers and officials of the Leipzig League, and member of the reichstag, aged 55.—**Dr. Guarany Goulart**, second vice president of the Sociedade de Medicina e Cirurgia of Rio de Janeiro.

CORRECTION

Circulation of Public Health Service Publication.—In THE JOURNAL, June 18, it was erroneously stated that all publications of the U. S. Public Health Service would be reduced to 1,000 copies. A correct statement of the fact is that all publications of the U. S. Public Health Service, excepting the Public Health Reports and reprints of same and bulletins of the Hygienic Laboratory, will hereafter be limited to editions of 1,000 each.

Government Services

Secretary Denby Rules on Authority of Medical Officers

Secretary of the Navy Edwin Denby has disapproved the findings of a court martial convicting a lieutenant-commander of the line of disobedience to a medical officer. The secretary sustained the contention of line officers of the navy that a medical officer commanding a hospital ship cannot give orders to a line officer charged with navigation of the ship. The question arose in the case of Lieut.-Com. Athol H. George, United States Naval Reserve Force, serving on board the hospital ship *Mercy*. That officer was convicted by court martial of the charge of "disobeying the lawful order of his superior officer," Com. William M. Garton, Naval Medical Corps, commanding the *Mercy*, and sentenced to be dismissed from the service. Secretary Denby disapproved the findings and announced that an officer of the Naval Medical Corps did not have the authority under the law to issue an order to an officer of the line of lower rank nor could he exercise military command over him. This is a reversal of the position heretofore taken.

Recommendations of Hospitalization Board

The Hospitalization Board, appointed by Secretary Mellon of the Treasury Department, made its first report to the secretary for the expenditure of a portion of the \$18,600,000 appropriated by Congress. The Secretary of the Treasury promptly approved the recommendations. They provide for the expenditure of \$3,010,000 on seven hospital projects as follows:

At U. S. Public Health Service Hospital No. 55, Fort Bayard, N. M., expenditure of \$850,000 for construction of a permanent hospital unit of 250 beds and improvement of existing facilities.

At U. S. Public Health Service Hospital No. 42, Perryville, Md., expenditure of \$500,000 for erection of buildings to accommodate 300 neuropsychiatric patients and improvement of existing facilities.

At Fort Logan H. Roots, Little Rock, Ark., expenditure of \$250,000 for remodeling the post hospital to provide for treatment of approximately 300 neuropsychiatric patients.

At Lake City, Fla., expenditure of \$300,000 for the construction of buildings and for improvements intended to be an addition of a tuberculosis unit of 100 beds.

At Fort Walla Walla, Wash., expenditure of \$450,000 for the construction of a general hospital of 150 beds.

At Whipple Barracks, Prescott, Ariz., expenditure of \$600,000 for enlargement of the present hospital of 400 beds caring for tuberculosis patients.

At Alexandria, La., expenditure of \$60,000 to re-erect buildings recently destroyed by fire.

Army Appropriation and Medical Corps

The Army appropriation bill recently passed by Congress will have a material effect on the medical corps of the Army. The measure provides for the reduction of the Army from 220,000 to 150,000 by the first of October, 1921. As the strength of the medical corps is based entirely on the actual strength of the Army, it was necessary for the Surgeon-General to bring about a reduction in the size of the medical department, bringing the total enlisted personnel down to 4,000 less than its present number. As it is impossible arbitrarily to discharge officers from the service the reduction in the commissioned personnel will have to be accomplished by absorption and by refusal to take new officers into the medical corps of the Army. At the present time there are forty-seven officers of the Reserve Medical Corps on active duty and the probabilities are that these officers will be relieved unless they can be utilized in the care of disabled and wounded veterans of the World War. The Army appropriation act provides in only one instance for the use of reserve officers in the medical department of the Army and that is in the case where hospitals of the Army are used for the treatment of former war veterans. In an emergency of this sort the Surgeon-General is authorized to call reserve officers into active service to supply the necessary number of medical officers to render medical attention to the patients. The discharge of the forty-seven reserve officers now on duty with the department will depend, of course, on whether the Surgeon-General decides to utilize them in these hospitals, treating disabled ex-service men, or whether he shall call in new reserve officers to active duty.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 27, 1921.

The Protection of Roentgenologic Workers

The committee for the protection of roentgenologists, which was announced in a previous letter (*THE JOURNAL*, April 23, 1921, p. 1181), has been formed. The chairman is Sir Humphry Rolleston. The members are Sir Archibald Reid, radiologist to St. Thomas' Hospital; Dr. Robert Knox, radiologist to King's College Hospital and the Cancer Hospital (representing the British Association for the Advancement of Radiology and Physiotherapy); Dr. S. Gilbert Scott, radiologist to the London Hospital; Dr. Stanley Melville, radiologist to St. George's and to the Brompton Chest hospitals (representing the Electrotherapeutic Section of the Royal Society of Medicine); Dr. Harrison Orton, radiologist to St. Mary's Hospital; Mr. Cuthbert Andrewes (representing the Röntgen Society); Prof. S. Russ, physicist to the Middlesex Hospital (representing the Institute of Physics); Dr. G. W. C. Kaye (representing the National Physical Laboratory), and Dr. J. C. Mottram, pathologist to the Radium Institute. The committee held a preliminary meeting and appointed a subcommittee to draw up a statement, to be issued as a leaflet, on the means for the protection of the workers, giving advice as to the position of roentgen-ray rooms, their ventilation and cubic space, and on the need for making and observing rules governing the hours of work, outdoor exercise and holidays of workers. The committee intends to collect data on the effect of irradiation with particular reference to protection; to carry out special research; to act in a consultative and, possibly, advisory capacity, and to publish reports from time to time.

The Washington Convention Concerning the Employment of Women Before and After Childbirth

The Ministry of Health has issued a memorandum by Sir Alfred W. Watson, the government actuary, on this subject. The convention provides that no woman (whether married or single) shall be permitted to work in any industrial or commercial undertaking during the six weeks following her confinement, and that if she is employed she shall have the right to leave her work on production of a medical certificate stating that her confinement will probably take place within six weeks. While absent from work she is to be paid benefits sufficient for the healthy maintenance of herself and her child, and is, in addition, to receive free attendance of a physician or certified midwife. Sir Alfred Watson says that, assuming it to be possible to apply a reasonable test of qualification, the number of births among industrially employed women would probably be about 120,000. However, it would appear open to question whether in practice the benefits could be limited to employed women, and it seems not unreasonable to assume that, following the adoption of the convention, there would spring up an immediate and an insistent demand for the extension of the benefits to mothers of every social class, irrespective of any question of employment. Such a demand would be difficult to resist. With a benefit fixed at no more than \$5 a week, the cost for each woman would be \$70, including \$10 for medical attendance. Whether a particular married woman would or would not return to work after her confinement it was impossible to determine, and indeed, in many cases, unreasonable to ask. Nevertheless, some test would have to be applied if the right to benefit depended on the settlement of the point. The choice of a test which was equitable, and at the same time easy to work, had, in similar circumstances in the past, proved an insuper-

able difficulty. If effective means of protection could be devised, the cost of the scheme would be about \$8,500,000 a year, subject to two important conditions: (1) That the benefit did not draw into the labor market a large number of married women who, otherwise, would never have sought industrial employment. If this should happen, the cost above suggested might easily be doubled. Other untoward consequences would also follow. Competition for work would increase unemployment, promote casualization, and in the long run lower wages. (2) That provision of the new benefit was not followed by an increase of illegitimacy. The provision of an unconditional subsidy to maternity of employed women, represented by a benefit of several dollars, might have reactions in this connection. If the benefits were universal at \$70 for each birth, the cost would be more than \$75,000,000 a year. The convention lays down that the benefits are to be provided either out of public funds or by a system of insurance. If the whole of the cost could be recovered from married women of child-bearing ages, it would be necessary to increase their contributions from 18 cents to about 48 cents; apart from the magnitude of the sum, it would be administratively impossible for the insurance contributions of married women (and even then only certain of them) to be different from those of other insured women. If the new benefit was made universal, the cost of it could be provided, as regards insured persons, by a general increase of the contributions of both men and women by something like 8 cents a week. Such increase would probably meet with the strong opposition of the insured, and of the employers also if it was proposed to divide the burden.

Decrease in the Number of Medical Students

At the General Council of Medical Education and Registration, the president, Sir Donald MacAlister, announced that the registration of medical students, which in 1919 rose to 3,420, in 1920 fell to the more manageable number of 2,531, and this number is still higher than in any year prior to 1919. It would be in the interest of sound professional education were the numbers still further reduced. They impose a severer strain, educational and financial, on the schools and hospitals than the necessary recruitment of the profession demands, and in present circumstances the teaching institutions are less able to meet the strain. To raise the educational standard for admission, and to increase the fees for professional tuition, would thus seem, from all points of view, to be prudent and justifiable. In respect of dentistry, a profession which still needs a large accession of fully trained recruits, the registrations in the Dentists' Register number 217, as compared with 128 in the year before. They still fall short of the annual number before the war. New dental students, however, number 560. This, though somewhat less than in 1919, is (except for that year) the highest entry yet recorded.

Census of India

The Indian census, conducted, March 18, shows that during the decade 1911-1921 the population of the country (British India and native states) has increased only from 315.15 millions to 319 millions, or at the rate of only 1.27 per cent. for the whole decade. At the census in 1872 the population was returned at 206 millions; in 1881 at 253 millions; in 1891 at 287 millions; in 1901 at 294 millions, and in 1911 at 315 millions. Down to 1901, the extent of territory under enumeration was always on the increase, and the census statistics consequently ascribed a somewhat spurious vitality to the Indian population. Even between 1901 and 1911, however, when the census area was approaching fixity, the increase was 7.1 per cent., and it was generally believed that the census just concluded would exhibit a population of not less than 340 millions. The shock afforded to statisti-

cians by an increase in the Indian population of only 1.27 per cent. over an entire decade is best realized by a comparison with France at the period of the greatest stagnation of its population. Even between 1901 and 1911 the population of France increased from 38,962,000 to 39,601,000, or at the rate of 1.64 per cent. for the decennial period. India, the country in which the marriage of every girl on the attainment of maturity is a religious obligation and in which the average marriage is enormously prolific, has beaten the worst record of the country in which lateness and infertility of marriages is the subject of national lament. What are the possible explanations? The influenza epidemic of 1918 accounts for much. The number of deaths from influenza occurring in British India within the few months of the epidemic reached the appalling number of 4,899,725, and it was estimated that, including the native states, the mortality for the whole country exceeded six millions. In a few months influenza claimed half as many victims in India as had been claimed by the bubonic plague during the whole twenty-two years since it first appeared in epidemic form. To the results of the influenza epidemic must be added the mortality resulting from the plague and other epidemics, especially severe in Bombay. The actual war mortality among Indian troops amounted only to 80,000, but doubtless the long absence from the country of what became ultimately a total of over a million men, as well as the effects of war on the fertility of the large number of wounded, counted for something in the slackened increase of the population. A permanent cause of wastage is the high infantile mortality, which, even in some wards of the Calcutta municipality, exceeds one out of every four babies whose births were recorded during the war.

Defective Instruction in Midwifery at the Indian Universities

For many years the medical diplomas of the Indian universities have been recognized as conferring a registrable qualification to practice medicine, surgery and midwifery in this country. Recent inquiries have, however, caused the Council of Medical Education and Registration to raise the question of their present sufficiency in respect of midwifery. It has been found that in most, if not all, of the Indian universities the prescribed courses of study and examinations in this branch do not now furnish a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of midwifery in the United Kingdom. The council has communicated its opinion to the Indian universities, and intimated that unless within a year the standard of their requirements in midwifery is raised to a satisfactory level, recognition must be discontinued.

PARIS

(From Our Regular Correspondent)

May 27, 1921.

Action of Anesthetics on the Liver

Clinicians have for a long time called attention to the frequency of changes in the liver caused by certain drugs used in general anesthesia, notably chloroform. Dr. Brulé, in studying disturbances of the biliary function in persons anesthetized by ether and chloroform, has noticed that the disturbances which are ordinarily found associated with chloroform narcosis, whatever may be its duration, do not occur with ether except during prolonged anesthesia. Dr. Widál, professor of clinical medicine at the medical school of the University of Paris, has undertaken, together with P. Abrami and J. Hutinel, the study of hepatic changes due to anesthetics, by investigating the causes not only of biliary insufficiency but also of derangement of the proteopexic function of the liver. Simply the observation of changes in the number of leukocytes occurring after the subject has drunk a glass of

milk makes it possible to trace the slightest functional changes of the liver (THE JOURNAL, Jan. 22, 1921, p. 275). The researches which they have presented to the Academy of Sciences bear partly on the three most important drugs employed in anesthesia: chloroform, ether and nitrous oxid, and partly on a local anesthetic, procain.

All drugs employed in general anesthesia produce lesions of hepatic cells. The most sensitive and the most trustworthy evidence of this cellular change is a derangement of the proteopexic function of the liver. It appears frequently before any other signs of hepatic insufficiency, and in certain cases it may develop independently without retention of biliary salts, and without urobilinuria. Hepatic insufficiency is constant with the use of chloroform, even when this anesthetic is used in small dosage. With ether and nitrous oxid hepatic insufficiency is absent in anesthesia of short duration, but appears whenever the narcosis is prolonged. On the contrary, the hepatic cell remains unharmed during anesthesia with procain. Ordinary doses of from 0.10 to 0.12 gm. of procain injected intraspinally, or even a dose of 2 gm. injected subcutaneously, did not produce a disturbance of proteopexic function nor biliary retention.

These results are important in general practice. In persons with normal hepatic functioning before the operation, proteopexic insufficiency caused by general anesthesia does not seem to constitute a contraindication to the narcosis in ordinary operations. This is a temporary disturbance which disappeared in a few days in all operated patients followed up. It is interesting to note, however, that in persons suffering from hepatic defects and in whom there is danger of serious accidents arising after general anesthesia, owing to hepatic insufficiency, the use of a local anesthetic such as procain, even when injected in large doses, does not produce any functional changes of the liver.

Compulsory Notification of the Still-Born

The Commission départementale de la natalité, of the Department of Isère, with the view of aiding in the suppression of abortion, has requested that notification of abortions to the state authorities be made obligatory for the physician and midwife attending the patient during confinement, whenever the fetus presents a distinguishable sex. This measure would have an important bearing on the suppression of abortion, as at the present time the notification of the still-born, even in Paris where it is governed by a decision of the prefect of the Seine, exposes physicians wishing to perform it to numerous difficulties and proceedings.

The Société de médecine légale has also demanded that a law be enacted requiring the notification of abortions, and proposes that such law be made to read as follows: Public notification is required by the Civil Code in all still-born cases and is obligatory for all persons compelled by the Civil Code to make notifications of births or of deaths. This notification applies to all expulsions occurring before the end of term and having a human form.

Death of Dr. Emile Combes

Dr. Emile Combes, senator and former president of the council of ministers, died recently at the age of 86. He was born at Rocquencourbe (Department of Tarn) in 1835. He pursued at first a course of study that would prepare him for an ecclesiastical career, but later he went to Paris and studied medicine. He was made doctor of medicine in 1868; practiced in Pons; in 1875 became mayor of the town and in 1879 was elected general councilor of the Department of Charente-Inférieure. He then devoted himself entirely to politics. In 1885 he was elected senator, and held his post at every new election. He was indefatigable in his attendance on the sessions of the senate, was a member of numerous committees, often the supporter of important bills, and acquired thus

a position of importance in the senate. He served as vice president of that assembly from 1894 to 1895. After becoming minister of public instruction, he played an important part in the organization of the "*défense républicaine*" and was selected by Waldeck-Rousseau to succeed himself at the head of the government (June 7, 1902). During the war he accepted the portfolio of minister of state.

BERLIN

(From Our Regular Correspondent)

May 14, 1921.

Thirty-Third Congress of the German Society for Internal Medicine

The thirty-third congress of the Deutsche Gesellschaft für innere Medizin was held in Wiesbaden, April 18-21. Detailed reports on the treatment of pulmonary tuberculosis were rendered by Professors Aschoff, Freiburg; Uhlenhuth, Berlin; Gerhardt, Würzburg; de la Camp, Freiburg, and Brauer Hamburg.

THE NATURAL HEALING PROCESSES OF PULMONARY TUBERCULOSIS

Aschoff first took up the more recent classifications of pulmonary tuberculosis as proposed by Eugen Albrecht, Albert Fraenkel and Nicol. The necessity of a pathogenic classification that takes into account not only the localization of the lesions but also the character of the reaction processes is emphasized. The localized defensive processes are productive and exudative reactions. Hence, a natural division or classification of pulmonary tuberculosis is into predominantly productive and predominantly exudative cases. The productive cases may be subdivided into three lower groups: acinose-productive (azinös-produktive), acinose-nodose (azinös-nodöse) and "cirrhotic" cases. Among the types of exudative tuberculosis we may distinguish "acinose-exudative" and "lobular-exudative" (cheesy) cases. Following the defensive reaction processes come the reparative or healing processes. The various reparation processes may suffer serious complications owing to the softening of the cheesy masses, from which the ulcerous cavernous type of tuberculosis develops, which, as soon as it can be demonstrated clinically, is, with few exceptions, incurable. The speaker then discussed the question as to whether any anatomic evidence could be adduced to show that in the evolution of tuberculosis fluctuations in the capacity of the organism to react occur that might be interpreted as due to allergic conditions. He stated that as regards this problem he had been led by his own investigations to accept the views of Ranke as essentially correct. From the standpoint of allergy we must separate the primary effect in infancy and childhood and the generalized type of tuberculosis in childhood and around the age of puberty from the more localized type of the disease found in adults, who are relatively immune. Then again, we must distinguish carefully between a primary infection and a reinfection. The pressure exerted by inelastic chest walls can only increase the liability to infection, but does not decide the fate of the patient. The speaker developed the following final conclusion: It is not so much the seat of the primary infection and the reinfections, nor the extent of the processes developing therefrom, that decides the clinical curability of pulmonary tuberculosis, but rather the character of the infectious processes—whether they are productive or exudative, proliferative or indurative; whether they run their course with or without softening and formation of cavities. Finally, he entered a plea that the term "tuberculosis" be replaced by the old word "phthisis."

THE EXPERIMENTAL BASIS OF TUBERCULOSIS THERAPY

Uhlenhuth referred to Koch, stating that soon after the discovery of the tubercle bacillus he began to search for a

therapeutic means of combating it. The speaker stated that comprehensive experiments that he had undertaken had proved to his own satisfaction that old tuberculin will not effect a cure in guinea-pigs. Uhlenhuth then considered Koch's other tuberculins. Koch himself maintained that he had brought about immunization in animals by means of various preparations. No protocols of the experiments, however, seem to be in existence, and other investigators have been unable to substantiate his findings. But with man it is quite different, as we find authentic evidence of cures being effected by the use of tuberculins. Guinea-pigs and rabbits are not appropriate animals for experimentation on tuberculosis. As bovines can scarcely be employed, man himself must serve, as it were, as an experimental animal. Toxic processes in man are at least favorably influenced. But we have no proof that immunization in man has ever been accomplished. The curative effect, therefore, is not based on immunization but, in great part, on focal reaction together with hyperemia. Nor is there adequate evidence to show that immunization in animals has been brought about by the use of Deycke-Much partial antigens. Furthermore, the speaker takes the attitude that fatty antibodies do not exist, and is therefore compelled to reject the Deycke-Much procedure, as he does not find that it possesses any advantages over the Koch preparations. Although up to the present time no conclusive results have been accomplished with heterogenous bacilli (inoculation of man with bovine bacilli and bovines with human bacilli), this is nevertheless an important point and deserves to be investigated further. As regards passive immunization, Uhlenhuth stated that he was inclined to take an extremely pessimistic attitude in view of the chronicity of the disease. Chemotherapy, unfortunately, cannot be said as yet to have contributed anything worth while to the specific treatment of tuberculosis.

THE CLINICAL TREATMENT OF TUBERCULOSIS

Dr. Gerhardt spoke of the clinical course of tuberculosis as presenting widely different aspects. Many types of tuberculosis heal spontaneously without the aid of a physician; others seem doomed to end fatally. Besides the extent of the infectious process in the lung, it is important to determine whether the process is progressive, and if so, what the rate of progress is. Furthermore, we must endeavor to ascertain the anatomicopathologic character of the process. The more frequently we have an opportunity of observing the course of pulmonary tuberculosis when no treatment is given, the more conservative we shall be in our judgment of various methods. It is still a matter of controversy as to what constitutes the favorable effect of mountain climate. The purity of the air is doubtless an important factor. If the treatment in health centers can be continued until the patient is completely cured, there is no doubt that it offers the best conditions for recovery. The question arises whether or not the so-called people's health centers, where patients are retained for the short space of three months, exert a worth-while influence. Statistics show that they do. However, it is not advisable to send advanced cases to such health centers.

ROENTGEN IRRADIATION OF PULMONARY TUBERCULOSIS

After a brief historical introduction, de la Camp summed up the results of roentgenologic work and study by saying that roentgen-ray treatment can be regarded only as supplementary to natural curative processes. Cicatrization may be stimulated, but we should avoid bringing about a breakdown of the tuberculous tissue in any case, as this would entail all the disadvantages of the rapid creation of a pathologic cavity. No universal roentgen-ray dosage for tuberculosis can ever be established, as there are too many factors entering into the case. Tubercle bacilli cannot be killed by roentgen irradiation; however, certain indirect effects on even the bacillus have been observed. Only cases in which there is a

tendency to latency and a cicatrization of the lesions should be considered as amenable to roentgenotherapy.

THE OPERATIVE TREATMENT OF PULMONARY TUBERCULOSIS

In the field of surgical treatment, L. Brauer stated, more than 1,200 articles have appeared during the last fifteen years, which may be taken as indicative of the interest in the subject. For surgical treatment only such cases should be selected as prove rebellious to other forms of treatment. Freund's method of treatment (chondrotomy) seems to have been laid on the shelf. The opening up of caverns or cavities still continues to be discussed, and lately Sauerbruch has championed this method following thoracoplasty. But caution should still be observed in this field. The danger of air embolism is very great in connection with operations on indurated tissue. The speaker then took up the various forms of treatment by lung collapse. As to whether the incision or the puncture method should be used, there is as yet no common agreement. Both have their advantages and disadvantages.

PRAGUE

(From Our Regular Correspondent)

June 2, 1921.

Medical Officers of Insurance Associations on Strike

The central organization of Czechoslovak physicians declared a strike, May 1, of all physicians acting as medical officers of insurance associations. Sickness insurance in Czechoslovakia is highly organized and rests in the hands of workmen's associations. These associations represent a strong political factor, as most of the officers of the insurance associations are social democrats. Sickness insurance in the country is compulsory, and comprises about 90 per cent. of the population. The insured persons derive a medical benefit from the insurance association, consisting of hospital treatment when necessary and free medicines. The indemnity for unemployment while sick is paid for not more than a year, and consists of two thirds of the average wage of the insured person. An indemnity is paid also to mothers for six weeks before and six weeks after confinement. The fees which the physicians receive from the insurance associations are very low in comparison with the minimal fees prescribed by the central organization of physicians. The German insurance associations pay their physicians twice as much as the Czech. This has been the chief reason for the strike. The strike has been in progress for a month, and there is no prospect of an early solution. The ministry of public health has not become involved in the difficulty because the whole question of insurance is delegated to the ministry of social welfare. The insurance associations have offered the physicians a raise of 40 per cent., but the offer has been refused.

New Society of Specialists in Otolaryngology

A new scientific society was founded, May 16, under the leadership of Profs. O. Kutwirt and J. Císler of the Czech Medical Faculty. The aim of the society is to bring together workers who are specialists in otolaryngology, and particularly to coordinate their research. Twenty-five members attended the first meeting, which was held in Prague.

The Infant Mortality Rate

Infant mortality rates, which showed a sharp increase in the first year of the war and which remained during the war at the average prewar level, were followed in the year 1919 by a very low rate all over the country. It has been difficult to explain this phenomenon. Although the general situation has improved enormously, yet it has not attained the prewar conditions. A close study of the high infant mortality rate in 1915 and a low rate in 1919 has shown that this phenomenon is due to a statistical fallacy produced by the fluctuating birth

rate. A sharply decreasing birth rate in a given year tends to increase the infant mortality rate in the same year and, on the other hand, a rapid increase in the birth rate means a depression of the infant mortality rate for the same year. The reason for this is, of course, that in computing an infant mortality rate in the usual way we are dealing in part with two different groups of children.

PEKING, CHINA

(From Our Regular Correspondent)

April 15, 1921.

The Famine in China

The five provinces or states which are principally affected by famine are Chihli, Shansi, Shensi, Honan and Shantung which, roughly speaking, represent the northeastern quarter of China proper. The famine is the result of a severe drought lasting without relief through the spring and summer of 1920. The severest famine has been in those regions along the Yellow River, which flows first south and then east through this territory. Three years ago it broke its bounds and, by flooding the land, brought destruction and disaster all along its course. In these regions, therefore, there was no reserve supply of grain. Famine was predicted early last summer, when day after day of burning dryness withered the grain before it had matured. The real effects were not manifest, however, until the pinch of hunger drove the people to action. The first effect was the emigration from the famine districts. The inhabitants went first by hundreds and then by thousands, seeking food and work, some north and others south as chance or hope directed them. Many traveled by foot or by cart, but great numbers boarded freight trains bound for the big cities. Sometimes whole families moved and sometimes men left their families, promising to return. Those who had to stay lived on what they had saved from preceding years as long as possible. If this were not enough, they consumed their stock. Then they sold their movable property. Then they tore down parts of their houses and sold what they could and used the wood for fuel. Then, if help did not come, they died. Some sold their wives and children to traders coming from the cities. It is reported that children often sold for a few coppers, while girls and young women brought as much as \$30.

At each stage of this downward journey, the other people of China, and particularly the foreigners, became more and more concerned. Here and there organizations were formed which attempted to give local relief, and before long there was a multiplicity of organizations with a resultant great waste of energy and money. Profiteering and graft were not unknown, and jealousy and suspicion crept into the councils. It soon became apparent that, to give efficient relief, it would be necessary to form a central body to direct the whole work. In September the International Famine Relief Committee was formed, and after some stormy weeks of organization and some opposition from other organizations already in the field, it emerged an active and efficient body. As formed, it represented all interested organizations, including government officials, Red Cross representatives, business men, Y. M. C. A. men and missionaries. The committee established itself in Peking, and from this point of vantage took upon itself to view with disinterestedness and proper perspective the whole famine field, to collect money, to procure grain and to distribute it justly and efficiently.

SURVEY OF FAMINE DISTRICTS

Accurate surveys had to be made. It was at first estimated that 20,000,000 people were threatened with starvation and that it would require a dollar a month to carry a single individual through until next harvest time. This would involve the enormous sum of more than a hundred million dollars. The committee was at once faced with the impossibility of raising such a fund and the impossibility, therefore, of saving

all of the starving people. If a hundred million could not be raised, at least the effort must be made to raise as much as possible. The relief could expand only as fast as money came in. Famine drives were launched in all parts of China and in all parts of the world. In China the drives have netted \$2,500,000, and \$4,000,000 more has been lent by the banks with future taxes as security. From other countries, funds have come making available up to the present time only \$16,000,000 (Mexican), the equivalent of about \$8,000,000 in gold.

With such a limitation of funds, definite policies had to be established. The question "Whom shall we save and whom shall we let die?" had to be answered. In answer to this, two policies were suggested: first, to select the best elements—the young, the rugged, the thrifty and the hard working—and let the old, the weak, the shiftless and the lazy die; second, to help only the absolutely destitute, hoping that those not so low might themselves find a way out and live. After long discussion the latter policy has prevailed, but with the added stipulation that those who are helped at all must be carried through until harvest.

Then came the problem of finding out who the absolutely destitute were. After careful revision of censuses, there were found to be more than 10,000,000 who would surely die if help was not given them. Even this number could not all be saved. Who could choose between them? The decision over life and death in such circumstance is not easily made. It would seem self evident that, other things being equal, those best fitted to live should live. In some places an attempt was made to follow out this method, but in most places it seemed that only lot could make this final decision. Drawing lots has always appealed to the Chinese. There is something supernatural about it, something of fate, and they are willing to accept its decision.

The body of investigators included students, missionaries, Y. M. C. A. and Red Cross men, business men and higher class Christians, virtually all of whom gave their services gratis. Before going out, they were given preliminary instructions in the art of investigation. The method that they have followed is first to obtain from the head man of the village a list of the destitute people of the town. Then the homes are visited and the actual living status determined. If grain or stock of any kind is found, that house is passed by; but if there is absolutely nothing, the name is left on the list. When all have been seen, lots are drawn. Those who are lucky are given a grain ticket, which is good for 20 pounds of grain a month until harvest time, which will be the end of June. The individual who holds the ticket is thereafter responsible for procuring the grain from the county distributing center.

The chief grain is "Kao liang," or "high grain," a kind of broom corn; but there are also millet, wheat and corn. The grain is first transmitted to district relief stations on the railroad lines and then carted to the subdistributing centers in each county for subsequent distribution. Those who have a little grain mix it with all sorts of vegetable and mineral diluents to give bulk, to satisfy the craving of hunger. Grass, dried leaves, tree bark, corn cobs, thistle leaves, chaff, locust berries, ground up soap stone and white clay have all been found in the famine food.

DISEASES INCIDENT TO THE FAMINE

Out in the sparsely settled country, it is difficult to get accurate reports; but apparently the deaths from starvation are preceded by a slowly developing emaciation. Occasionally, death is preceded by great edema, which is thought to be due to poisoning from the food substitutes. There have been no serious epidemics among famine sufferers except in the great refugee camps.

As the people fled north and south from the famine areas, toward the big cities, they frequently encountered a cold

reception and were not allowed to enter the city. Outside of Tientsin, 60,000 of them congregated. Many fled to Buddhist temples and many to Protestant and Catholic mission centers. Wherever they gathered in quantities, infectious diseases soon appeared. Measles, scarlet fever, diphtheria, meningitis and smallpox were all active. The lice-borne diseases—especially typhus and relapsing fever—appeared in force.

A sanitation subcommittee of the United International Famine Relief Committee was formed to take what measures it could to prevent the spread of these diseases in the camps. The limited supply of physicians made this problem overwhelming, and the committee advised immediate dispersion of the camps and a return of the refugees to the land to get ready for the harvests. Smallpox spreading from the camp in Tientsin into the family of one of the Chinese officials in that city precipitated the breaking up of that camp, where no medical control was possible. Here whole families lived in small holes or cellars dug in the ground and covered by matting. The crowding was suffocating and the filth indescribable.

SANITATION COMMITTEES

In the smaller refugee centers there has been some control. The sanitation committee organized and sent out two sanitation teams consisting of a foreign physician in charge, a business manager, two Chinese physicians, six nurses and eleven coolies. They set up mat-shed hospitals in the neighborhood of the refugee camps and isolated all of the sick and gave what treatment they could. Their chief attack was directed against typhus and relapsing fever. A very efficient delouser was devised by Dr. J. H. Ingram of Peking, who is a medical missionary under the American Board of Foreign Missions. It cost only \$50 to build and is most effective. A few of the details will be interesting. It is an oblong building 20 feet long, 7 feet wide and 6½ feet high, built with a double wall of sun-dried bricks. There is a door at each end and two poles inside running lengthwise near the ceiling. In a small pit at each end there is a coal stove with bellows at the draft. The chimneys pass under the floor, gradually ascending to the opposite side, where they open into the room. This effectively heats the floor and roasts the lice as they fall from the garments. The clothes are hung loosely on the poles and are put in at one end and removed from the other. When the chamber is full, the doors are closed and the bellows are started. In seven or eight minutes, the temperature has reached 70 or 80, and within fifteen minutes the clothes are lice free. Meanwhile, the individual has had his head shaved and has received a regular old fashioned "Saturday night bath" in a bath house set up next to the delouser. More than a hundred can be handled in an hour by this method.

All of the refugees of the Peking camp, which was a small one in the southern part of the city, were given this treatment. At Shun Teh Fu in southern Chihli there were 12,000 refugees scattered throughout the city, living as best they could and under no control except that of the bread line and soup kitchen. All were deloused and sent home with grain tickets. These sanitation teams are gradually going from one center to another in an attempt to clean them up. The work is progressing slowly because of the limited personnel, and there are still many foci of infection in the smaller and more remote refugee camps.

It may be of interest to know that the sanitation committee has been financed by an appropriation of \$100,000 (Mexican), or \$50,000 gold, from the funds raised in the United States. The work has been directed by an American physician and a Chinese who took a public health course in the United States.

I have to thank Mr. Philip A. Swartz, the director of religious and social work in the college, and Dr. Charles Young of the sanitation committee for the data used in this letter.

Marriages

JOHN DICKSON CARR, Uniontown, Pa., to DR. AGNES-CECELIA THORPE, Scottsbluff, Neb., at Osawatimie, Kan., June 15.

ALFRED C. BYER, Woodhaven, L. I., to Miss Theresa McQuade, Mount Vernon, N. Y., June 17.

HENRY JOHN BERKLEY to Miss Mary Miles Jordan, both of Baltimore, at Chevy Chase, Md., June 16.

FORREST J. DRURY, Londonderry, N. H., to Miss Emma Christie Pratt, Alexander, N. H., June 7.

WILLIAM C. VERNON, Okmulgee, Okla., to Miss Emma McConnell of Springfield, Mo., April 5.

STANHOPE BAYNE-JONES, New Orleans, to Miss Nannie Moore Smith, Baltimore, June 25.

GEORGE LUNSFORD CARRINGTON, Durham, N. C., to Miss Maud Baxter, Baltimore, June 17.

SAMUEL BLACK NUNNELLEY, Burlington, Ky., to Miss Selma Brell, North State, Ky., June 10.

FRANK P. WERNER, Reading, Pa., to Miss Mattie A. Beck, Schuylkill Haven, Pa., June 8.

EDWIN W. GARBERICH to Mrs. Jennie McCoy, both of Spokane, Wash., in May.

IRWIN W. HOWARD, Aurora, Ill., to Mrs. Helen M. Bachmann, Chicago, June 19.

THOMAS H. VAN CAMP to Miss Media A. Dierf, both of Somers, Iowa, June 15.

WALLACE H. COLE, St. Paul, to Miss Mary B. Crunden, St. Louis, about June 7.

L. EMMET HOLT, JR., to Miss Olivia Cauldwell, both of New York, June 17.

JOHN BENJAMIN RIEGER to Miss May Edith Hoover, both of Detroit, June 23.

REUBEN OTTENBERG to Miss Marie Clarissa Chene, both of New York, May 31.

CECIL H. DARROW to Miss Grace Marian Clark, both of Denver, May 14.

T. A. ESTREM to Miss Violet Toms, both of Hibbing, Minn., about June 7.

Deaths

George Frank Butler ☉ Winnetka, Ill.; Rush Medical College, Chicago, 1889; died from heart disease, June 22, aged 64. Dr. Butler was born in Moravia, N. Y., in 1857; he was lecturer in pharmacy and materia medica in his alma mater from 1889 to 1892; professor of materia medica, therapeutics, and clinical medicine, Northwestern University Woman's Medical School, 1890-1896; professor of the same subjects in the College of Physicians and Surgeons, Chicago, 1892-1906; professor of medicine in the Dearborn Medical College, 1905-1906; professor of internal medicine in the Chicago Post-Graduate Medical School, 1905-1907, and professor and head of the department of therapeutics, Chicago College of Medicine and Surgery, 1906-1915. He was for a time consulting physician to the Cook County Hospital. He had been director of the Alma Sanatorium, later medical director of the Mudlavia Springs Sanatorium, and recently of the North Shore Health Resort in Winnetka. He was the author of numerous books; his medical works devoted chiefly to materia medica and therapeutics, and nonmedical books, including fiction, essays and poetry. His most recent books were on mental hygiene and included "The Travail of a Soul," 1914, and "How the Mind Works," 1921.

Russel McWhorter Cunningham, Birmingham, Ala.; Bellevue Hospital Medical College, New York, 1870; formerly a member of both houses of state legislature; delegate to Constitutional Convention, 1906; lieutenant-governor of Alabama, and acting governor one year (1904); at various times, president of the Alabama Medical Association; died, June 6, aged 66.

Walter Bernard Winchell, Brooklyn; New York Homeopathic Medical College, 1886; member of staff, Cumberland Street Hospital and also Prospect Heights Hospital, Brooklyn; member New York State Homeopathic Medical Society; died, from bronchitis, June 18, aged 63.

☉ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

OXYL-IODIDE NOT ADMITTED TO N. N. R.

Report of the Council on Pharmacy and Chemistry

"Oxyl-Iodide" (Eli Lilly and Co.) is said to be the hydroiodid of cinchophen and the claim is made that it exerts the effects of cinchophen and of iodid. Because of inquiries which have been received the Council decided to determine the eligibility of "Oxyl-Iodide" for New and Nonofficial Remedies. Dr. P. J. Hanzlik—formerly Associate Professor of Pharmacology at Western Reserve University School of Medicine, now Professor of Pharmacology at Leland Stanford Junior University Medical School—who has made a study of the action of salicylates and cinchophen, was asked to report on the therapeutic value and the rationality of "Oxyl-Iodide." This he consented to do and his report appears below.

After considering Doctor Hanzlik's report, the Council declared "Oxyl-Iodide" inadmissible to New and Nonofficial Remedies because it is an irrational combination, marketed under claims that are unproved and consequently unwarranted.

W. A. PUCKNER, Secretary.

"Oxyl-iodide," marketed by Eli Lilly & Co., is claimed to be the hydroiodid of phenylcinchoninic acid, containing 33 per cent. of iodine and 67 per cent. of phenylcinchoninic acid (cinchophen). Its solubility resembles that of cinchophen, being low in water and acid mediums, and higher in the presence of alkalis. Whether "oxyl-iodide" is decomposed into its constituents in the presence of alkalis does not appear to have been determined. However, if this were the case, the intestine, after administration of "oxyl-iodide," would contain cinchophen and sodium iodid in the same forms as if these agents were administered individually so that nothing would be gained by administering "oxyl-iodide." Being, like cinchophen, practically insoluble in acid mediums, "oxyl-iodide" would have no advantage over the latter so far as gastric irritation is concerned.

DOSAGE

The dosage advised is from one to three tablets containing 3 grains (0.2 gm.) each of "oxyl-iodide." The total dosage would depend on the condition to be treated. In rheumatic fever, which requires a full therapeutic or so-called, "toxic" dose of cinchophen, about 12 to 13 gm. would be administered intensively. Since each tablet of "oxyl-iodide" contains 0.13 gm. of cinchophen, the total number of tablets of "oxyl-iodide" required would be 100, or two and one-half bottles of forty tablets each. At the same time the patient would receive 6.6 gm. of iodine (as iodid). This might be distinctly objectionable because of the production of the disagreeable symptoms of iodism in some persons, and indicates that the fixed proportion of the iodine constituent would be objectionable.

Even a smaller dosage, such as 5 gm. of cinchophen, which gives partial relief in rheumatism and similar conditions, would still require a patient to take a full bottle, or forty tablets, of "oxyl-iodide," and at the same time about 2.7 gm. of iodine would have to be ingested.

Furthermore, rheumatic fever, the arthritides, gout and related conditions in which cinchophen is indicated do not require iodid. Therefore, "oxyl-iodide" would not be the remedy of choice in these conditions, and its use would be irrational and illogical.

ACTIONS

No data on the pharmacologic actions of "oxyl-iodide" are presented in the manufacturer's literature. Presumably, the compound would exhibit the actions of its individual components, i. e., cinchophen and iodine (as iodid), though probably less efficiently, owing to its low solubility. This is also indicated by the following statements of the manufacturer:

Lorene Painter, Lincoln, Neb.; Boston University School of Medicine, 1917; member of staff, Green Gables Sanatorium, Lincoln; was secretary-treasurer of the Nebraska State Woman's Medical League; died, June 17, of acute miliary tuberculosis, aged 31.

Walter R. Pike, St. George, Utah; University of Vermont College of Medicine, Burlington, 1887; Medical Department University of the City of New York, 1888; first medical superintendent of State Mental Hospital, Provo; died, June 10, aged 73.

John MacDiarmid ☉ DeLand, Fla.; Southern Medical College, Atlanta, 1891; former mayor of DeLand; served in Medical Corps, U. S. Army, in the World War; died suddenly, on the Atlantic Coast Railroad train, May 23, aged 50.

John L. Durham, Graysville, Ind.; University of Louisville Medical Department, 1880; member Indiana State Medical Association; served on United States Pension Board during Cleveland's administration; died, June 13, aged 66.

Wilbur S. Watson, Danbury, Conn.; Long Island College Hospital, Brooklyn, 1884; member of the Connecticut State Medical Society; former surgeon general, Connecticut National Guard; died, June 8, aged 69.

William W. Longacre, Mount Pleasant Mills, Pa.; College of Physicians and Surgeons, Baltimore, 1893; member of the Medical Society of the State of Pennsylvania; died, May 9, from Bright's disease, aged 55.

James E. Groff ☉ Doylestown, Pa.; Jefferson Medical College, 1880; at one time Bucks County representative of the state department of health, and member of the Borough Council; died, June 16, aged 65.

William Clay Baster, Benton Harbor, Mich.; Hahnemann Medical College and Hospital of Chicago, 1884; died at the Waukesha Sanatorium, Wis., from cerebral hemorrhage, June 11, aged 58.

Frederick Marshall Davenport, Scranton, Pa.; Jefferson Medical College, 1905; member of Medical Society of the State of Pennsylvania; died at Hahnemann Hospital, May 15, aged 50.

John Henry Hartwell ☉ Philadelphia; Medico-Chirurgical College of Philadelphia, 1910; died from infection resulting from pricking his finger while operating on a patient, June 21, aged 48.

Leonard O. Buzzell, Standish, Me.; Dartmouth Medical College, Hanover, N. H., 1882; member of the Maine Medical Association; died, June 6, from injuries sustained in a fall, aged 72.

James P. Latimer, Newark, Ohio; College of Physicians and Surgeons, Baltimore, 1880; member of Ohio State Medical Society; died, June 7, from a complication of diseases, aged 68.

Joseph H. Potts ☉ Holyoke, Mass.; Dartmouth Medical College, Hanover, 1884; specialized in otology, laryngology and rhinology; died, May 16, after a long illness; aged 62.

Joseph S. Raborg, Baltimore; University of Maryland, Baltimore, 1867; at one time medical superintendent, San Francisco City Hospital; died, June 12, aged 74.

William S. Grimes ☉ Wapello, Iowa; Rush Medical College, 1874; a practitioner of Wapello for nearly fifty years; a Confederate veteran; died, June 7, aged 79.

Edwin A. Weimer, Peoria, Ill.; Rush Medical College, 1895; died, June 7, in the Elkhart General Hospital, Elkhart, Ind., from pneumonia, aged 50.

William Henry Heller, LeMars, Iowa; University of Illinois, 1902; died at Lake Minnetonka, June 9, from tumor of the brain, aged 48.

Archibald A. Swinton, Charlevoix, Mich.; University of Michigan, 1898; mayor of Charlevoix; died, May 25, from cerebral hemorrhage.

Arthur Bailey Williams, Chicago; College of Physicians and Surgeons, Boston, 1907; died, May 21, from paralysis.

Edward H. Troy, McAlester, Okla.; University of Michigan, 1891; died, April 22, from bronchopneumonia, aged 60.

Leonard Briggs Oliver ☉ Chula Vista, Calif.; University of Iowa, Iowa City, 1887; died suddenly, June 10, aged 63.

Percy Joseph Wiley, Portland, Ore.; University of Oregon, Portland, 1905; died, May 22, aged 39.

W. A. Orender, Norwood, Mo. (license, Missouri, 1883); died, about June 1, aged 74.

Charles L. Orr, Ada, Okla.; Louisville Medical College, 1886; died, June 6, aged 60.

Thomas Burke, Wayside, Wis.; Rush Medical College, 1886; died in June, aged 65.

"The analgesic action of 'oxyl-iodide' is gradual. A word of caution is necessary to those who may expect immediate relief from pain." Therefore, why use "oxyl-iodide" in place of more dependable analgesics, such as salicylate or cinchophen. The following statements appear far-fetched: "There is a stimulation of the endocrines which is perhaps more marked in the thyroid gland, although it is probably shared by the pituitary and other glands which function in a chain-like control. . . . There is stimulation of cells with increased flow of secretion, visibly demonstrated by the nasal mucous membrane after 'oxyl-iodide' has been taken for some time. The general action on mucous membranes favors elimination of toxins and waste products."

It is probable that "oxyl-iodide" acts as a uric acid eliminant, though there is no reason to suppose that it is more effective than cinchophen alone. No data are given for this in the manufacturer's literature.

USES

Successful use of "oxyl-iodide" is claimed in brachial and sciatic neuritis, lumbago, muscular rheumatism, arthritis deformans, chronic arthritis (" . . . in some instances were apparently cured"), subacute bronchitis, circumflex neuritis, traumatic orchitis, eczema and rheumatism. However, a careful reading of the protocols of seven cases, representing these conditions, gives an unfavorable impression as to the real contribution to the recovery by, or value received from, "oxyl-iodide." Summarized, the opinions as quoted by the manufacturers in support of their claims for "oxyl-iodide" are briefly as follows:

Case 1. "Of course, the case is not complete yet, but I am looking for continued betterment."

Case 2. "For two weeks past her improvement has been marvelous."

Case 3. "The joints are still enlarged and we do not hope to clear them entirely. . . ."

Case 4. "Undoubtedly, removal of the kidney had much to do with improvement."

Case 5. "I think I have gotten very good results."

Case 6. "Some apparent benefit."

Case 7. "She is practically free from pain, and the muscle and joint stiffness is now slight."

These inconclusive opinions certainly do not agree with the favorable impression which other portions of the manufacturer's literature create. If the factor of natural recovery in the conditions represented by these seven cases is given due weight, little, if anything, is left to the credit of "oxyl-iodide." Such clinical evidence as is supplied by the manufacturer indicates that the therapeutic efficiency of "oxyl-iodide" is doubtful, and not an improvement over either cinchophen or iodid.

IODISM

Iodism cannot be avoided by the use of "oxyl-iodide," for the manufacturer's literature states that "the dosage of 'oxyl-iodide' may be pushed to iodism as manifested by skin symptoms. . . . To avoid iodism there should be an occasional interruption of treatment." "Oxyl-iodide," therefore, has no advantage over ordinary sodium iodid to avoid iodism. Usually, the conditions which require cinchophen do not require the simultaneous administration of iodids, and vice versa. If administration of iodid and cinchophen together should be indicated or desirable, these can be given separately with the added advantage that the iodid can be easily reduced or withdrawn in case iodism supervenes, and the cinchophen could be continued if necessary. Since conditions do not arise frequently enough to warrant the use of iodid and cinchophen together, the existence of such a product as "oxyl-iodide" is unwarranted.

Finally, the manufacturer himself recognizes that phenylcinchoninic acid (cinchophen) can take the place of "oxyl-iodide." Under "dosage," the circular states: "A few patients may be idiosyncratic to the iodides and find they cannot take 'oxyl-iodide.' For the latter chloroxyl, the hydrochloride of phenylcinchoninic acid, is recommended." The action of the hydrochlorid of phenylcinchoninic acid does not differ, of course, from that of cinchophen. The difficulties of assigning

a clear-cut, definite, therapeutic rôle to "oxyl-iodide" in order to justify its existence, alongside well-known and tried remedies are self-evident.

CONCLUSION

"Oxyl-iodide" is pharmacologically and therapeutically an illogical, irrational and unjustified substitute for cinchophen and iodids. The conditions which require the administration of cinchophen do not as a rule require the administration of iodid and vice versa. If it is desirable to secure the effects of iodid and cinchophen together, these can be more conveniently and advantageously administered as separate agents, permitting in that way a better control of their actions. This cannot be accomplished with "oxyl-iodide," in which the proportion of iodid and cinchophen are fixed. Symptoms of iodism cannot be avoided by the administration of "oxyl-iodide." The objective evidences for its actions and uses are totally lacking; and the clinical opinions concerning its therapeutic benefits in different disease conditions are inconclusive and hedging, and, if anything, contradictory to the favorable impressions which the language of the advertising matter is likely to create.

Correspondence

BILHARZIA DISEASE IN NATAL: ITS PREVALENCE AND TREATMENT

To the Editor:—My attention has been drawn to some statements in THE JOURNAL in regard to the prevalence of fluke infestation in South Africa which require an explanation. It is only in very limited areas that fluke disease among cattle and bilharzia infection among children can be regarded as a serious economic problem.

At one time bilharzia disease was a common complaint among schoolchildren in Natal, and insurance companies were continually confronted with the problem of cases in which the infection had persisted after boys had left school. The prevalence of the disease at Pietermaritzburg was largely due to bathing in a river which was heavily infested with *Physopsis africana*, the common fresh-water snail which acts as the intermediary host, while residents at Durban who suffered from the disease invariably associated it with bathing in the suburban pools and rivers. In examining *Physopsis africana* recently for the preparation of a suitable antigen test for the bilharzia parasite, I found eighteen out of twenty heavily infected with this human parasite, though the introduction of domesticated duck has materially reduced the number of fresh-water snails in the suburbs from which I obtained these snails.

When it became widely known how boys contracted the disease, river bathing became much less common, and today the infection is very much less frequently encountered in general practice, while only occasionally are cases admitted into the provincial hospitals.

In 1919, Dr. A. B. M. Thomsen, the medical inspector of schools in Natal, drew my attention to the encouraging results Dr. J. B. Christopherson was obtaining from the use of tartar emetic in Khartum, and I commenced to give this treatment a trial in South Africa. Judging from the results I have obtained in a series of 100 cases whose condition I have followed for several months after the treatment was completed. I have no hesitation in saying that the disease can be entirely eradicated in the vast majority of cases by fresh and frequent injections of tartar emetic in solution given over a period of twenty-eight days. Where such doses of from $\frac{1}{4}$ grain to $1\frac{3}{4}$ grains of tartar emetic have been given intravenously on alternate days for such a period, I have never seen any return of symptoms or been able to detect any living ova in the

urine passed. So far as my experience goes in treating cases of bilharzia disease in South Africa, there would seem to be little doubt that the first effect of the injections of antimony is on the eggs, which rapidly show signs of degeneration until they completely disappear from the urine and that, should living eggs reappear in the urine without the possibility of fresh infection, the adult parasites have never been entirely eradicated from the system.

As the infection as commonly encountered in South Africa would appear to be less severe than is common in other parts of the continent, a total dose of from 12 to 15 grains of antimony and potassium tartrate is generally a sufficient one to administer to any patient.

Toward the expense of this investigation a grant has recently been received from the British Medical Association, and the efficacy of various preparations of antimony and emetin is being investigated as to their permanent effect on the bilharzia and allied parasites; but there is no doubt that the tartar emetic treatment in a large number of patients has materially lessened the number of fluke-infested snails.

F. G. CAWSTON, M.D. (CANTAB.),
Durban, Union of South Africa.

“REPORT OF OHIO COMMITTEE
ON ANESTHESIA”

To the Editor:—You likely would not have published in the June 18 issue of THE JOURNAL the condensation of the report of the Ohio Committee on Anesthesia, from the April, 1921, *Ohio State Medical Journal*, had you carefully read in the June number of our state journal the report of the last annual meeting of the Ohio State Medical Association. You then would have noticed that, by unanimous vote of our House of Delegates, the report of the Ohio Committee on Anesthesia was altogether discredited by the adoption of the following resolution, presented by the Reference Committee on Reports of Standing Committees:

The committee does not concur in partial report of the Special Committee on Anesthesia Survey, as published in April, 1921, *Journal*.

The report of the Ohio Committee on Anesthesia, as it appears in THE JOURNAL, is entirely misleading to all your readers, except those in Ohio. Actually it was not concerning an Ohio survey, but a national survey, evidently confined solely to the expression of the views of proponents of nursing anesthesia from Michigan to Texas and from New York to California. In the forty-one “statements by surgeons,” as printed in the April (*Ohio State Medical Journal*) report of the Committee on Anesthesia, only four are by Ohio surgeons, no one of whom is probably much known outside his home town. Among the sixteen statements of hospital superintendents, “printed in the same report, no name can be found of a superintendent of an Ohio hospital. This “report” leads your readers to infer that Ohio physicians generally oppose medical anesthesia, while as a matter of fact, by overwhelming vote, the last meeting of the Ohio State Medical Association went on record for the prompt repeal of the state law permitting nurses to administer anesthetics. Last month the Ohio State Medical Association, the Ohio State Eclectic Society, and the Ohio State Homeopathic Society, in their regular annual sessions, with unanimity of opinion, by resolutions endorsed medical anesthesia and opposed nursing anesthesia. Should this matter be taken up in a similar way by the medical associations of all other states, all would probably endorse medical, as opposed to nursing, anesthesia. The attitude of some surgeons and of some surgical associations toward the vital subject of anesthesia is a disgrace to them both individually and collectively. But it is my desire merely to place before your readers the facts of the recent history

of Ohio state medical societies on this question—not attempt to fortell what other states may do.

GAINOR JENNINGS, M.D., West Milton, Ohio.
Chairman, Reference Committee on Standing
Committee Reports, Ohio State Medical
Association, 1921.

“SMOKING VERSUS CHEWING”

To the Editor:—In THE JOURNAL, June 4, 1921, p. 1579, an editorial comment reviews an article by us on the output of workers grouped according to habits (*J. Indust. Hyg.* 3:1 [May] 1921). The statement is made in concluding the comment, that, “unfortunately for the interpretation of the results of their study, the authors of the paper under consideration do not take into account the ages of their light and heavy smokers and chewers, or other factors that might be of great significance.” This statement, however, is not entirely true, as on page 3 of our paper we state that “a study of the correlation of age and output gave negative results, as did also a study of correlation of overweight and underweight and output.” As there is no correlation ($r=0.02$) between age and output, it is improbable that age is a factor affecting the differences of output of the various habit groups. The overweight or underweight of the men based on the Provident Life and Trust Company biometric table was employed as a measure of the general condition and health of the men. However, as there was no correlation ($r=0.06$) between the conditions of overweights or underweights and output, these measurements could not be of significance in the matter.

We have, however, gone over our data and find that the average ages of the men in the habit groups do not vary in such a manner as to account for the differences in output. The output and average age for the groups in question are given below:

Habit group	Output Rate	Average Age
Nonusers of tobacco.....	14.24	39.3
Heavy smokers who do not chew.	14.33	35.0
Light smokers who do not chew.	13.88	33.7
Chewers	13.59	38.5
All habit groups.....	13.99	36.0

In conclusion, we wish again to emphasize the point that the only strictly dependable conclusion, from a statistical point of view, is the decreased output rate of chewers.

J. P. BAUMBERGER,
EDNA E. PERRY,
E. G. MARTIN,
Stanford University, Calif.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

HEISKELL'S OINTMENT—NITRATE IN OSTEOMYELITIS

To the Editor:—1. Please give the approximate formula of Heiskell's Ointment. 2. Has commercial nitrate fertilizer been used as a local application in tuberculous bone affections?

R. C. FINLAY, M.D., Greenville, Miss.

ANSWER.—1. According to “The Composition of Certain Patent and Proprietary Medicines,” by J. P. Street, Heiskell's Tetter Ointment is “cerate of lead subacetate.” In making this statement Street quotes Oleson (1903) through the *Western Druggist*. We have no information as to its quantitative composition.

2. We are not aware of “commercial nitrate fertilizer” as such, being used in the treatment of bone affections. A preliminary report has been published on the use of potassium nitrate plus aluminum nitrate in the treatment of osteomyelitis (*Queries and Minor Notes*, THE JOURNAL, April 30, 1921, p. 1265).

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 12. Chairman, Dr. Samuel W. Welch, Montgomery.

ARIZONA: Phoenix, July 5-6. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

COLORADO: Denver, July 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Hartford, July 12-13. Sec., Regular Board, Dr. Robert L. Rowley, 79 Elm St., Hartford.

CONNECTICUT: New Haven, July 12. Sec., Eclectic Board, Dr. James E. Hair, 730 State St., Bridgeport. Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 12-14. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington, D. C.

INDIANA: Indianapolis, July 12-14. Sec., Dr. Wm. T. Gott, 84 State House, Indianapolis.

MAINE: Augusta, July 5-6. Sec., Dr. Frank W. Searle, 775 Congress St., Portland.

MARYLAND: Baltimore, July 19. Sec., Regular Board, Dr. J. McP. Scott, 141 W. Washington St., Hagerstown.

MASSACHUSETTS: Boston, July 12-14. Sec., Dr. Walter P. Bowers, Room 144, State House, Boston.

NEW MEXICO: Santa Fe, July 11-12. Sec., Dr. R. E. McBride, Las Cruces.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, July 12-13. Dr. J. M. Byrum, Shawnee.

OREGON: Portland, July 5-7. Sec., Dr. Uring C. Coe, 1208 Stevens Bldg., Portland.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 5-9. Sec., Mr. Thomas E. Finnegan, State Capitol, Harrisburg.

RHODE ISLAND: Providence, July 7-8. Dr. Byron U. Richards, State House, Providence.

SOUTH DAKOTA: Deadwood, July 19-20. Director of Medical Licensure, Dr. H. R. Kenaston, Bonesteel.

UTAH: Salt Lake City, July 6. Sec., Mr. J. T. Hammond, Salt Lake City.

WASHINGTON: Olympia, July 12. Commissioner of Licensure, Mr. Wm. Melville, Olympia.

WEST VIRGINIA: Charleston, July 12. State Commissioner of Health, Dr. L. T. Vinson, Masonic Bldg., Charleston.

Iowa January Examination

Dr. Guilford H. Sumner, secretary, Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Jan. 5-7, 1921. The examination covered 8 subjects and included 100 questions. An average of 75 per cent. was required to pass. Three candidates were examined, all of whom passed. Six candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Medical School of Harvard University.....	(1919)		89.9
John A. Creighton Medical College.....	(1920)		85.5
Ohio State University College of Homeopathic Med....	(1920)		86.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery.....	(1917)	New Mexico	
Rush Medical College.....	(1919)	Illinois	
University of Maryland.....	(1919)	Maryland	
University of Minnesota Medical School.....	(1920)	Minnesota	
University Medical College of Kansas City.....	(1908)	Kansas	
University of Nebraska College of Medicine.....	(1919)	Nebraska	

Illinois February and March Examination

Mr. W. H. H. Miller, director, Illinois State Department of Registration and Education, reports the written and practical examination held at Chicago, Feb. 28-March 2, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 92 candidates examined, 81 passed and 11 failed. Thirteen candidates were licensed by reciprocity and one candidate was licensed on government credentials. The following colleges were represented:

College	PASSED	Year Grad.	Number Licensed
College of Physicians and Surgeons, Los Angeles.....	(1919)		1
Howard University School of Medicine.....	(1907)		1
Bennett Medical College.....	(1915)		1
Chicago Medical School.....	(1920, 2), (1921, 2)		4
Chicago College of Medicine and Surgery.....	(1917)		1
Loyola University School of Medicine.....	(1921)*		3
Northwestern University Medical School....	(1920), (1921, 4)†		5
Rush Medical College.....	(1921)‡		55
University of Minnesota Medical School.....	(1921)		1
New York Homeo. Med. Coll. and Flower Hospital...	(1917)		1

Leonard Medical School.....	(1906)	1
Ohio State University College of Medicine.....	(1920)	1
Mcharry Medical College....	(1910), (1913, 2), (1916), (1920)	5
Vanderbilt University	(1917)	1

FAILED

American College of Medicine and Surgery.....	(1905)	1
Chicago Hospital College of Medicine.....	(1915)	1
Chicago Medical School.....	(1921)	1
Meharry Medical College....	(1908), (1912), (1914), (1915), (1916), (1917), (1919)	7
Royal University of Naples.....	(1915)§	1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....	(1914)	Minnesota	
University of Louisville.....	(1914)	Kentucky	
University of Michigan Medical School.....	(1920)	Michigan	
Columbia University	(1910)	New York	
Jefferson Medical College of Philadelphia.....	(1919)	New York	
University of Pennsylvania.....	(1912), (1918)	Penna.	
University of Pittsburgh.....	(1912)	Penna.	
Meharry Medical College....	(1909) Texas, (1910), (1919)	Kentucky	
McGill University	(1908)	New York	
Western University Faculty of Medicine.....	(1910)	Canada	

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Cooper Medical College.....	(1912)	U. S. Navy	
* One candidate received temporary license pending completion of his hospital internship.			
† Three candidates received temporary licenses pending completion of their hospital internships.			
‡ Received temporary licenses pending completion of their hospital internships.			
§ Graduation not verified.			

Wisconsin January Examination

Dr. J. M. Dodd, secretary, Wisconsin State Board of Medical Examiners, reports the oral, written and practical examination held at Madison, Jan. 11-13, 1921. The examination covered 18 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 13 candidates examined, 11 passed and 2 failed. Nine candidates were licensed by reciprocity, and 4 candidates were licensed on government credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University Medical School.....	(1920)*		78
Rush Medical College.....	(1917) 85, (1919) 81, (1920)*		83
University of Illinois College of Medicine.....	(1920)		80
Johns Hopkins University Medical Department.....	(1920)		89
Medical School of Harvard University.....	(1919)		89
St. Louis University School of Medicine.....	(1920)		83
University and Bellevue Hospital Medical College....	(1920)		88
Osteopaths			80,†

FAILED

Chicago College of Medicine and Surgery.....	(1914)	69
Loyola University School of Medicine.....	(1917)	67

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hahnemann Med. Coll. and Hosp. of Chicago.....	(1918), (1919)	Illinois	
Loyola University School of Medicine.....	(1918)	Illinois	
Northwestern University Medical School.....	(1901)	Illinois	
University of Illinois College of Medicine.....	(1919)	Illinois	
Indiana University School of Medicine.....	(1915)	Indiana	
State University of Iowa College of Medicine.....	(1904)	Illinois	
Saginaw Valley Medical College.....	(1899)	Michigan	
Meharry Medical College.....	(1918)	Tennessee	

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Northwestern University Medical School.....	(1913)	U. S. Army	
Rush Medical College.....	(1914) U. S. Army, (1917)	U. S. Navy	
University of Minnesota Medical School.....	(1917)	U. S. Navy	
* These candidates have finished the medical course and will obtain the M.D. degree after they have completed a year's internship in a hospital.			
† No grade given.			

Porto Rico April Examination

Dr. M. Quevedo Baez, secretary, Porto Rico Board of Medical Examiners, reports the written and practical examination held at San Juan, April 5, 1921. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Of the six candidates examined, 5 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Loyola University School of Medicine.....	(1917)		78.7
University of Maryland.....	(1920)		78
Boston University School of Medicine.....	(1916)		81.3
Jefferson Medical College of Philadelphia.....	(1916)		80
University of Pennsylvania.....	(1920)		78.5

College	FAILED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery.....	(1916)		55.7

Book Notices

DIE KINDERTUBERKULOSE: IHRE ERKENNUNG UND BEHANDLUNG. Ein Taschenbuch für praktische Aerzte. By Prof. Hans Much. Paper. Price, 4.80 marks. Pp. 35. Leipzig: Curt Kabitzsch, 1920.

TUBERCULOSIS OF CHILDREN: ITS DIAGNOSIS AND TREATMENT. By Professor Dr. Hans Much, Director of the Department for the Science of Immunity, University of Hamburg, Germany. Translated by Dr. Max Rothschild, Medical Director of the California Sanatorium for the Treatment of Tuberculosis, San Francisco and Belmont, California. Cloth. Price, \$2.50. Pp. 156. New York: The Macmillan Company, 1921.

This monograph concerns principally the diagnosis and treatment of tuberculosis in childhood. Tuberculosis of the adult, Much says, generally follows infection acquired during childhood, and consequently any attempt at its eradication must begin with thorough and effective treatment at an early age. He points out that at this early period the disease is easily cured, and a resulting immunity insures protection for the remainder of that individual's life. Tuberculosis of the bronchial glands, he states, is the most frequent form that is encountered in childhood. In describing the symptomatology, he ascribes importance to exhaustion following moderate exertion, to emaciation, to digestive disturbances, to inclination to catarrh, to dyspnea and to pallor. He thinks that a child with tuberculosis undergoes a mental strain, and becomes dull, refractory and ill-tempered. Investigation of the previous history of tuberculous patients lead him to conclude that measles, whooping cough and influenza are the diseases most likely to lower the patient's resistance to subsequent infection. He finds that in some children cough is absent, and he attaches importance to his belief that the absence of cough is never proof of the absence of tuberculosis of the bronchial glands. The cough may be similar in character to pertussis, and again a peculiar metallic sound is present, which he assumes is due to stenosis of the bronchial tubes from pressure by the enlarged glands. Breathing is sometimes difficult, and not infrequently produces a rattling sound during the expirium. This, he believes, is produced by pressure on the trachea or bronchi. He considers D'Espine's sign of value, secondary in importance only to the roentgen-ray examination. For the diagnosis of enlarged bronchial glands, he thinks our most valuable aid in diagnosis is a thorough roentgen-ray examination. He contrasts the relative value of the fluoroscopic examination with roentgenography, and concludes that fluoroscopic examination is not in itself sufficient. Even when the roentgenogram is good and a careful study of it has been made, he admits that the differentiation of the normal hilum shadow from that of a tuberculous one is sometimes difficult. Influenza with bronchopneumonic infiltrations may cause considerable difficulty in differentiation, though repeated roentgen-ray examinations may reveal progressive absorption of the bronchopneumonic foci. Emphasis is laid on the importance of the tuberculin test in differentiating tuberculosis from other respiratory bronchial gland infections.

There can be no cure without immunity, the author believes; the progress in treatment depends on maintenance of this factor. Tuberculosis of the bronchial glands may be treated by the use of the roentgen ray, but the danger of reducing the anti-infectious powers of the body by too much roentgenization is not emphasized.

Cultures are isolated and treated so that the acid-fastness of the bacilli disappears, and eventually a substance is obtained which is referred to as M. T. B. From this substance, by the process of filtration, three partial antigens are obtained, which are designated as M. T. B. R. In the process of filtering, M. T. B., a water-soluble element containing the toxin of the tubercle bacillus, is obtained. This represents the pure tuberculin, and is designated L. The water-insoluble residuum is called M. T. B. R. By treating the residuum with alcohol and ether, the three partial antigens are obtained. Continuing his description of the three partial antigens, he says that part one contains the fat acid lipoids which are soluble in alcohol, and he designates these as F; the second part contains the neutral fats, high molecular substances soluble in ether, which are called M; the third constituent

of this antigen group, which is entirely insoluble, is derived from the residuum and belongs to the group of nucleoproteins. This is designated as A. These partial antigens are injected in very minute doses, and the author claims they are of special value in the treatment of tuberculous bronchial glands. Of these partigens, only M. T. B. R. and the special antigens A., F. and M. are considered in the treatment.

The ideas advanced by Professor Much may be interesting, but the conclusions are far from convincing and the therapeutic directions remind one of manufacturers' "literature." In the words of the translator's preface, the assertions of the value of partial antigens or partigens (what a word!) are most emphatic, and it is well to note that as yet nothing but assertions are brought forward in favor of their alleged value. Dogmatism with a touch of arrogance is the prevailing note. It is quite evident that the efficacy of the treatment with partigens requires further clinical tests. The evidence thus far submitted is not sufficient to warrant acceptance.

The translation reads smoothly enough. That "tubercular" is used in the first ninety pages and "tuberculous" in the other sixty-six arouses curiosity. There is complete lawlessness, however, in the way roentgen ray and x-ray, with or without one or two capitals, is used.

SURGICAL THERAPEUTICS AND OPERATIVE TECHNIC. By E. Doyen. English Edition Prepared by the Author in Collaboration with H. Spencer-Browne, M.B., Elève de l'Institut Pasteur. In Three Volumes. Cloth. Price, \$35. New York: William Wood and Company, 1920.

In reviewing this work, it must be remembered that Doyen is dead. The material was ready for publication at least five years ago—about the time of Doyen's death; hence there was no opportunity given him to make revisions which would bring the subject matter up to date, and furthermore, only Doyen's work, opinions and beliefs are set forth. In short, the work is a professional autobiography published posthumously. Under these circumstances, any criticism that could be made of what is said, or disagreement with the author's views, would hardly be in good taste. Doyen's genius was known and acknowledged, although his views were not always accepted. This work is a reflection of his surgical views and practice. The first volume—which appeared in 1917—contains much introductory matter on the state of surgical practice at the beginning of the twentieth century, on surgical technic, and on the duties and rights of the surgeon. General surgical technic, including a description of Doyen's "surgical home," of his instruments and apparatus, numbering several hundreds, as he was a mechanical genius and devised one or more instruments for each and every step in surgical technic, and the care of the patient before, during and after operation are subjects discussed at considerable length. Surgery of blood vessels and operations on the head are begun in this volume. The second and third volumes were published in 1920, having been translated from the original after the conclusion of the war. Volume II continues and concludes the operations on the head, neck, thorax and extremities. Volume III takes up the surgery of the abdomen, including in this discussion a summary of Doyen's researches into the physiology of the stomach and gastric digestion. Operations on the female generative organs and the index conclude this volume. The text is freely illustrated throughout by well made pictures—about a thousand to each volume. Every instrument, every procedure and each step in the more essential and important operations is illustrated, either by a photograph or by a drawing.

A TEXT-BOOK OF PHYSIOLOGY FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By Russell Burton-Opitz, S.M., M.D., Ph.D., Associate Professor of Physiology, Columbia University. Cloth. Price, \$7.50 net. Pp. 1185, with 538 illustrations. Philadelphia: W. B. Saunders Company, 1920.

Burton-Opitz has definitely designed this book from the point of view of the physician, and has correspondingly emphasized the mammalian and human aspects of physiology at the expense of comparative physiology. This omission has been largely compensated for by the first section of the book, which considers physiology in a much broader manner. One of the strongest features of the book is its large number of illustrations and diagrams, especially of apparatus and the less easily understood subjects, as the clotting of blood. Much

of the material of the text is also gathered in outline form, making the book more available for ready reference. The practitioner, especially, will appreciate the brief review of the physical, chemical and histologic principles which precedes each physiologic discussion. Considerable emphasis is laid on methods of measurement, possibly too much when it is considered that the older ones are usually inferior to the more recent. Burton-Opitz tends to be somewhat didactic in his treatment of theories, often failing to distinguish between facts and their interpretations, or giving but one theory as accepted and not mentioning other equally tenable theories. As an instance in point, exophthalmic goiter is treated as a hyperthyroidism, with no mention of the possibility of a toxic secretion. Not all the most recent work has been incorporated in the text. For instance, we were unable to find any mention of vasomotor control of the capillaries; and the sections on internal secretions (thirty-four pages) and immunity (eight pages) seem rather slighted as compared with the physiology of muscle (fifty-seven pages), especially as this book is for medical men. There are the usual first edition typographic errors, and pages 79 and 83 are transposed; but, on the whole, the book is well gotten up, the material clearly presented, and the whole a welcome addition to the literature on physiology.

DÖDERLEIN-KRÖNIG OPERATIVE GYNÄKOLOGIE. Bearbeitet von Dr. med. et. Dr. art. obs. h. c. Albert Döderlein, Direktor der Universitäts-Frauenklinik, München. Fourth edition. Cloth. Price, 400 marks. Pp. 1028, with 470 illustrations. Leipzig: George Thieme, 1921.

The third edition of this book appeared in 1912. The fourth edition is prefaced by a statement from Döderlein which is virtually a eulogy of his collaborator, Krönig, who died not long ago. Döderlein points out that operative gynecology has advanced greatly in many fields, and invites comparison of the present volume with the third edition. Numerous additions have been made to the text as evidenced by increase in number of pages and pictures. Literary references are frequent to articles published during the intervening years, some of the references as late as 1920. Of course there is little consideration given to American or British work, since this literature was not available to German authors. A special chapter on "Anesthesia," has been prepared by Dr. Zweifel, assistant to Döderlein. The classical operation, drawing the round ligaments through the broad ligaments for suspending the uterus, is credited to Baldy. As has been the case with previous editions of this books, it is printed entirely on the finest coated paper, and there are 455 illustrations, most of which are in colors. Of the American gynecologists mentioned, according to the index, Baldy occurs three times; Cullen, seven times; Dudley, once; Kelly, twenty-four times; Kosmak, once; Goldspohn, once; Marion Sims, eight times; Martin, once; Mayo, once, and Williams, three times. Since the appearance of the first edition in 1905, this book has been considered among the leading textbooks of its subject.

DIE SCHLAFSTÖRUNGEN UND IHRE BEHANDLUNG. Von Dr. L. E. Bregman, Primararzt am Städtischen Krankenhaus Czyste-Warschau. Paper. Price, 12 marks. Pp. 136. Berlin: S. Karger, 1920.

This unpretentious little book, with paper cover, printed on poor paper and poorly bound, was written in Polish in 1918; but on account of unsurmountable difficulties in the printing situation, it had to be translated into German and wait two years for publication. The author rightly points out that, as one third of our life is spent in sleeping, the disorders of sleep are worthy of serious consideration. The first two chapters deal with the causes and types of insomnia; the third with disturbances of sleep in childhood and youth, such as pavor nocturnus, sleep walking, and enuresis nocturna; the fourth with morbid drowsiness and narcolepsy; the remaining four chapters with treatment, including hydrotherapy, mechanotherapy, psychotherapy, and the mode of action, proper selection and administration of hypnotic drugs. In his psychotherapy the author recommends only the more conservative and simple methods. He denounces psychoanalysis and warns against deep hypnosis, though he finds light hypnosis useful at times. The literature is extensively quoted, and altogether the little book will be found most useful to those interested in the subject.

Medicolegal

Legitimate Use of Bones by Physicians as Witnesses

(*People v. Lipszinska (Mich.)*, 180 N. W. R. 617)

The Supreme Court of Michigan says that in this homicide case certain bones that had been found were brought into court and were received in evidence without objection. After they were received in evidence, physicians, over the objection of the defendant's counsel, assembled the bones. The court does not think that the defendant's objection was tenable. One of the purposes of assembling the bones was to show the height of the skeleton, to demonstrate that it was that of a female, and one of the physicians made use of the bones in explaining the difference in the bones of the male and the female. The condition of the skull, and whether a fracture found in it was made before or after death, was a matter of direct conflict between the experts of the state and the one called by the defendant. The bones were in the same condition as when found; they were used, and legitimately so, by the physicians in giving their testimony; and the court perceives no basis for the claim that such gruesome exhibit was made to prejudice the jury.

Influenzal Pneumonia with Reference to Military Service—Statistics

(*Gorder v. Lincoln Nat. Life Ins. Co. (N. D.)*, 180 N. W. R. 514)

The Supreme Court of North Dakota says that this action was brought, by the beneficiary of a policy of life insurance, to recover for the death of the insured, which occurred, Oct. 14, 1918, from pneumonia, at the base hospital at Liverpool, about a week after his debarkation as a member of a battery of field artillery. The policy contained a war clause which required the insured to obtain permission from the insurance company to engage in military or naval service in time of war and to pay an extra premium, or the company's liability should not be greater than the legal reserve on the policy. In affirming a judgment in favor of the plaintiff, the court takes the position that on the record in this case it cannot say that the death of the insured was in consequence of military service. Under the language of the provision in question, each individual case is to be determined on its own facts. In other words, whether or not the death of the insured in a particular case was in consequence of such service within such provision is a question of fact to be determined on all of the evidence of the circumstances surrounding the insured at the time of his death. Where a death is occasioned by a disease epidemic at the time among both the civilian and the military populations, the court cannot find from statistics alone, which apparently show a greater mortality in the army as a whole than among the civil population, that the insured died in consequence of military service. Some statistics offered would seem to show that there were about six deaths in the army from influenzal pneumonia to one in civil life among a similar number of people, and that the disease was much more prevalent in the army than in civil life. But these statistics were admitted to be very unreliable; for, as was remarked in the report of the state board of health for the biennial period ending June 30, 1920, "case reports were most inaccurate and thousands never saw a physician," whereas in the army every man was under constant observation for pathologic symptoms, and no case of disease would be likely to be overlooked. Furthermore, the age of susceptibility to the particular disease in question is greatest and the mortality highest among those of military age, and of these it has been observed that it bore heaviest on the most vigorous. The removal of so large a number of vigorous persons of this age from civil life would naturally have a tendency both to lessen the mortality rate for civil life and to accelerate it for military life. The outstanding fact in this case was that the hazard to the lives of both the military and civil population was increased several fold by the prevalence of the pandemic of influenzal pneumonia. Statistical data thus far compile show wide variation of mortality in different sections of the country and in different army camps. Both soldiers and

civilians suffered from a common disease, whereas the high death rates due to diseases in the armies assembled in former wars were occasioned by diseases more peculiar to military life. However the policy in question might be construed in reference to diseases that are more peculiarly prevalent in army camps than in civil life, so that a death from such a disease might be regarded as a death in consequence of such service, the court is of the opinion that on the record in this case it cannot say that the death of the insured was in consequence of such service. The burden resting on the defendant company to establish that death resulted from military service was not sustained when no evidence was introduced showing the sanitary conditions in the various camps in which the insured was stationed, and on the army transport on which he sailed, or in the military unit to which he was attached.

Diagnosis and Treatment of Injury to Knee

(*Dillishaw et ux. v. Bell (S. C.), 105 S. E. R. 410*)

The Supreme Court of South Carolina, in reversing a judgment obtained by the plaintiffs, says that Mrs. Dillishaw in some way fell to the floor and injured one of her knees. The defendant was called to attend her. He made such examination as he could, but found that the knee was too painful to make a thorough examination, and, not having an anesthetic with him, went to get one. When he returned the same night, he brought another physician to assist him. The two agreed that the injury was the result of a torn muscle, and not a broken patella. They bound up the knee with a figure-of-8 bandage. The knee did not get well, and Mrs. Dillishaw called in a Dr. Fuller, whose diagnosis was a broken patella. Dr. Fuller called to his assistance another physician, who was doubtful. A roentgenogram was taken, and it confirmed the diagnosis of Dr. Fuller. Subsequently Dr. Fuller and his assistant performed an operation on the knee and cured it. The defendant quit the case when Dr. Fuller was called. The defendant was charged with negligence in making the diagnosis, in the treatment, and in a premature discharge of the plaintiff as cured.

With reference to the alleged negligence in the diagnosis, the strongest point in the plaintiff's favor was the statement that there was an indentation on the knee that followed the break in the bone, and large enough to hold the finger; but there was also undisputed evidence that a torn muscle would have produced the same depression. The evidence was all one way—that an injured knee presents difficulties of diagnosis that mislead the most skilful physicians. When Dr. Fuller was asked whether the average practicing physician, who knew enough to practice, would have had any difficulty in making a diagnosis, he answered, "I do not know what the average man would be able to determine." The fact that the assistant of Dr. Fuller, who made a careful examination under the most favorable circumstances, did not believe the patella to be broken, negated the charge of negligence in the diagnosis. When the testimony of the other witnesses, uncontradicted, was that a mistake in the diagnosis of the injury to a knee is liable to occur with the most skilful, was added, then negligence in a diagnosis goes out of the case.

Nor was there any evidence from which negligence in treatment could be inferred. All of the physicians said that the figure-of-8 bandage was a well-recognized method of treating that kind of injury, even when the patella was broken. It might be better to operate, but even operations are not always successful.

As to the alleged premature dismissal: The plaintiffs testified that the defendant told them that Mrs. Dillishaw was cured and could walk; that this statement was untrue, and she could not walk at all. The defendant denied this, and stated that he quit the case when he learned that Dr. Fuller had been called in, and that is the proper practice. If this statement were material, the case should have been sent to the jury. It was not material. There was nothing in the case to show that they had done or refrained from doing anything to their injury on account of the untrue statement. The operation was not performed for months after they knew that the patella was broken. More than this, even if the defendant did tell Mrs. Dillishaw that she was cured and could walk, she knew better than any one else that she could

not walk a step and was not cured. There are some treacherous diseases in which visible manifestations disappear; but the skilled physician knows that the danger is not at an end. The ordinary mortal does not know it, and may be misled, to his injury, by a false statement. This was not such a case. No injury did or could have resulted from the alleged false statement, even if it was made. Hence it was immaterial. A verdict should have been directed for the defendant.

Administration of Anesthetic to Alcoholic Patient

(*Loudon et al. v. Scott et al. (Mont.), 194 Pac. R. 488*)

The Supreme Court of Montana, in affirming a judgment granting a nonsuit and dismissing the complaint, says that Dr. Scott was charged with negligence in causing an anesthetic to be administered to one Charles Loudon when he was in an unfit physical condition, the patient dying before the intended operation on him for a comminuted fracture of the bones of the right forearm was commenced. The fracture was sustained, June 4. After waiting some time for the swelling in the arm to recede and the soreness to disappear, Dr. Scott two or three times postponed operating because Loudon was suffering from acute alcoholism. Finally, July 17, Loudon went to the hospital more sober than he had been, was induced to stay there overnight, during which time Dr. Scott got him in as good condition as he could under the circumstances, and the next morning prepared the patient to operate on him and had the anesthetic administered.

The court does not think that the evidence, viewed in the light most favorable to the plaintiffs, reasonably tended to establish the negligence charged against Dr. Scott. The consensual transaction from which arises the relation of physician and patient does not imply absolute liability. A physician is not an insurer, and a malpractice case does not differ in its essential ingredients from any other action for damages arising from negligence. The law does not presuppose that for every injury there must be a recovery in damages. The gist of this action was negligence, and actionable negligence arises only from a breach of legal duty. Isolated cases may be found in which loose language is employed to the effect that the physician owes to the patient the duty to exercise his best care, skill and ability; but the doctrine is as illogical as the practical application of the rule would be ridiculous. As has been said, "No man is always at his best. One who employs a professional man may expect from him the ordinary care and skill of his profession. He is liable if he does not give this, but more cannot be demanded." The object of the law, on the one hand, is to guard the patient against the wrongful practice of ignorant or negligent men who hold themselves out as physicians or surgeons, and, on the other, to protect the faithful practitioner of ordinary learning, skill and ability from loss in reputation or purse on account of matters for which it would be unreasonable to hold him responsible.

The gravamen or material part of this case was negligence, and negligence cannot be inferred from the fact alone that the patient died. The maxim "*Res ipsa loquitur*," the thing speaks for itself, has no application to a case of this character. Negligence is not to be presumed; it must be proved, and the plaintiffs were required to assume the burden of proving the negligence charged and that Loudon's death resulted proximately from such negligence. From the very nature of the case, each of these ultimate facts required for its proof the testimony of one qualified to give an expert opinion, and in the absence of such testimony the case failed. It is not difficult to understand why expert testimony was not introduced. The subject-matter did not admit of it. The case made was one wherein the question whether the operation should have been undertaken on July 18 was addressed exclusively to the sound judgment of the surgeon in charge. The evidence led to but one conclusion: That Dr. Scott exercised a bona fide judgment, and if, under the circumstances, an error was committed—and the evidence did not warrant such an assumption—it was merely an error of judgment for which he could not be held responsible in damages.

It was suggested that Dr. Scott could have detained Loudon in the hospital a sufficient time to remove the effects of his

intemperance, and that there was no emergency compelling the operation when it was undertaken; but there was no evidence to justify either assertion, and certainly there is no presumption that a physician has authority to detain his patient against the patient's will, any more than that he may operate on the patient without the patient's consent. Whether the operation could have been performed as well at a later date was left to conjecture. If the operation had been postponed longer, and serious results had followed to Loudon's arm, Dr. Scott might have been called on to respond in damages for his negligence in failing to operate at the proper time. The evidence was not sufficient to carry the case to the jury.

Society Proceedings

COMING MEETINGS

Delaware State Medical Society, Rehoboth, Aug. 16.
Colorado Congress of Ophthalmology and Oto-Laryngology, Denver, July 29-30.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Montana, Medical Association of, Billings, July 13-14.
Tri-State Meeting (Oregon, Washington and Idaho), Portland, Ore., June 30-July 2.

SOUTH DAKOTA STATE MEDICAL ASSOCIATION

Fortieth Annual Session, held at Aberdeen, May 25-26, 1921

The President, DR. HARRY T. KENNEY, Pierre, in the Chair

Status of the Bone Graft in the Treatment of Fractures

DR. MELVIN S. HENDERSON, Rochester, Minn.: The bone graft is not necessary in the treatment of recent fractures. The conservative closed method will always be the method preferred, and next in preference some form of internal fixation either by metal or by beef bone plates. The bone graft is the method preferred in cases of nonunion, and the massive graft gives the best means of obtaining union. Since the bone graft is absorbed in part, at least, it is safer from a clinical point of view to regard it as being completely absorbed and replaced by new bone. It is essential, therefore, that the graft be large so that absorption will be slow, thus giving time for more callus to be deposited; and postoperative fixation must be firm enough and prolonged enough to protect the graft, before heavy strain is allowed on the part. The massive graft fulfils these requirements better than either the intramedullary or the inlay graft.

Direct Laryngoscopy, Bronchoscopy and Esophagoscopy as Diagnostic Aids

DR. C. C. HOAGLAND, Madison: Peroral endoscopy is not a formidable or dangerous diagnostic procedure when performed by one with the proper training and experience. A general anesthetic will be required in less than 50 per cent. of all cases. The greatest field for this method is in the laryngeal diseases of children. Closer cooperation between the general practitioner and the specialist in this field will work to the advantage of all concerned.

Prognosis and Treatment in Tuberculosis of Larynx

DR. J. B. GREGG, Sioux Falls: Laryngeal tuberculosis is found in 10 per cent. of incipient cases; in 20 per cent. of moderately advanced cases, and in 42 per cent. of far advanced cases of pulmonary tuberculosis. The laryngeal prognosis varies directly with the extent of the pulmonary involvement. The mortality within one year in incipient pulmonary tuberculosis with laryngeal involvement is three times as great as in the same type of pulmonary cases without the laryngeal complication. The mortality within one year, in moderately advanced pulmonary tuberculosis with laryngeal involvement, is twice as great as in the same type of cases without the laryngeal complication. In far advanced pulmonary tuberculosis with the laryngeal complications, the mortality was 12 per cent. higher than in the same class of cases without the laryngeal involvement. Involvement of the epiglottis or extensive involvement throughout the larynx

indicates a poor prognosis, both as regards life and as regards probability of improving the laryngeal condition. The improvement or lack of improvement in the larynx, if treated carefully, parallels closely (with exceptions) the improvement or lack of improvement in the lungs and general condition.

Acute Glandular Fever in Children

DR. GOLDIE ZIMMERMAN, Sioux Falls: Glandular fever is contagious. It is a disease of childhood, although cases are reported among adults. Its pathology is obscure. Evidence points to the possibility of a streptococcus infection, which enters by the way of the throat and gives rise to angina and later localizes in the lymph nodes. The prognosis is favorable in most cases. Many weeks are required before recovery is complete. The patient's health is seriously impaired. Fatalities are usually due to nephritis. Few cases go on to suppuration, and this rarely occurs in more than one gland mass. Treatment consists in rest in bed, isolation, light diet, an ice bag to the neck, and cool sponging. Calomel and salicylates are of some value. After recovery the patient usually shows a marked anemia which calls for treatment.

Prevention of Acidosis in Treatment of Diabetes

DR. MICHAEL EBERT, Webster: The cause of acidosis is the overproduction of nonvolatile acids which fix base and deplete the alkali reserve. The great source of these acid bodies is the combustion of fat without the presence of carbohydrates. Consequently, to prevent or treat acidosis, we should avoid all fat and push carbohydrate intake. In the treatment of coma, alkali therapy is dangerous and should be abandoned.

Negative Pressure in Empyema

DR. N. O. RAMSTAD, Bismarck, N. D.: My associate, Dr. A. E. Brix, developed an apparatus which will be of considerable help in the treatment of empyema. The apparatus consists of a rubber belt holding a drainage tube and a Dakin tube tightly, and an electrically driven vacuum pump controlled by a manometer. By means of this apparatus, after a thoracotomy has been performed, it is possible to maintain a constant negative pressure of definite amount in the pleura. It automatically removes the pus and keeps the lung distended, and it allows the free use of any antiseptic solution in the pleura, without removal of the apparatus. The negative pressure has been very valuable in the treatment of unhealed chronic cases in which operation had been performed.

When Shall We Operate for Mastoiditis?

DR. FREDERICK E. FRANCHERE, Sioux City, Iowa: When the pain and tenderness show no tendency to subside, when the discharge from the ear persists or increases in quantity and the general condition of the patient is not improving, it is time to make a complete exenteration of every mastoid cell that can be found.

Suppurative Appendicitis

DRS. H. J. BARTON and C. E. SHERWOOD, Watertown, Iowa: In the diagnosis of the condition we depend on: history of previous typical attack of appendicitis; abdominal pain; sudden cessation of the pain, indicating that the pressure has been suddenly relieved; variable temperature; abdominal sensitiveness; nausea and vomiting; tumor; leukocytosis, and condition of pulse. The method of handling these cases is operative. The appendix is removed in practically every case. When possible the stump is invaginated. Our mortality—6.435 per cent.—is low. In 202 consecutive cases there have been thirteen deaths.

Diagnosis and Treatment of Osteomyelitis

DR. A. C. STOKES, Omaha: The acute form of osteomyelitis demands early surgical treatment if the limb is to be saved from either a long period of infection or entire loss. The symptoms are, in order of importance, sudden onset of pain, high temperature, tenderness, swelling, local redness, history of trauma, either real or imaginary and considerable prostration. The earlier the bone is opened, the sooner the extension of the infection is limited and the less frequent the sequels. The point of greatest tenderness is the point to be chosen for operation.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

June, 1921, 21, No. 6

- Standards of Basal Metabolism in Normal Infants and Children. F. B. Talbot, Boston.
- *Reflexes in Early Infancy. C. W. Burr, Philadelphia.—p. 529.
- *Factor of Position of Diaphragm in Roentgen-Ray Diagnosis of Enlarged Thymus. H. J. Gerstenberger, Cleveland.—p. 534.
- *Empyema in Children. W. E. Ladd and G. D. Cutler, Boston.—p. 546.
- Changes in Form and Dimensions of Chest at Birth and in Neonatal Period. R. E. Scammon and W. H. Rucker, Minneapolis.—p. 552.
- *Absorption of Fluid Injected into Peritoneal Cavity. B. S. Denzer and A. F. Anderson, New York.—p. 565.
- Physical Development of Tuberculous Children. M. L. Blatt, Chicago.—p. 575.
- Resume on Circulatory System Literature of 1920. H. Calhoun, Iowa City, Ia.—p. 586.

Reflexes in Early Infancy.—Sixty-nine infants were examined by Burr, their ages varying from less than 1 hour old to 90 days old. The deep and superficial reflexes (i. e., knee, Achilles, chin, plantar, abdominal) may be present at birth but the absence of one or all in early infancy does not indicate disease. The plantar jerk is very variable. It may be absent up to the third month or longer, or there may be extension or flexion of the toes, or at one time there may be one movement, at another the other. Most frequently there is extension. The movement may be rapid or deliberate. The Achilles jerk is very frequently absent at birth. (How late in life it may appear is unknown). Sometimes the abdominal jerk can be obtained only on stimulating the lowest third of the muscle. When the reflexes appear after birth, their appearance does not occur in any regular order.

Position of Diaphragm and Enlarged Thymus.—The case of a patient, 17 months old, is presented by Gerstenberger who under the fluoroscope and in the roentgenogram shows a wide shadow in the thymic region which, according to present conception, is considered abnormal.

Empyema in Children.—From a study of 172 cases, Ladd and Cutler advise that a preliminary thoracentesis should be done to ascertain the type of infection; that in the streptococcus infections it is probable that aspiration or closed drainage through a tube would supply sufficient drainage and result in a lower mortality. Cases of pneumococcus empyema, closed drainage is useful as a temporary measure in the case of the extremely sick patients but it is not to be recommended as the operation of choice. The causes of so-called collapsed lung is not the presence of atmospheric pressure through an open wound, but the result of inadequate operation and drainage. Operations causing collapse of the chest wall, as recommended by Estlander and Schede, are contraindicated because they cause distressing deformities and are unnecessary.

Absorption of Fluid from Peritoneal Cavity.—According to Denzer and Anderson, absorption of fluid injected into the peritoneal cavity occurs in from twelve to forty-eight hours. Intraperitoneal injection of saline solutions causes a temporary reaction—a sterile inflammation. Abdominal puncture with a capillary tube provides a safe method for the diagnosis of very small quantities of peritoneal fluid and of following the course of an inflammatory reaction in the peritoneal cavity.

American Journal of Ophthalmology, Chicago

May, 1921, 4, No. 5

- Physiologic Nature of Schlemm Canal. M. U. Troncoso, New York.—p. 321.
- Fixation, Kindergarten Exercise in Ophthalmic Technic. H. Gifford, Omaha.—p. 327.
- Etiology of Periodic Ophthalmia in Horses. L. Post, St. Louis.—p. 330.
- Intraocular Foreign Body, a Surgical Ocular Emergency. G. S. Derby, Boston.—p. 334.
- Injuries to Eye; Report of 1,051 Cases. D. M. Campbell and J. M. Carter, Detroit.—p. 336.
- Self Inflicted Eye Injuries. M. Londolt, Paris.—p. 345.
- Hereditary Optic Atrophy. J. M. Griscom, Philadelphia.—p. 347.

- Traumatic Rupture of Internal Carotid into Cavernous Sinus. I. Hartshorne, New York.—p. 353.
- Subnormal Accommodation: Result of Focal Infection. P. Sumner, San Francisco.—p. 356.
- Some Varieties of Glaucoma, Especially with Reference to Prognosis and Treatment. G. H. Burnham, Toronto, Can.—p. 358.
- New Retinoscope. A. G. Bennett, Buffalo.—p. 361.
- Fixation of Eyeball Perpendicular to Section. A. Perlmann, Iserlohn, Ger.—p. 362.
- Traumatic Myopia. J. H. Bailey, Brooklyn.—p. 363.
- Neuroretinitis Following Salvarsan Injection. P. W. Oden and W. B. White, Shreveport, La.—p. 365.
- Corneal and Scleral Measurements of Intraocular Tension with Brown Tonometer. E. J. Brown, Minneapolis.—p. 365.

American Journal of Physiology, Baltimore

May 1, 1921, 56, No. 1

- *Reactions to Hemorrhage. W. J. Meek and J. A. E. Eyster, Madison, Wis.—p. 1.
- Activation of Muscle Catalase by Liver. T. C. Burnet, San Francisco.—p. 16.
- *Source of Diastases of Blood. L. H. David and E. L. Ross, Chicago.—p. 22.
- Changes in Catalase Content During Life Cycle. W. E. Burge and E. L. Burge, Urbana, Ill.—p. 29.
- *Nutritive Value of Yeast in Bread. P. B. Hawk, C. A. Smith and O. Bergeim, Philadelphia.—p. 33.
- Effect of Suckling and Castration on Lactating Mammary Gland in Rat and Guinea-Pig. C. Kuramitsu and L. Loeb, St. Louis.—p. 40.
- Diet and Sex as Factors in Creatinuria of Man. G. Stearns and H. B. Lewis, Urbana, Ill.—p. 60.
- Studies on Visceral Sensory Nervous System. VIII. Presence of Vasomotor Fibers in Vagus Nerve to Pulmonary Vessels of Amphibian and Reptilian Lung. A. B. Luckhardt and A. J. Carlson, Chicago.—p. 72.
- Paradoxical Pupil Dilatation Following Lesions of Afferent Paths. J. Byrne, New York.—p. 113.
- Fatigue in Frog Muscle When Immersed in Various Concentrations of Lipoid-Solvents; Especially Higher Alcohols. F. M. Baldwin, Ames, Iowa.—p. 127.
- Ameboid Movement, Tissue Formation and Consistency of Protoplasm. L. Loeb, St. Louis.—p. 140.
- Distribution of Iodin Between Cells and Colloid in Thyroid. III. Effect of Stimulation of Vagus Sympathetic Nerve on Distribution and Concentration of Iodin in Dog's Thyroid. H. B. Van Dyke, Chicago.—p. 168.
- Extensibility of Muscle: I. Effect of Stretching on Development of Fatigue in Muscle. N. B. Eddy and A. W. Downs, Edmonton, Can.—p. 182.
- Id. II: Production of Carbon Dioxid by Muscle When It is Made to Support a Weight. N. B. Eddy and A. W. Downs, Edmonton, Can.—p. 188.
- Studies of Thyroid Apparatus. I. Stability of Nervous System as Factor in Resistance of Albino Rat to Loss of Parathyroid Secretion. F. S. Hammett, Philadelphia.—p. 196.
- *Studies in Nutrition. VI. Nutritive Value of Proteins of Lima Bean, Phaseolus Lunatus. A. J. Finks and C. O. Johns, Washington, D. C.—p. 205.
- Id. VII. Nutritive Value of Proteins of Adzuki Bean, Phaseolus Angularis. C. O. Johns and A. J. Finks, Washington, D. C.—p. 208.
- Epinephrin Output Estimated by Collecting Suprarenal Blood Without Opening Abdomen. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 213.
- Postoperative Depletion of Epinephrin Store of Suprarenals. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 220.

Reactions to Hemorrhage.—The effect of hemorrhage on the diastolic heart size of the dog was studied by Meek and Eyster by means of the roentgen ray. In anesthetized animals under artificial respiration the cardiac output and venous pressures have been determined after bleeding by cardiometers and manometers. In the intact animal hemorrhage amounting to about 2.1 per cent. of the body weight is necessary before the diastolic heart size, and presumably the output, is reduced. In the anesthetized animal with open chest, the minute volume output is maintained, with the exception of a slight drop immediately after bleeding, until the total hemorrhage equals about 1.2 per cent. of the body weight. Various mechanisms which might account for maintenance of cardiac output under these conditions are discussed. The only satisfactory explanation seems to be that the effective circulation is kept up by constriction of venules and capillaries, particularly those which have been more or less stagnant. Evidence in support of this idea is submitted. When hemorrhage in the intact animal reaches about 2 per cent. of the body weight, the venules and capillaries of the ear may be seen markedly to constrict. Since such a mechanism is thus shown to exist, it becomes probable that it may have been operating in various parts of the body in earlier stages of the hemorrhage and that in this way there was provided a constant venous return and cardiac output even though the blood volume was decreased.

Source of Blood Diastases.—Davis and Ross conclude that the pancreas is practically the only source of the blood diastases.

Nutritive Value of Yeast in Bread.—Hawk and his associates claim that flour containing 5 per cent. of yeast powder makes a palatable bread much more nutritious than ordinary bread. The yeast supplements both the water soluble B and protein content of wheat flour. Yeast is thus a nutrient constituent of bread, and any increase in its amount up to quantities far in excess of those ordinarily used will improve the food value of the product.

Nutritive Value of Lima Bean.—A diet of cooked lima bean meal supplemented with 0.3 per cent. of cystine, together with the other necessary nonprotein dietary ingredients, furnished adequate protein for the normal growth of albino rats. A similar diet, to which no cystine was added, merely maintained the weight of the experimental animals. Growth did not occur if the diet consisted of either raw or cooked lima bean meal which was not supplemented with cystine although the other nonprotein dietary factors were added.

Nutritive Value of Adzuki Bean.—Raw or cooked adzuki bean meal supplemented with cystine furnished adequate protein and water soluble vitamin for normal growth. Similar diets without the addition of cystine enabled the albino rats to grow at only one third to two thirds of the normal rate. Comparable results were obtained with the isolated adzuki bean globulin.

American Journal of Roentgenology, New York

May, 1921, 8, No. 5

- Absorption of Radium Radiations by Tissues. G. Failla, New York.—p. 215.
 Personal Experience with Application of Newer Roentgen-Ray Therapy in Cancer. M. J. Sittenfeld, New York.—p. 232.
 Clinical Results from Newer Technic of Deep Roentgen-Ray Therapy in Malignant Diseases. G. E. Pfahler, Philadelphia.—p. 236.
 New Device for Increasing Protection of Both Patient and Roentgenologist. G. E. Pfahler, Philadelphia.—p. 239.
 *Roentgen-Ray Treatment of Pulmonary Tuberculosis. W. Wilkinson, Phoenix, Ariz.—p. 241.
 Roentgen-Ray Study of Dust Inhalation in Granite Industry. D. C. Jarvis, Barre, Vt.—p. 244.
 Roentgen-Ray Shadows of Lung Syphilis and Syphilitic Tuberculous Symbiosis in Lungs. W. W. Watkins, Phoenix, Ariz.—p. 259.
 Aneurysm of Aorta and Abscess of Tracheobronchial Lymph Glands. R. D. Carman and C. G. Sutherland, Rochester, Minn.—p. 269.
 *Pelvimetry by Means of Roentgen Ray. W. E. Chamberlain and R. R. Newell, San Francisco.—p. 272.
 Present Problems and Future Prospects of Deep Roentgen-Ray Therapy. A. Soiland, Los Angeles.—p. 276.

Roentgen-Ray Therapy of Pulmonary Tuberculosis.—Wilkinson claims that when roentgen-ray therapy is used properly in incipient tuberculosis, especially with those patients who have improved or are at a standstill, most of them will be benefited decidedly. As in pneumonia, inflammation and congestion are relieved, adhesions are absorbed to some extent, lymphocytes are increased, infected lymph glands become shriveled and cease to be foci of infection. Fibrosis and calcification are promoted, the pulse rate is lowered, and the blood pressure approaches normal. With the improved circulation and elimination, patients sleep and eat better and gain in weight. Expectoration becomes at first freer and then thinner and gradually decreases. The cases progress toward complete arrest much more rapidly than they would without roentgen-ray therapy. Wilkinson gives treatments three times a week, alternately exposing the anterior and the posterior chest, using 2 to 3 ma., 6 in. spark, 15 in. distance, five to ten minutes time, and 3 mm. of aluminum as filter. In many cases, we begin with a dose somewhat less than the above, especially if the patient has a rapid heart and slight elevation of temperature, applying the lesson taught by heliotherapy, that the tuberculous patient must begin with very short sun baths.

Pelvimetry by Means of Roentgen Ray.—A method is described by Chamberlain and Newell for measuring bony dimensions, notably of the female pelvis, by means of roentgen rays. The special apparatus required comprises: 1. A cross-arm plumb-bob. 2. An aluminum filter with small lead ring from which to hang the bob. 3. A light bar of known length for an automatic check on the accuracy of the exposure making. 4. A special scale to lessen the burden of the calculations.

American Review of Tuberculosis, Baltimore

May, 1921, 5, No. 3

- Studies on Tuberculous Infection. VIII. Spontaneous Pneumokoniosis in Guinea-Pig. H. S. Willis, Baltimore.—p. 189.
 *Focal Reaction. W. F. Petersen, Chicago.—p. 218.
 *Importance of Subliminal Symptoms and Period of Alternation of Rest and Exercise in Treatment of Pulmonary Tuberculosis. H. Sewall, Denver.—p. 236.
 *Additional Diagnostic Methods for Cases of Suspected Intra-Ocular Tuberculosis. A. H. W. Caulfeild, Toronto.—p. 253.
 *Suprarenals and Thyroid in Experimental Tuberculosis. G. B. Webb, G. B. Gilbert and C. T. Ryder, Colorado Springs, Colo.—p. 266.

Focal Reaction.—In view of the demonstrated fact that tuberculous foci may react to nonspecific stimuli and conversely that nontuberculous foci may react to tuberculin, the fallacy of the purely specific concept of the focal reaction is discussed by Petersen. Focal reactions occur (1) about inflammatory foci of infectious origin, (2) about localized foci endogenous or traumatic in origin, and (3) on the basis of diathesis. Such reactions take place not only after specific stimulation, but after a wide variety of biologic alterations in the organism. This widened concept of the focal reaction would seem to make clear a number of common clinical observations, such as the flaring up of gallbladder, appendiceal, arthritic or other localized inflammatory foci after remote trauma, vaccination, gastro-intestinal disturbance, roentgen-ray exposure, fatigue, chilling, etc. The focal reaction, no matter how elicited, is essentially a diphasic phenomenon, consisting in an augmentation of inflammation, followed by a diminution, and a tendency to complete restoration to the normal. In the mechanism of the focal reaction in tuberculosis at least three factors are involved: (1) a true and strictly specific sensitization of the organism against proteins and (2) a nonspecific reaction about the tubercle. In the therapeutic application of the focal reaction in nontuberculous disease, attention is directed to the fact that favorable results have been reported from combined nonspecific stimulation and the use of etiotropic agents. Thus milk injections and mercury (in syphilis), tuberculin and mercury (in general paresis), milk injections and salicylates (in arthritis), milk injections and luminal (in epilepsy), arsphenamin and tuberculin (in lupus), etc., have been reported in this connection.

Rest and Exercise in Treatment of Tuberculosis.—Based on the common experience that clinical deterioration due to tuberculous disease is not only accompanied but is preceded by more or less well recognized pathologic symptoms, it is maintained by Sewall that on investigation each patient will commonly disclose a range of pathologic symptoms far less obtrusive than those usually apparent to the physician, and the recognition of these may lead much earlier than is usual to proper treatment. Based on the fact that autoinoculations in the tuberculous subject may lead to disaster or to cure, depending on the phase of vital reaction at which each inoculation succeeds the preceding, it is shown by clinical experience and by experimental inquiry that the clinician should take careful account of the length of the rest interval between muscular exertions of certain patients. It has been found that patients whose symptoms persist when even gentle exercise is taken daily may overcome this trouble when exercise is spaced on alternate days. There is probably considerable divergence between the length of the "negative" and of "positive" phases of reaction in different persons, and, accordingly, the spacing of their exercise should differ. An attempt has been made to draw a parallel between the obscure events marking the course of clinical tuberculosis and the immunologic reactions of animals in which the conditions of infection and inoculation can be experimentally controlled.

Diagnosis of Intra-Ocular Tuberculosis.—A recapitulation of what Caulfeild presents as additional diagnostic methods for cases of suspected intra-ocular tuberculosis might be put as follows: A. With regard to the methods themselves: (1) A careful clinical and, frequently, a stereoscopic examination. (2) The simultaneous use of inhibitive reaction, the tuberculocomplement fixation reaction, and the estimation of the degree of tuberculin sensitiveness. (3) The repetition of these tests, and if the diagnosis still remains in doubt the additional use of the general and focal reaction to tuberculin. B. With regard to the interpretation: (1) The presence of a marked inhibitive reaction together with slight or even doubt-

ful complement fixation is in Caulfeild's opinion an absolute indication that the patient has an active tuberculous lesion, as well as a comparatively high work or resistance tolerance. (2) With a marked inhibitive reaction alone he would hesitate to place on it the same amount of reliance, chiefly because of the greater possibility of the technical error. (3) With a positive complement fixation reaction alone the degree of the reaction is of importance. (4) In the event of certain of the "indecisive" results indicated in 2 and 3, the tests should be repeated, and if the reactions are unchanged they should be considered as suggestive only and taken together with the clinical data and with the history of the subsequent course of the case. (5) Any marked variation in the degree of tuberculin sensitiveness should be considered as suggestive of tuberculous diseases rather than of infection. (6) If the repetition of these tests gives the same "negative" results, the data should be regarded as of increasingly exclusive value in proportion to the number of such results, and the length of the period of observation.

Suprarenals and Thyroid in Experimental Tuberculosis.—Webb and his associates found that the suprarenals become enlarged in guinea-pigs in the course of generalized tuberculosis, and also in pyogenic infections. The thyroid also appears to enlarge in experimental tuberculosis of guinea-pigs, as well as in certain forms of human tuberculosis. This enlargement of suprarenals and thyroid is probably in response to a demand for increased function, and it may be desirable to supplement this tendency by giving suprarenal and thyroid extracts in selected cases of human tuberculosis.

Boston Medical and Surgical Journal

June 9, 1921, 184, No. 23

*Prevention of Heart Disease. H. Emerson, New York.—p. 587.
Essential Factors of Cancer Causation. J. W. Shannon, San Diego, Calif.—p. 608.

Prevention of Heart Disease.—Emerson claims that it is within the realm of possibility, within the reach of present day medical and social knowledge and resources to make as much reduction in sickness and premature death from heart disease as has been obtained by teaching, by diagnosis, by organized medical services in the control of tuberculosis. He urges not to await the coming of patients into offices, but to search for them among the presumably healthy and attack these disabilities before the patient is aware of them, and this through a development of a habit in the whole community to seek a thorough medical examination one a year for adults, twice a year for children under 14, and always after apparent recovery from any acute febrile disease.

Georgia Medical Association Journal, Atlanta

May, 1921, 10, No. 12

Radium Service of Harbin Hospital from Feb. 1, 1920, to Dec. 1, 1920. W. H. Lewis, Rome.—p. 417.
Nonsurgical Drainage of Pathologic Gallbladder. G. M. Niles and H. N. Kraft, Atlanta.—p. 418.
Relief of Menorrhagia and Metrorrhagia by Roentgen-Ray Treatment. W. A. Cole, Savannah.—p. 421.
Importance of Early Diagnosis of Intracranial Lesions. C. E. Dowman, Atlanta.—p. 423.
Fracture of Shaft of Femur. K. McCullough, Waycross.—p. 425.
New Navel Band and Better Way of Putting a Diaper on a Baby. S. A. Visanska, Atlanta.—p. 429.
Analysis of Causes of Vomiting. E. O. Chimene, Rome.—p. 432.
Emergency Head Surgery. D. B. Ware, Fitzgerald.—p. 435.
Significance of Pain in Physical Diagnosis. J. T. Moore, Sycamore.—p. 436.
Sacral Anaesthesia. H. L. Barker, Carrollton.—p. 441.
Diagnosis of Bone Diseases by Roentgen Ray. J. J. Clark.—p. 442.
Quarantine Officer of Twenty Years Ago Versus Modern Health Officer. M. F. Haygood, Atlanta.—p. 444.

Iowa State Medical Society Journal, Des Moines

May 15, 1921, 11, No. 5

Medical Profession Safe-Guarding Americanism. C. J. Whalen, Chicago.—p. 153.
Preparation for Motherhood. W. L. Allen, Davenport.—p. 159.
Medical Journals and Campaign Against Cancer. F. J. Osborne.—p. 161.
Practical Points on Blood-Pressure. E. S. McCrea, Eddyville.—p. 165.
Use of Radium in Surgery. E. E. Bamford, Centerville.—p. 167.
Treatment of Acne. J. F. Auner, Des Moines.—p. 171.
Lethargic Encephalitis. F. M. Fuller, Keokuk.—p. 173.

Johns Hopkins Hospital Bulletin, Baltimore

June, 1921, 32, No. 364

*Analysis of Twenty-One Years' Experience with Cesarean Section. J. W. Williams, Baltimore.—p. 173.
Modern Methods in Handling Hospital Statistics. R. Pearl, Baltimore.—p. 184.
*Atypical Bacillus Paratyphosus B Infection. H. J. Morgan, Baltimore.—p. 195.
*Growth Requirements of Influenza Bacilli. T. M. Rivers and A. K. Poole, Baltimore.—p. 202.
Gradual Withdrawal Method of Treating Morphinism: A Mathematical Note. J. R. Miner, Baltimore.—p. 205.
Formation of Vacuoles and Neutral Red Granules in Connective-Tissue Cells and Blood Cells Observed Under Abnormal Conditions. R. E. Prigosen, Baltimore.—p. 206.

Cesarean Section.—The 183 sections on 145 women analyzed by Williams occurred in a series of approximately 20,000 deliveries, an incidence somewhat under 1 per cent. The operations comprise 104 single, and seventy-nine repeated sections. The following types of operation were done: 121 typical conservative sections, four extraperitoneal sections, one post-mortem section and fifty-seven Porro sections. The gross mortality was 5.46 per cent. but, upon deducting the cases in which death was not attributable to the operation, the net mortality was 3.45 per cent., or 4.07 per cent. in the conservative and 1.82 per cent. in the Porro sections. All deaths, except one from hemorrhage, were due to infection. Disproportion due to contracted pelvis was the indication for interference in 144 cases. The several varieties of rachitic pelvis afforded the predominant indication in the blacks, as compared with the simple flat pelvis in the white. The most frequent nonpelvic indications were eclampsia and serious cardiac decompensation. The uterine cicatrix ruptured once in forty-eight women with repeated sections, as well as in twelve deliveries through natural passages subsequent to section. Somewhat over one half of the children immediately after delivery, and only 7 per cent. were deeply asphyxiated. The old superstition that boys originate from the right and girls from the left ovary can be definitely discarded. In two thirds of the patients the corpus luteum persisted until the end of pregnancy, and its location bore no relation to the sex of the child. It is Williams' conviction that cesarean section is being abused throughout the country, and if accurate statistics as to its results were available that it would be found to be accountable for many unnecessary deaths.

Atypical Paratyphosus B Infection.—An organism was isolated by Morgan from the blood of a patient who initiated his general infection by the development of a cystopyelitis (the latter following urethral stricture). A bacteremia persisted over six weeks. A septic fever was present with leukocytosis. The organism was recovered on numerous occasions from the urine and blood, but never from the stool. With the cure of the urethral stricture and the subsidence of the cystitis and pyelitis the bacteremia disappeared and the patient apparently made a complete recovery. The organism morphologically and culturally corresponds to *B. paratyphosus B*, yet serologically and antigenically it shows marked differences from the stock strains of *B. paratyphosus B*. The organism is a member of the group which has rather loosely been called "Paratyphosus C." It would not seem justifiable to employ the term "Paratyphosus C" in connection with this organism; it should rather be considered a variant of the *B. paratyphosus B* originally described by Schottmuller.

Culturing Influenza Bacillus.—Rivers and Poole claim that two substances are essential for the growth of influenza bacilli. Both are in blood. One resists autoclaving half an hour under 15 pounds pressure, the other does not. The autoclave stable substance is not hemoglobin, although it may be derived from the blood pigment, and as yet has not been found outside of blood. The autoclave labile substance has been obtained also from yeast.

Journal of Bacteriology, Baltimore

May, 1921, 6, No. 3

Main Lines of Natural Bacterial System. S. Orla-Jensen, Copenhagen.—p. 263.
*Variations in Typhoid Bacilli. K.-I. Morishima, New York.—p. 275.
Solid Culture Mediums with Wide Range of Hydrogen or Hydroxyl Ion Concentration. F. A. Wolf and I. V. Shunk, West Raleigh, N. C.—p. 325.
Azotobacter Chroococcum Beij. A. Bonazzi, Wooster, Ohio.—p. 331.

Variations in Typhoid Bacilli.—The variations which may occur in the characteristics of typical typhoid bacilli in regard to their abilities to utilize carbohydrates, and their behavior to serum antibodies under various conditions of cultivation were investigated Morishima. One hundred and thirty-eight cultures which had been carried on artificial mediums since their isolation from patients were employed. Concerning the question whether certain of the variations from the normal type noted represent true mutations in the sense of de Vries, Morishima believes that this term, which defined changes of a definite character occurring in higher plants should not be introduced into bacteriology. All the alterations brought about by artificial environment in the typhoid bacillus were rapidly lost when the organisms were returned to the environments prevailing under the usual cultural conditions and in the case of the inagglutinable strains, even in the course of persistent abnormal environment, the changes observed by others as well as by Morishima should properly be regarded as variants and cannot be spoken of with accuracy as mutations in the sense of de Vries.

Journal of General Physiology, Baltimore

May 20, 1921, 3, No. 5

- Method of Studying Respiratory Exchange in Small Aquatic Organisms, with Particular Reference to Use of Flagellates as an Indicator for Oxygen Consumption. H. M. Fox, Cairo, Egypt.—p. 565.
Phagocytosis of Solid Particles. III. Carbon and Quartz. W. O. Fenn, Boston.—p. 575.
Studies on Enzyme Action. XIX. Sucrolytic Actions of Bananas. K. G. Falk and G. McGuire, New York.—p. 595.
Theory of Injury and Recovery. III. Repeated Exposures to Toxic Solutions. W. J. V. Osterhout, Cambridge, Mass.—p. 611.
Rate of Growth of Dairy Cow. Extrauterine Growth in Weight. S. Brody and A. C. Ragsdale, Columbia, Mo.—p. 623.
Casein Viscosity Studies. H. F. Zoller, Washington, D. C.—p. 635.
Significance of Latency Time in Enzyme Determination. L. G. M. Baas-Becking, Pacific Grove, Calif.—p. 653.
Associative Bacterial Action in Propionic Acid Fermentation. J. M. Sherman and R. H. Shaw, Washington, D. C.—p. 657.
Physiologic Zero: Explanation of Departure from Linear Graph of Reaction Rate Values at Lower Temperatures. J. Krapfa, Jr., Athens, Ga.—p. 659.
Comparative Studies on Respiration. XVII. Decreased Respiration and Recovery. O. L. Inman, Cambridge, Mass.—p. 663.
Donnan Equilibrium and Physical Properties of Proteins. I. Membrane Potentials. J. Loeb, New York.—p. 667.
Donnan Equilibrium and Physical Properties of Proteins. II. Osmotic Pressure. J. Loeb, New York.—p. 691.

Journal of Industrial Hygiene, Boston

June, 1921, 3, No. 2

- Pregnant Woman in Industry. C. P. McCord and D. K. Minster, Cincinnati.—p. 39.
Method for Determining Finer Dust Particles in Air. A. L. Meyer, Baltimore.—p. 51.
Aniline Poisoning in Rubber Industry. P. A. Davis, Akron, Ohio.—p. 57.
Oil Folliculitis. C. G. Page and L. D. Bushnell, Boston.—p. 62.

Journal of Laboratory and Clinical Medicine, St. Louis

May, 1921, 6, No. 8

- *Chaulmoogra Oil in Treatment of Tuberculosis. W. L. Culpepper and M. Ableson, Detroit.—p. 415.
Pharmacologic Action of Lead in Organic Combination. E. C. Mason, Cincinnati.—p. 427.
Resistance of Red Blood Cells. I. Resistance of Red Blood Cells in Health to Hemolytic Action of Sapotoxin. C. H. Neilson and H. Wheelon, St. Louis.—p. 454.
*Test for Early Renal Insufficiency. T. B. Magath, Rochester, Minn.—p. 463.

Chaulmoogra Oil in Tuberculosis.—Culpepper and Ableson report the results of their experimental work on tuberculous guinea-pigs treated with 1 per cent. solutions of the soluble acid sodium salt of the four acid fractions of chaulmoogra oil.

Test for Early Renal Insufficiency.—Magath's work was done on the assumption that if a patient were fed uric acid and there was a slight lesion of the kidneys too small even to give a very marked rise of blood uric acid with a normal diet, it might be possible to demonstrate an early inability of the kidneys to excrete uric acid and thus determine a possible pre-nephritic condition. Usually about 2 gm. of pure uric acid prepared from human urine were administered. A determination was then made of the uric acid in blood. The uric acid excreted during the next twenty-four hours was deter-

mined; at the end of this time a second blood uric acid determination was made and compared with that made at the time the drug was administered. Caffein citrate was used in other cases, and here Magath was able to obtain calculated rises in the blood or urine according to whether the individual was normal or nephritic. From this it would seem that caffein is excreted as uric acid or piles up as uric acid in the blood in cases of nephritis or else some other substance is formed that gives a blue color by the Folin and Wu method. The dose used was about 1 gm. caffein citrate in capsules at three one-hour intervals just prior to the ingestion of a meal.

Kentucky Medical Journal, Bowling Green

May, 1921, 19, No. 5

- Nephro-Cardio-Arterial Syndrome. C. Pope, Louisville, Ky.—p. 216.
Reno-Pulmonary Syndrome. O. O. Miller, Louisville.—p. 218.
Reno-Ophthalmic Syndrome. C. T. Wolfe, Louisville.—p. 219.
Carcinoma in Cervical Stump After Supra-Vaginal Hysterectomy: Report of Three Cases. L. Frank, Louisville.—p. 223.
*Unusual Case of Tuberculosis. O. R. Stuteville, Big Clifty, Ky.—p. 228.
Trifacial Neuralgia; Symptomatology and Treatment. L. W. Frank, Louisville.—p. 229.
Management of Cancer of Rectum. B. Asman, Louisville.—p. 234.
Anomalous Appendix: Uterine Myofibromas; Parovarian Cysts; Hydro-salpinx. J. G. Sherrill, Louisville.—p. 238.
Injury to Wrist; Case Report. J. G. Sherrill, Louisville.—p. 248.
Case of Acute Communicating Hydrocephalus. II. E. Tuley, J. W. Moore and L. R. Ellars, Louisville.—p. 249.
Toxemia of Pregnancy; Report of Two Cases. L. Frank, Louisville.—p. 254.
Mammary Carcinoma in Female, Aged 22 Years; Case Report. L. Frank, Louisville.—p. 256.
Aural Complications of Acute Infectious Diseases. S. G. Dabney, Louisville.—p. 259.
Pneumonia; Its Management and Treatment. C. C. Carroll, White Mills, Ky.—p. 265.
Medical Fads and Frauds. A. H. Barkley, Lexington, Ky.—p. 268.
Dilatation of Heart. J. F. Dunn, Arlington, Ky.—p. 270.
Full Time Pregnancy with Imperforate Hymen. H. A. Davidson, Louisville.—p. 272.
Diagnosis of Pathological Conditions of Gall-Bladder. F. P. Strickler, Jr., Louisville.—p. 273.
Secondary Parotitis. L. Kahn, Louisville.—p. 276.
Methods of Antirabic Treatment. J. McI. Phillips, Columbus, Ohio.—p. 278.
A Bullet Wound of the Femoral Artery. W. E. Fallis, Louisville.—p. 281.
Treatment of Pott's Disease. O. O. Miller, Louisville.—p. 282.
Roentgen-Ray Therapy. M. Y. Marshall, Henderson, Ky.—p. 284.
Celluloid Splints. R. T. Pirtle, Louisville.—p. 287.

Early Case of Pulmonary Tuberculosis.—Stuteville reports a case of pulmonary tuberculosis in a child 11 months old. Examination of the sputum showed presence of the tubercle bacillus.

Medical Record, New York

June 11, 1921, 99, No. 24

- Psychologic Study of Some Mental Defects in Normal Dull Adolescent. L. P. Clark, New York.—p. 991.
Iodin in Treatment of Goiter. S. P. Beebe, New York.—p. 996.
Medical Economics Problems. E. H. Ochsner, Chicago.—p. 999.
Metabolimetry in Hyperthyroidism. H. R. Harrower, Glendale, Calif.—p. 1003.
Diagnosis in Tuberculosis. O. Paget, Perth, Australia.—p. 1005.
Concept of Roentgen-Ray Pathology. A. J. Pacini, Washington, D. C.—p. 1007.

Missouri State Medical Association Journal, St. Louis

June, 1921, 18, No. 6

- Removing Health Departments from Politics. W. J. Ferguson, Sedalia.—p. 185.
Thrombosis of Inferior Vena Cava: Report of Case. G. H. Hoxie and G. H. Thiele, Kansas City.—p. 187.
Extreme Cyanosis in Pulmonary Emphysema. A. E. Taussig, St. Louis.—p. 189.
*New Method of Removing Median Bar Type of Prostatic Obstruction. J. R. Caulk, St. Louis.—p. 191.

Prostatectomy.—Caulk describes his method in which he makes use of a specially constructed cautery punch. He claims that this operation, owing to its simplicity, its freedom from hemorrhage, infection and other complications and from the fact that the results seems substantially good, offers itself as a method of choice for the group of prostatic obstructions, due to median bar formations or contractions of the vesical neck and for certain limited cases of lateral lobe obstructions. Since it should be attended with practically no more mortality Caulk believes it commends itself as the method of surgical intervention for this type of obstruction and for the general lowering of the mortality rate of prostatic obstruction.

Philippine Islands Medical Association Journal, Manila

January-February, 1921, 1, No. 1

- Legal Status of Medical Laboratories. S. De Los Angeles.—p. 1.
Treatment of Ulcus Tropicum. L. Guerrero.—p. 4.
Deterioration of Fluid Extract of Ergot. F. Garcia.—p. 8.
Normal Deliveries Following Cesarean Section. A. Villarama.—p. 11.
Right Diaphragmatic Hernia. R. Fernandez.—p. 12.
*Two Cases of Scurvy in Breast Fed Infants. A. V. Tupas.—p. 23.

Scurvy in Breast Fed Infants.—One of Tupas' patients was 2 months old and entirely breast fed since birth. A careful study of the case eliminated every condition except scurvy. No treatment was given except 5 c.c. of lemon juice in equal parts of sweetened water every three hours. The patient was discharged nine days after admission as recovered. The second patient was 1 month old and entirely breast fed since birth. This patient likewise improved under the lemon juice treatment.

Public Health Journal, Toronto

May, 1921, 12, No. 5

- Ontario Municipal Health Efforts. R. Wodehouse.—p. 193.
Public Aspect of Tuberculosis. F. Royer.—p. 213.
Establishing and Re-Establishing of Breast Feeding. E. Haslam.—p. 221.
Membership Enrolment Campaign of Canadian Red Cross Society. "Crusade For Good Health." A. H. Abbott.—p. 225.

Southern Medical Journal, Birmingham

June, 1921, 14, No. 6

- *Neutrophilic Myelocytes in Cerebrospinal Fluid of a Patient Suffering from Myeloid Leukemia and Their Significance for Diagnosis of Myeloleukemic Infiltration of Leptomeninges. L. F. Barker, Baltimore.—p. 437.
*Diagnosis of Pernicious Anemia. J. P. Schneider, Minneapolis.—p. 442.
Direct Aspiration of Contents of Biliary Tract Through Duodenal Tube: Clinical Application and Therapeutic Possibilities of Method. S. K. Simon, New Orleans.—p. 447.
Pediatric Pranks. J. R. Snyder, Birmingham.—p. 455.
Intramuscular Blood Injections as Nutrition Aids. T. D. Parke, Birmingham.—p. 460.
Value of Nurse in Public Health Work in South. J. Van DeVrede, Atlanta.
Impressions Derived from One Hundred and Thirty Neurosurgical Cases. C. E. Dowman, Atlanta.—p. 470.
Complete Severance of External Carotid Artery, Anterior, External and Internal Jugular Veins and Sternocleidomastoid Muscle from Razor Cut: Recovery. J. L. Crook, Jackson, Tenn.—p. 475.
Ununited Fractures. A. Meyers, Charlotte, N. C.—p. 479.
Fibrous Cavernositis; Induration of Corpora Cavernosa. P. Bromberg, Nashville.—p. 480.
Treatment of Placenta Praevia. E. Speidel, Louisville.—p. 487.
Eye in Relation to Ear, Nose and Throat. M. Wiener and H. W. Loeb, St. Louis.—p. 491.
Tonsils from Clinical and Pathological Standpoint. E. G. Gill and K. D. Graves, Roanoke, Va.—p. 498.

Neutrophilic Myelocytes in Cerebrospinal Fluid.—In a single case Barker says it has been possible during life to demonstrate in the cerebrospinal fluid the presence of cells of leukemic origin (myelocytes and, perhaps, myeloblasts). In no other case thus far reported has the presence of leukemic cells in the cerebrospinal fluid during life been described. In the few instances in which lumbar puncture has been done in leukemia, the cerebrospinal fluid has been negative, or has merely shown a trace of blood or an increase of globulin. The presence of cells of leukemic origin in the cerebrospinal fluid probably indicates a leukemic infiltration of the leptomeninges. The majority of nervous complications in leukemia are not due to a leukemic leptomeningopathy, but to epidural infiltration, to infiltration of the nerve roots or of nerve ganglia, to infiltration of the nervous axis itself or to hemorrhages, degenerations or inflammations.

Diagnosis of Pernicious Anemia.—Schneider claims that in 80 per cent. of all cases of pernicious anemia, there will appear sooner or later objective findings in one or more of the following fields: (1) Loss of vibration sense in the distal ends of the long bones of the limbs particularly, is present in (80 per cent. of the cases. (2) Loss of position sense, or joint sense, with or without loss of vibration sense. (3) Loss of tactile sense to cotton-wool in fingers and toes. (4) There are motor disturbances either ataxic with loss of the deep reflexes, the spectroscopic method for the measurement of the units or urobilin and urobilinogen in duodenal content. Schneider says, for the purpose of differential diagnosis has gratifying value.

Surgery, Gynecology and Obstetrics, Chicago

June, 1921, 32, No. 6

- Reconstruction Operation for Ununited Fracture of Neck of Femur. R. Whitman, New York.—p. 479.
Postoperative Massive Collapse of Lung. F. A. C. Scrimger, Montreal.—p. 486.
*Cauterization of Adhesions in Pneumothorax Treatment of Tuberculosis. H. C. Jacobaeus, Stockholm, Sweden.—p. 493.
*Focal Infections with Metastatic Manifestations. J. H. Cunningham, Boston.—p. 501.
Present Status of Treatment of Operable Cancer of Cervix. W. P. Graves, Boston.—p. 504.
Present Position of Radium in Treatment of Uterine Cancer. W. S. Stone, New York.—p. 509.
*Sequels and Later Aspect of Toxic Albuminurias of Pregnancy. H. K. Gibson, Chicago.—p. 513.
*Nasopharyngeal Endothelioma. L. Eloesser and J. M. Read, San Francisco.—p. 519.
Angioma of Placenta: Report of Case. J. T. Williams, Boston.—p. 523.
*Analysis of Results of Treatment of Fractures of Femoral Diaphysis in Children Under Twelve Years of Age. K. Speed, Chicago.—p. 527.
Influence of Syphilis on Pregnant Woman. G. Gellhorn, St. Louis.—p. 535.
Recurrent Gastric Perforations. C. K. P. Henry, Montreal.—p. 542.
*Cancer of Ampulla of Vater. R. M. Lewis, Baltimore.—p. 543.
Importance of Thorough Exploration of Intra-Abdominal Organs in Operations for Epigastric Hernia. R. Lewisohn, New York.—p. 546.
Clinical Study of Placenta. J. E. Talbot, Worcester, Mass.—p. 552.
*Treatment of Prolapse of Urethra. G. R. Livermore, Memphis, Tenn.—p. 557.
Thread Retaining Needle. D. S. Allen, St. Louis.—p. 558.
Surgical Postoperative Treatment. R. V. B. Shier, Toronto.—p. 559.

Cauterization of Adhesions in Pneumothorax Treatment of Tuberculosis.—At the International Medical Congress in London in 1913, Jacobaeus gave an account of the first attempt to cauterize string or membrane-like adhesions, which prevent the complete collapse of the lung in the pneumothorax treatment of pulmonary tuberculosis. The operation was performed through only two punctures, without a wide opening of the chest wall. Guided by the thoracoscope the operator locates the adhesions in question and cauterizes them by the glowing wire. In summarizing the data in the forty cases in which operation was performed, it is seen that in thirty the purpose of the operation was attained. Complete or sufficient compression of the lung was obtained in twenty-seven of thirty-seven cases of adhesions to the apex and the lateral chest wall. The aim of operation was attained in all three cases of adhesion to the diaphragm; but in only one was a corresponding practical and valuable result gained. From these thirty cases four must be deducted in which operation was followed by a complicating serous pleurisy of tuberculous empyema, with serious consequences to the patients. In twenty-six of forty cases, therefore, a satisfactory pneumothorax was obtained and the operation was of genuine benefit. The early convalescence was favorable in all cases except in the five mentioned; later on, however, it was highly variable, depending on other factors especially on the condition of the other lung. The statistics of the immediate effect of the operation justify the operation as an adjunct in the pneumothorax treatment of pulmonary tuberculosis. The string-like and membrane-like adhesions are the best subjects for the operation. Surface adhesions also are adapted for cauterization to a certain extent.

Focal Infections in Genital Organs as Cause of Arthritis.—Cunningham urges that the possibility of foci of infection in the deep genital structures be included in the differential diagnosis of infectious arthritis.

Toxic Albuminuria of Pregnancy.—Gibson expresses the conviction that freedom from albuminuria with a normal arterial tension following a toxic albuminuria in the course of one pregnancy is by no means a sure criterion of its non-occurrence in a subsequent one. As to the wisdom or expediency of a subsequent pregnancy in this group of affections one may say possibly it may be permitted after a protracted interval of normal arterial tension and freedom from any evidence of renal incapacity and after due consideration to the three outstanding hazards—first, irreparable damage to kidney and heart; second, prematurity; third, eclampsia. Gibson finds no justification for placing the woman in jeopardy a second time, for although the etiology and nature of eclampsia are obscure, the mortality and morbidity are by no means so. There is no statute of limitations for the kidney of pregnancy.

Nasopharyngeal Endothelioma.—Eloesser and Read urge that patients with endothelioma of the nasal passages be observed over a longer period than has been customary, that they be examined completely and thoroughly at regular intervals, not by rhinologists alone, but also by internists or general surgeons, and that necropsies performed on those who die while under observation be undertaken with a view to discovering distant metastases. One of their patients died of metastases five years after operation.

Treatment of Fracture of Femoral Diaphysis in Children.—If a proper Balkan frame and suspension splint traction are used for femoral shaft fractures in children over 4 or 5 years of age, Speed says, their advantages will be appreciated. There is constant study and efficient traction in the axis required against contracting muscles. There is no pain if the skin surface does not become cut and infected and a traction weight proportionate to the child's body weight is used. The patient has bed freedom to amuse himself, to use the bed pan and to permit nursing attention. A maximum length and good axial alignment can be obtained by this method if care is given to watching details. Splints permitting knee movements during traction can be used. Most children do not need them. They recover quickly from any knee stiffness acquired during the four weeks of traction. The usual result is much better than a result obtained by any other nonoperative method.

Cancer of Ampulla of Vater.—Lewis reviews the history of a patient who returned to the clinic for observation eight and one-half years after a successful radical extirpation of a cancer of the ampulla of Vater by Dr. Howard A. Kelly and Dr. Curtis F. Burnam.

Electrotherapy of Prolapse of Urethra.—Livermore used the monopolar current with most gratifying results in one case he reports.

Tennessee State Medical Ass'n Journal, Nashville

May, 1921, 14, No. 1

- Principles in Recognition of Syphilis and Syphilitic. J. A. Wither-spoon, Nashville.—p. 1.
Initial Lesion and Its Diagnosis. T. R. Barry, Knoxville.—p. 3.
Reactions of Syphilis in New-Born and Growing Child. E. C. Mitchell, Memphis.—p. 5.
Laboratory Diagnosis of Syphilis. R. C. Derivaux, Nashville.—p. 8.
Tubercular Peritonitis. J. B. Haskins, Chattanooga.—p. 17.

Virginia Medical Monthly, Richmond

June, 1921, 48, No. 3

- Fever in Infancy. C. G. Grulee, Chicago.—p. 115.
Injuries to Bile Tract in Cholecystectomy. W. H. Goodwin, University.—p. 127.
Surgical Treatment of Diseases of Gallbladder. D. P. Peters, Lynch-burg.—p. 132.
Demography. W. A. Plecker, Richmond.—p. 137.
Acute Pylitis. A. I. Dodson, Richmond.—p. 140.
Optic Nerve in Its Relation to Posterior Nasal Sinuses. J. Bordley, Baltimore.—p. 144.
Surgical Procedures in Fractures of Elbow. J. G. Omelvena, Hampton Roads.—p. 147.
Some Points Well to Consider in Preliminary and Postoperative Treatment of Prostate Cases. A. S. Brinkley, Richmond.—p. 149.
Associated Nervous Manifestations and Psychoses in Obstetrics. J. Bear, Richmond.—p. 151.
Effects of Radium and Roentgen-Ray on Cancer; Especially Skin Lesions of Disease. C. A. Simpson, Washington, D. C.—p. 155.
Atypical Mastoiditis with Report of Three Cases. E. Gill, Roanoke.—p. 156.
Goiter Operations. W. F. Grigg, Richmond.—p. 158.
*Case of General Infection Due to Colon Bacillus. B. A. Pope, New-soms.—p. 160.

Colon Bacillus Septicemia.—Pope reports a case of septicemia due to the colon bacillus. The patient, aged 10, complained of general malaise, slight fever, diarrhea, pain in the back above the waist line and in the intestines in the region of the umbilicus. There are six children in the family, ages ranging from 3 to 18 years, and all save one boy about 18, were taken down one after another ranging over a period of about three weeks. In none of these other cases was the blood culture confirmed, although they all had similar symptoms. The general treatment was a carbohydrate diet, sulphocarbo-lates and potassium citrate by mouth, with mercuric chlorid intravenously. When the mercury was given early in the disease, its duration was shortened.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Dublin Journal of Medical Science

May, 1921, Ser. 4, No. 15

- *Case of Plasmocytoma Associated with Bence-Jones Protein. J. Speares.—p. 193.
Acid and Alkalies. W. Fearon.—p. 201.
Some Impressions of the French School of Medicine. L. Abrahamson.—p. 208.
*Herpes as a Type of Vicarious Menstruation. B. Solomons.—p. 217.

Plasmocytoma Associated with Bence-Jones Protein.—The remarkable features of Speares' case are: Association of Bence-Jones proteinuria with widespread bone-marrow trouble; presence of skin tumors or deposits; swollen tongue; progressive weakness, anemia, painful pressure and consistent milky appearance of the urine. Nearly all the bones examined showed masses of tumor. These were almost entirely composed of separate cells. The stroma was extremely slight, consisting of a few delicate fibrous threads. The tumor cells were for the most part medium-sized cells of irregular shape. The protoplasm was spongy, full of small, round, unstained spaces. The nuclei were oval or round, sharply marked off by a staining border; the chromatin of the nucleus was usually arranged in three or four masses round this border, and in the center of the cell was a small, round nucleolus which took on acid stains, and with any stain showed a slightly different tone from that of the chromatin. This class of myeloma has been called a plasmocystoma. The most noticeable feature in this case from the histological point of view outside the multiple bone tumors was the presence of a widespread degeneration affecting the blood vessels, both arteries and veins, and also connective tissue, especially fat tissue, and that between the bundles of muscle fibers. The substance is like amyloid in appearance, but does not give the amyloid reactions. It is present in the vessels of all parts examined, even in the tumor itself. It was most marked in the vessels of the tongue, the muscles of the neck, the mesenteric vessels and in fat tissue, but it was also present in the kidney, spleen, heart, and to a less extent in the lymphatic glands. Along with this there is a form of coagulation necrosis present in the muscles of the parts affected, and in fat tissue a thickening of the capsule of the fat globule which gave a peculiar granular or gritty feel to the fat at the postmortem. Speares calls it a form of hyaline.

Herpes as Type of Vicarious Menstruation.—A woman aged 27 complained of getting a sore on her left cheek every month, as a catarrhal herpes it remained for about a week. When it is present she gets the sensations which some women feel previous to menstruation. This herpetic eruption commenced when she was 18 and had appeared monthly ever since. Absence of the uterus, tubes and ovaries was diagnosed.

Glasgow Medical Journal

May, 1921, 13, No. 5

- *Examination of Blood in Cases of Cancer of Breast in Regard to Operation and Prognosis. E. D. Anderson.—p. 321.
Defects in Cardiac Rhythm in Relation to Cardiac Failure. G. A. Allan.—p. 333.
Cookery and Digestion. J. Adam.—p. 351.

Blood Examination in Cancer as Aid in Prognosis.—In addition to breast cases, cases of cancer of the uterus, lip, tongue and stomach, which were diagnosed clinically before operation, were also examined by Anderson. Of thirty cases examined, twenty-one were seen before operation. The average leukocyte count of these cases was 8,962 per c. mm., and the average of the first count after operation in twenty cases (one being inoperable) was 7,410 per c. mm. Eleven of the twenty-one patients had a leukocyte count of over 10,000 per c. mm. before operation. The highest leukocyte figure obtained in the thirty cases was 14,400, one week after operation. A fortnight later the leukocytes had fallen to 7,800 per c. mm. Five months later they numbered 9,800 per c. mm. The changes in the number and appearance of the red cells were not very outstanding. The hemoglobin figure ranged from 40 per cent. to 75 per cent. The color index figure

showed little change after operation. In none of the innocent cases was there a leukocyte count of over 10,000 either before or after operation.

Journal of Tropical Medicine and Hygiene, London

May 2, 1921, 24, No. 9

- Keratoses Pilaris of Jackson and Brocq in Anglo-Egyptian Sudan. A. J. Chalmers and E. Gibbon.—p. 121.
Monilia Metalondincensis (Castellani, 1916) and Epidermophyton Rubrum (Castellani, 1909). E. C. Spaar.—p. 126.

Medical Journal of South Africa, Johannesburg

February, 1921, 16, No. 7

- Relation Between Delinquency and Mental Abnormality. J. M. Moll.—p. 125.
Problem of Venereal Disease. J. A. Mitchell.—p. 128.
Prognosis of Heart Disease. G. D. Maynard.—p. 131.
"Mosquito" Apparatus for Obtaining a Blood-Sample by Venipuncture.—p. 133.

Tubercle, London

May, 1921, 2, No. 8

- *Blood Pressure in Pulmonary Tuberculosis. A. G. M. Grant.—p. 337.
Tuberculosis in a Welsh Country Parish. R. C. Hutchinson.—p. 345.
*Striae Distensae in Skin of Consumptives. K. Hammer.—p. 349.

Blood Pressure in Pulmonary Tuberculosis.—Grant's findings in 140 patients show a higher systolic level in all stages than that recorded by Pottenger, but with the characteristic decline in pressure as the disease advances. The diastolic pressure is also somewhat lowered, although not to such a degree, but in many cases the fall is marked—60 mm. Hg being a frequent reading. The minimum pressure represents the peripheral resistance which is chiefly a measure of vascular tone. With vasodilatation the diastolic pressure falls, and this lack of vascular tone manifests itself clinically in the blueness of the dependent hands so frequently noticed. The beneficial effect of rest in bed in cases of activity can be demonstrated by the increase in pressure. An intelligent use of blood pressure helps as a guide in the control of exercise in the treatment of phthisis. The effect of exercise on the diastolic pressure is indefinite. With the rise in the systolic pressure, there generally occurs a small rise in the diastolic pressure, but the small variations and the difficulty of exactly defining the minimum level in some cases make data less accurate than with systolic readings. A rise in systolic pressure maintained over a considerable time is evidence of definite improvement, while an appreciable fall implies advancing disease, the rapidity of the fall corresponding with the activity of the disease. When numerous observations are made at frequent intervals, fluctuations in the blood pressure are noticed from time to time, but the general trend in advancing disease is downward. The diastolic pressure is less affected than the systolic and its variations less reliable. If the systolic pressure is low, viz., 90-100 mm. Hg, the outlook seems to be better when the diastolic pressure shows a corresponding decline, but if it registers in such cases between 70-80 mm. Hg, making a pulse pressure of about 20 mm. Hg, the chances of improvement are not so promising. These patients are the subjects of weakly acting hearts; they are fragile, lack vitality and do not respond well to treatment.

Striae Distensae in Skin of Consumptives.—The occurrence of striae in pulmonary tuberculosis seems to be very rare, or, at least, little observed. Among 5,800 patients, Hammer has found twelve who, according to the records, exhibited striae. In these cases the gain of weight was so great and so constant that it may be regarded as an essential factor in the causation of the striae. Their appearance in places where accumulations of fat are most prominent, i. e., the hips, loins, and shoulders, further supports this view. There was nothing to suggest that they could be associated with any compensatory dilatation of the healthier side of the chest, for they never occurred on the thorax itself, and their distribution could not in any way be correlated with the site of the diseases. In most cases the disease had lasted only a short time, and there had been little or no fever to indicate marked toxemia. Any appreciable reduction of the vitality and nutrition of the skin by toxic influences can, therefore, be excluded. The marked gain of weight in itself suggests that the toxins of the disease cannot have affected these patients greatly.

Archives des Maladies du Cœur, etc., Paris

April, 1921, 14, No. 4

- *Leukolytic Serotherapy. G. Lindstroem.—p. 145.
*Acute Leukemia. J. Kaltenbach.—p. 156.
Pure Myelogenous Lymphoid Leukemia. T. Reh.—p. 167.

Leukolytic Serotherapy.—Lindstroem describes experiments on rabbits and cats with leukolytic serums obtained from sheep immunized by intravenous injection of rabbit leukocytes. The results encouraged the application of this form of serotherapy in a woman of 40 with myeloid leukemia and in a man of 30 with subacute leukemia. The leukocytes, which had numbered 180,000, ran up at first and then dropped to 3,000, and the spleen could no longer be palpated and the patient said she felt as well as before her sickness. An intramuscular injection of 5 c.c. of the serum had been given, and a second of 10 c.c. Four months later the leukocytes began to climb again and the spleen to enlarge, and roentgen exposures were made, the patient refusing further serotherapy. The condition continued stationary for two months, but then fatal aggravation followed. One injection of the serum was given the second patient and the leukocytes dropped from 92,000 to 12,000, the temperature becoming normal at the same time. The symptoms returned again in about three months and proved fatal. In a third case the effect of the serum was not so manifest although the spleen grew smaller. A fourth patient is still under treatment; the leukocyte figure dropped for a time but then ran up again.

Acute Leukemia.—In the case described in a laboring man of 30, edema of the glottis and ulceration on the epiglottis were probably responsible for the sudden death. What had seemed to be pleurisy with effusion was probably a manifestation of the hemorrhagic diathesis. A third feature of the case was the numerous and extensive ulcers found in the bowel although no blood had been discovered in the stools except with chemical tests.

Bulletin Médical, Paris

May 21, 1921, 35, No. 21

- Diphtheria Associated with Other Infections. C. Achard.—p. 421.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 13, 1921, 45, No. 16

- Tincture of Garlic in Treatment of Pulmonary Gangrene. Loeper, Forestier and Hurrier.—p. 667.
*Diabetic Gangrene. E. de Massary and J. Girard.—p. 670.
Colloidal Metals in Therapeutics. H. Roger.—p. 675.
*Parkinsonian Syndrome with Epidemic Encephalitis. G. Guillaïn and C. Gardin.—p. 676.
Ulcer of the Esophagus. De Lavergne.—p. 681.
*Fasting in Treatment of Diabetes. M. Labbé.—p. 684.
Gonococcus Septicemia. Weill and Colaneri.—p. 695.
*Tardy Serum Sickness. Lafforgue.—p. 699.
Laboratory Contagion with Malta Fever. J. Meyer.—p. 701.
*The Arteries in the Legs in Diabetes. J. Heitz.—p. 706.
Hodgkin's Disease Involving the Mediastinum. L. Ribadeau-Dumas.—p. 711.
*Residual Nitrogen with Uremia. Brouardel and J. Renard.—p. 717.
*The Salivary Glands in Epidemic Encephalitis. Netter, Césari and H. Durand.—p. 721.
*Nephritis in Gastro-Intestinal Disease. Nathan.—p. 724.

Diabetic Gangrene.—Massary and Girard describe a case in which the gangrene had evidently developed on the basis of syphilitic changes in the blood vessels. In two other cases the gangrene was the result of infection of a trophic ulceration on the foot.

Parkinsonian Syndrome with Epidemic Encephalitis.—Guillaïn and Gardin call attention to the high pressure and catatonia with glycosuria in the young man, following an attack of epidemic encephalitis. The glycosuria has persisted during the few months to date.

Fasting in Diabetes.—Labbé tabulates the details in a few cases to sustain his statements in regard to the different effect of fasting in treatment of diabetes according as the diabetes is or is not of the emaciation type. It gives the best results in the graver cases of diabetes without denutrition. When there is denutrition, the fasting exaggerates it and the benefit is only transient. None of the symptoms permanently subside although all may show transient improvement. The principle is like that of Guelpa's fasting plus repeated purges, kept up for three days. This method

dates from 1910 and has aroused much opposition among clinicians.

Tardy Serum Sickness.—Lafforgue describes the case of a young man treated vigorously with antimeningococcus serum for severe epidemic meningitis. As the latter subsided the pulse grew very weak and the pressure very low, with extreme tachycardia and asthenia. He gave suprarenal treatment, assuming that this was a tardy manifestation of serum sickness, and prompt recovery followed.

The Arteries in the Legs in Diabetes.—Heitz has been testing the blood pressure and pulsation in the various arteries of fifty-three diabetics. He found that the pulse wave was very much weaker below the knee than in the thigh and arm. He ascribes this to a specific obstruction to the permeability of the arteries in the leg before it becomes apparent in any other way. This warns to give alkalies and treatment with physical agents, etc., to ward off the grave consequences of obliteration of the arteries in the diabetic. Thirty of the total number were private patients, and in these the blood pressure was always abnormally high in comparison to the hospital patients.

The Residual Nitrogen with Fatal Uremia.—Brouardel and Renard report a case of fatal uremia in a man of 69 with chronic kidney disease but the residual nitrogen was never over 0.80 gm.

Salivary Glands in Epidemic Encephalitis.—The participation of the salivary glands in the clinical picture of epidemic encephalitis is being noted more and more, and this communication describes several cases with necropsy findings in some, and the proof of the virulence of the salivary glands by injection of guinea-pigs and rabbits.

Nephritis and Digestive Disorder.—Nathan tabulates some data which show that latent chronic kidney disease is common with chronic digestive disturbance. It may obscure the clinical picture and explain the lack of success of the treatment directed solely against the digestive disturbance.

Journal de Médecine de Bordeaux

May 10, 1921, 92, No. 9

- Recurrence of Scarlet Fever. J. Vergely.—p. 243.
- Paratyphoid Pleurisy. H. Mallié.—p. 245.
- Orthopedic Medical Inspection of Schools. J. Doche.—p. 247.
- Surgical Treatment of Gastric Ulcer. G. Chavannaz.—p. 251.
- Compulsory Health Insurance. H. Verger.—p. 254.
- Radium and Radium Therapy. J. Bergonié.—p. 255.

Journal d'Urologie, Paris

March, 1921, 11, No. 3

- *Accessory Urethral Passages. Oudard and G. Jean.—p. 177.
- *Calculi in Kidney Pelvis. E. Christian.—p. 203.
- Calculus in the Bladder Simulating a Papilloma. J. Reynard.—p. 211.

Accessory Urethral Passages.—Oudard and Jean theorize to explain the origin of congenital accessory passages communicating with the urethra, and summarize fifteen cases from the literature and three from their own experience. Several different types are encountered and the differential diagnosis is very important. If operative measures are required it seems wisest to remove the accessory passage completely. In their three operative cases there was no infection although gonorrhea was present. If the gonococcus infection extends to one of these blind passages, the best treatment seems to be to open up the passage to make it form part of the urethra, instead of a pocket.

Calculi in Kidney Pelvis.—Christian advocates a right-angled incision in the kidney pelvis, his illustrations showing the ample access this affords and the ease with which the incision can be closed and healed. It prevents any danger of hemorrhage, and does not interfere with the functioning of the kidney, while it allows the extraction of large and faceted calculi.

Lyon Médical, Lyons

May 25, 1921, 130, No. 10

- *The Axilla in Pleuropulmonary Disease. G. Mouriquand.—p. 429.
- History of the Rubber Nipple. A. Mollière.—p. 467.

The Axilla in the Diagnosis of Pulmonary Disease.—Mouriquand urges that the axilla should be minutely examined with auscultation whenever pneumonia is suspected in a child or adult. The symptoms at first are often exclusively in the

axilla. Sometimes auscultation of the axilla will reveal a tuberculous focus that escapes detection by other means. Percussion of the axilla may differentiate between a pulmonary process at the base and a pleural process. A moderate effusion in the pleural cavity often tends to settle in the axilla, the dullness being more prominent here than in front or back. Discovery in the axilla of dullness due to "axillarization" of a pleurisy of the large cavity or to pure axillary pleurisy or to interlobar pleurisy with axillary predominance—all call for an exploratory puncture in the axilla, which may reveal pus here when puncture elsewhere is negative. This permits treatment which may prove life saving. He discusses the whole field of axillary semeiology which often leads to discovery of purulent pleurisy otherwise escaping detection.

Médecine, Paris

January, 1921, 2, No. 4, Second Part

- Otorhinolaryngology in France in 1920. L. Baldenweck.—p. 290.
- *The Larynx in Tabes. M. Lannois.—p. 297.
- Tuberculosis of the Tonsil. H. Bourgeois.—p. 302.
- Mastoid Operations with Chronic Otitis. V. Texier.—p. 307.
- Cancer of the Maxillary Sinus. A. Hautant.—p. 309.
- Correction of Deformed Nose. H. Aboulker.—p. 313.
- Treatment of Paradental Cysts. L. Brémont.—p. 315.
- *Foreign Bodies in the Ear. G. Liébault.—p. 319.
- Radium Treatment of Cancer of the Esophagus. L. Dufourmentel.—p. 321.
- Total Tonsillectomy. Ramadier.—p. 325.
- Adhesion of the Palate and Pharynx. J. Rouget.—p. 327.
- Treatment of Ozena. J. Tarneaud.—p. 328.

Larynx in Tabes.—Lannois urges the extreme importance of detecting the tabetic origin of disturbance in the larynx, and describes the clinical pictures it is liable to present. The disturbances may be of a sensory nature or more in the line of spasm or paralysis. Laryngeal disturbance with tabes is always grave. With bilateral paralysis, recurring spasm may compel tracheotomy. The spasm may recur even after resection of the vocal cords. The only effectual treatment is that of the underlying syphilis.

Foreign Bodies in the Ear.—Liébault warns that blind attempts at extraction may do irreparable harm. Living parasites should be killed with chloroform or ether or tepid oil, and grains may be modified by instillation of fluid. Instillation of glycerin is always useful, and lavage of the ear should always be given a trial. General anesthesia may be necessary for children, and for all patients if the foreign body has to be extracted through an incision back of the ear.

Paris Médical

May 21, 1921, 11, No. 21

- Wounds of the Wrist. A. Martin.—p. 405.
- *Variations in Leukocyte Count in the Normal. P. Mauriac and P. Cabouat.—p. 407.
- *Signs of Epidemic Encephalitis. P. Sainton and P. Cornet.—p. 408.
- System in Physical Education. M. Boigey.—p. 409.
- Physiotherapy in Uterine Hemorrhage. Foveau de Courmelles.—p. 413.

Variations in Leukocyte Count in the Normal.—Mauriac and Cabouat found a surprising range of fluctuations in the leukocyte count at different fifteen minute intervals during the day. In one half hour in one subject the count varied from 12,300 to 6,500. They warn that instead of a digestion leukocytosis it would be better to speak of the digestive fluctuation of the leukocyte count. These abrupt changes in the leukocyte count in normal conditions warn to be reserved in attributing a specific character to them.

Signs of Epidemic Encephalitis.—Sainton and Cornet have found it possible to elicit myoclonus in dubious cases by flexing the hand or arm or tapping certain muscles. Another sign is what they call the frontal sign. When the upper eyelid is raised, the frontal muscle contracts very slowly. In exophthalmic goiter it does not contract at all, and in seven patients with epidemic encephalitis this asynergy in the movements of the upper lid and the frontal muscle was pronounced.

Presse Médicale, Paris

May 18, 1921, 29, No. 40

- *Revision of Unfit for Military Duty. E. Rist.—p. 393.
- *The Apex Beat Reclining on Left Side. C. Lian.—p. 395.

The Board of Revision.—Rist describes the work done by the council which has been reexamining the 3,407 men in one

province who had been exempted between 1896 and 1914 from military service. A total of 608 had been exempted on account of tuberculosis, but the revision showed that 68.8 per cent. were free from any signs of old or recent tuberculosis. Only 110 of the 483 exempted for "weakness" were found unfit for regular or light service. Among the 144 exempted for hernia, sixteen had no trace of a hernia although diligently wearing a truss. Among those exempted for deafness, hearing was restored in five by removal of cerumen.

The Apex Beat.—Lian expatiates on the advantages of investigating the region of the apex with the subject reclining on his left side. The stethoscope findings then are particularly instructive with mitral stenosis, and in the diagnosis of systolic murmurs at the apex.

May 21, 1921, **29**, No. 41

*Sulphur in Dermatology. L. M. Pautrier.—p. 401.

*Treatment of Pseudarthrosis. L. Imbert.—p. 403.

*Visual Disturbances from Alcohol and Tobacco. A. Terson.—p. 404.

*Speed of Sedimentation of Erythrocytes. P. Pagniez.—p. 405.

Sulphur in Dermatology.—Pautrier reports striking results in treatment of alopecia and psoriasis after intramuscular injection of 1 or 2 c.c. of a 5 per cent. oil solution of sulphur. He adds cholesterin to the oil as this increases the absorbing power, his formula being 8 parts sulphur to 80 parts of the cholesterinized oil and 20 parts eucalyptol. The injections are repeated twice a week. He comments on the losses of sulphur in certain cases of alopecia. This sulphur treatment acts on the papilla. In one case the hairs grew again after total rebellious baldness. Cod liver oil or the oil from horse kidneys has special advantages in this formula. The proportion of cholesterin is not stated.

Serum Treatment of Pseudarthrosis.—Imbert has been injecting 5 c.c. of serum once or twice a week in persons whose fractures refuse to heal, taking the serum from convalescents with well-healed fractures. The results are most encouraging.

Visual Disturbance from Abuse of Alcohol or Tobacco.—Terson explains that in these cases the vision is better toward evening, that is, when the light is less bright. There is also central scotoma and color blindness for small patches of color. The subject can distinguish a red or green card but is unable to tell the color of a scrap cut from such a card. Medical treatment can be relied on to cure or at least to improve even in very advanced cases. This impairment of vision may accompany tabes or other disease but yields promptly to abstention from the alcohol or tobacco or both.

Biologic Import of Sedimentation of Erythrocytes.—Pagniez reviews the testimony that has been accumulated in regard to the especially rapid sedimentation of erythrocytes in the pregnant. This is interesting in connection with recent research by Lumière and Couturier which has shown that certain guinea-pigs fail to respond to experimental anaphylaxis. This abnormal resistance was found only in gravid females. None of the phenomena of anaphylactic shock could be induced in these gravid females, confirming that gestation confers a kind of stability on the colloids of the plasma which protects them against the colloidoclasia shock.

Progrès Médical, Paris

May 7, 1921, **36**, No. 19

*Diagnosis of Traumatic Shock. J. Guyot and G. Jeanneney.—p. 199.

*Pepsin in Pneumogastric Nerve. M. Loeper et al.—p. 204.

*Gynecologic Aspect of Industrial Accidents. Dalché.—p. 204.

Diagnosis of Traumatic Shock.—Guyot and Jeanneney describe the nervous, the hemorrhagic, the toxemic, the toxic-infectious and the mixed forms of traumatic shock, with the indications for treatment in each. Low blood pressure, subnormal temperature and torpor may be encountered in a number of conditions that may be mistaken for shock. Pain, fatigue and chilling may induce a condition closely resembling shock, but the greatest chance for error is with acute peritoneal septicemia.

May 14, 1921, **36**, No. 20

*Principles of Vaccine Therapy. Auburtin.—p. 211.

*Gonococcus Vaccine Therapy. A. Sézary.—p. 212.

*Vaccine Therapy in Otogenous Meningitis. Lortat-Jacob.—p. 215.

*Vaccine Therapy for Suppurative Processes. R. Dupont.—p. 216.

*Vaccine Therapy of Typhoid Fever. Ranque and Senez.—p. 217.

Gonococcus Vaccine Therapy.—Sézary remarks that the dose must be the amount which induces just the mild febrile reaction which is indispensable for success. This dose varies with different cases, and the effect can be most instructively studied with the complications of gonorrhea. In nine of his 150 cases the orchitis or arthritis vanished the day after the first injection. The vaccine has to be kept up, however, to prevent reinfection from the gonococci still lurking in the tissues. A new dose should never be injected until twenty-four hours after the subsidence of the previous reaction. Three days is usually enough of an interval. He begins with 0.5 c.c. and follows with 1 up to 2 c.c. of the lipovaccine, not omitting the usual local measures.

Vaccine Therapy in Otogenous Meningitis.—The success was striking in two staphylococcus cases in two women recently delivered. Jacob urges to use a stock vaccine without waiting for certainty or for mastoid involvement. Lumbar puncture relieves and drains.

Revue Franç. de Gynécologie et d'Obstét., Paris

March, 1921, **16**, No. 3

*Transperitoneal Cesarean Section on the Lower Segment. L. Aubert.—p. 129.

*Epidemic Encephalitis in the Pregnant. M. Vincent and E. Gaujoux.—p. 147.

Repeated Cesarean Section in a Dwarf. A. Grosse.—p. 163.

Transperitoneal Cesarean Section on the Lower Segment.—Aubert was much impressed with the advantages of the transperitoneal technic applied on the lower segment of the uterus in the four cases here described. The danger of rupture later does not seem to be any greater, if so great, as this segment of the uterus is less involved in the contraction and relaxation of the organ. Even if rupture should occur, it seems less dangerous in this lower segment, as it would be below the peritoneum and the drainage would be better. If the operation should have to be supplemented by hysterectomy, this technic offers further advantages for this. In his four cases the intestines did not show at all; he drew down a flap of the peritoneum and sutured it in a triangle over the sutured incision in the uterus.

Epidemic Encephalitis in the Pregnant.—Vincent and Gaujoux describe a case and summarize eleven others from the literature, and urge the importance of laboratory tests to eliminate other infectious processes. They verify the diagnosis by the mild meningeal reaction or high sugar content of the spinal fluid which is so frequent in this disease. The pregnancy in itself does not seem to render the prognosis graver.

Schweizerische medizinische Wochenschrift, Basel

May 12, 1921, **51**, No. 19

*Action of Altitude on Sick Children. E. Feer.—p. 437.

*Changes in Leukocytes in Infectious Diseases. A. Alder.—p. 440.

*Perforation of Ulcer in Digestive Tract. A. Sträuli.—p. 443.

Indications for Albee's Operation in Spondylitis. Debrunner.—p. 446.

Mountain Climate for Sick Children.—Feer says that the family physician is better able to judge of the effect of a stay in the mountains than the local physician. He has made a special study on their return of children who have been sent to the mountain resorts in Switzerland, and his conclusions are that a children's sanatorium offers much better chance for success than hotel or resort life in general. The food is planned for children, and the mental impressions are better for the child. He has been impressed with the advantages of a change to the mountains during the winter. The freedom from fogs, the sunlight, etc., are particularly useful for tuberculous children; the benefit is even greater than from a summer visit. From six to twelve weeks is the advisable length of the sojourn except in cases of tuberculosis and asthma. A three months' stay in the mountains in two successive years builds up the child better than a single six months' stay. He advises that the children should not get too much milk but should be given cream, vegetables and fresh fruit freely. He says that the mountain sunlight has an almost specific effect in the cure of rachitis. The exudative diathesis is another indication for the mountains, especially for children with the doughy habitus and obstinate eczema. Tuberculous bronchial gland disease is one of the

most important indications for the mountain climate. He says that about 25 or 33 per cent. of all city children over 6 years old may be regarded as having tuberculous disease of the bronchial glands in a healed or slumbering phase. Such children thrive under out-of-door life in the mountains.

Morphologic Changes in the Leukocytes in Infectious Diseases.—Alder emphasizes the importance of changes in the protoplasm as well as in the nucleus as signs of the action of infectious disease on the leukocytes. He gives a colored plate with thirty-one specimens showing typical changes, discussing their significance.

Perforated Gastric Ulcer.—Sträuli reports 17 cures in 29 operative cases, the mortality thus being 41.2 per cent. None died in the cases in which the operation followed within six hours; 2 when the interval had been up to the twelfth hour; 4 between the twelfth and twenty-fourth hours, and all died of those operated on later than this. One man of 67 had been brought to the hospital with the diagnosis of gallstone colic. No history of stomach trouble was known, but inquiry of the family elicited a history of pains in the epigastrium for the last few months; then came the sudden unbearable pain with marked subsidence the fifth hour. Sträuli diagnosed a perforated duodenal ulcer, and although twenty-one hours had elapsed, prompt recovery followed the operation which revealed a perforated ulcer in the duodenum. This case shows the power of resistance of the peritoneum which is possible in certain cases.

Chirurgia degli Organi di Movimento, Bologna

April, 1921, 5, No. 2

- *Tuberculosis of Vertebrae. G. Valtancoli.—p. 127.
- *Tuberculosis of the Hip Joint. S. Vacchelli.—p. 159.
- *Tuberculosis of the Knee. R. Sacco.—p. 193.
- *Tuberculosis of the Foot. G. Cicconardi.—p. 209.
- *Dislocation of Diseased Hip Joint. D. Maragliano.—p. 225.
- Dislocation of the Carpus; Two Cases. A. Nicotra.—p. 243.

Tuberculosis of Vertebrae.—Valtancoli relates that the cases of tuberculous spondylitis formed 45.5 per cent. of the 2,790 cases of tuberculosis of bones and joints given treatment at the Rizzoli Institute in the last twenty years. There was a history of trauma in only 7.3 per cent. of the total 1,004 cases, and of tuberculous lesions elsewhere in 17.4 per cent. The first lumbar vertebra was the one most frequently affected (24.4 per cent.) but the mortality was highest with lesions in the upper vertebrae. In 612 cases reexamination the fifteenth year after the first symptoms has shown a complete functional cure in 41 per cent.; improvement, but not entire disappearance of the pains, in 25.4 per cent.; the condition has grown worse in 8.7 per cent., and 11.6 per cent. have died. Classified by ages, a complete cure was realized in 53 per cent. under 10; in 40.6 under 20; in 30.6 under 30; in 41 under 40; in 23.8 under 50, and in 25 per cent. under 60. The corresponding percentages for the improved but not entirely freed from pains are 20.5 under 10; 24.6 under 20; 30.6 under 30; 22 under 40; 30 under 50, and 58.5 under 60.

Tuberculosis of the Hip Joint.—Vacchelli gives a similar statistical study of 506 cases at the same institution: trauma in 16 per cent.; other tuberculous lesions in 28 per cent.; insidious onset without pain in 20 per cent. The outcome from three to twelve years after dismissal has been complete recovery in 11.2, and recovery with slight impairment of function in 62.6 per cent.; no benefit in 2.1 per cent. and 13.7 per cent. have died. Prolonged immobilization of the joint is the principle followed in treatment; no injury from this was ever noted while the benefit for the joint was incalculable. One young woman wore her plaster cast, enclosing pelvis and ankle, for forty-two months after her return home, but the limb did not suffer. The use of Beck's paste has been abandoned. When fistulas prevent immobilization in plaster, an apparatus of the Thomas type is used.

Tuberculosis of the Knee.—Sacco reports on 402 cases; only 33 per cent. were adults. About 70 per cent. of the total cases progressed to a spontaneous cure under immobilization, while 182 required operative intervention.

Tuberculosis of the Foot.—Cicconardi reports the outcome in 145 cases. There was a history of trauma in 26.2 per cent. and of other tuberculous lesions in 19.3 per cent.; and a com-

plete cure was realized in 11.6 per cent. and great improvement in 40.1 per cent. of the 112 cases given conservative treatment, and in 54.5 per cent. and 16.1 per cent. of the 33 with operative treatment. Of the total 145 no benefit was realized in 20 per cent. and 3.4 per cent. have continued a progressive course.

Cure of Chronic Dislocation of the Hip Joint from Coxitis.—Maragliano writes from Genoa to extol the excellent results in two children who had been crippled by a destructive inflammatory process in one hip joint. He implanted a strip of bone, taken from the tibia, to form a support for the ischium on the femur. It was not to take the place of any normal bone but to provide a new support in a region naturally free from bone. A bed was made for it in muscle and connective tissue, and a socket was dug for the upper end in the tuberosity of the ischium. A short canal was made in the femur at its upper third, slanting from below upward, and the rod of bone was driven through this canal up through the soft parts until the upper end fitted into the socket in the ischium, where it was fastened with silver wire. The lower end protruded about 1 cm. from the femur shaft, but was held in place by its fitting tight in the canal. As the operation was in sound tissue, it healed in eight days, in a large plaster cast, and in a little over two months the child was walking with a cane. The results two years later are most gratifying. The bone acts like a new long neck to the femur, bearing the weight of the trunk. It has grown thicker, and the child soon was able to discard all supports. In the other case, he implanted the strip of bone in the upper end of the femur and in the ilium, its upper end fitting into a bed cut for it in the ilium, the end resting against the crest of the ilium. It was held in place by the muscles sutured over it and a plaster cast. During the seven years since, the limb has been used freely without supports and without pain or other sign of the old inflammation. It had healed when the hip joint had been relieved of the burden of weight bearing. Although this case proved a success, existing infection renders this technic too risky. This drawback is avoided with the technic applied in the other case. A slight tendency to adduction became evident early, although not showing any tendency to progress during the sixteen months since. The illustrations show the technic and fine outcome.

Pediatria, Naples

April 15, 1921, 29, No. 8

- *Diagnosis of Whooping Cough. E. Modigliani and S. de Villa.—p. 337.
- *Vincent's Angina in Children. F. de Angelis.—p. 339.
- *Epinephrin Test in Leishmaniasis. Mazzoni.—p. 347.
- Pathogenesis of Chorea. G. Milio and S. Cannata.—p. 360.

Intradermal Test for Whooping Cough.—A loop of a culture of the Bordet-Gengou bacillus in 1 c.c. of distilled water containing a little of a 3 per cent. solution of toluene, was injected into the skin by the tuberculin intradermal technic. The dose for each child was 0.1 c.c. No response was obtained with various diseases other than whooping cough, while an inflammatory reaction formed constantly in the thirty-eight children with pertussis. The reaction was negative also in ten children that had recovered from whooping cough. The results were most instructive in three children who had been exposed to pertussis but showed no signs of it at the time. They gave a pronounced positive response to the injection, and a few days later the symptoms of pertussis developed.

Fusospirillar Infection of the Mouth.—De Angelis found this associated infection in 143 of 22,000 children at the Naples Children's Clinic. In eighty-nine of the cases there had been a recent infection of some kind, generally measles or intestinal disease. The tonsils were affected in 6.2 per cent. The aspect of the ulcerations imposed the diagnosis, in addition to the fetid breath. The best treatment seemed to be rinsing with hydrogen dioxid and spraying with calcium chlorid. Neoarsphenamin by the vein seemed a valuable adjuvant in some cases. When the periosteum of the jaw was involved, curetting or cauterization was necessary.

Epinephrin Test in Leishmaniasis.—Mazzoni obtained slight leukocytosis as a response to the subcutaneous injection of epinephrin in twenty-six children, and a pronounced response in five. No effect in driving the parasites out into the blood stream could be detected.

Policlinico, Rome

May 23, 1921, 28, No. 21

- *Rhizomelic Spondylosis. E. Banchieri.—p. 715.
- *Osmic Acid to Promote Healing of Fractures. G. Arnavas.—p. 720.
- Present Status of Acute Atrophy of the Liver. M. Prebil.—p. 724.

Rhizomelic Spondylosis.—In Banchieri's case the cerebrospinal fluid of the workingman of 48 with ankylosis of the spine was yellowish and coagulated on standing. Banchieri ascribes etiologic importance to the man's syphilis. This assumption was confirmed by the subsidence of the pains and inflammation under specific treatment although the ankylosis was not modified. The spinal disease had developed at once after a fall. He regards the trauma as having merely rendered manifest the latent disease.

Osmic Acid to Promote Healing of Fractured Bones.—Arnavas thinks there can be no doubt that osmic acid injected into the focus exerts a stimulating action on the bone-producing tissues in cases of delayed healing. He gives the details of a few of the cases in which he has applied this treatment, to illustrate its constant efficacy. In one man of 62 with comminuted fracture of tibia and fibula there was not a trace of consolidation after nearly twelve weeks of immobilization, plus massage, etc., but after direct injection of 2 c.c. of a 1 per cent. solution of osmic acid, repeated at six day intervals, a solid callus formed by the thirty-fifth day. The injections sometimes induce smarting and edema, but this is transient, and is followed by torpor in the region. In some of the seven cases described three injections answered the purpose.

May 15, 1921, 28, Surgical Section No. 5

- *Diabetes Insipidus After Trauma of Head. A. Catterina.—p. 181.
- *Operative Treatment of Jacksonian Epilepsy. O. Tenani.—p. 188.
- *Experimental Gastro-Enterostomy. R. Brancati.—p. 197.
- *Inguinal Aneurysm. G. Bonfanti.—p. 218.

Diabetes Insipidus After Trauma of the Head.—Catterina gives roentgenograms showing how the frontal bone in the man of 42 had been driven in by a fall from a motorcycle. Diabetes insipidus developed at once and a fistula in the brow suppurated a little, but there was no fever, and the urine was free from sugar and albumin, and there were no cerebral symptoms. Five months later the frontal bone was trephined, the dura found normal, and the prompt subsidence of the diabetes insipidus showed that the probable injury of the pituitary from the trauma had been functional rather than organic.

Operative Treatment of Jacksonian Epilepsy.—Tenani reviews the ultimate outcome in five cases of posttraumatic epilepsy in which he performed a plastic operation on the skull. In ten other cases the plastic operation was to close a large defect in the skull. The jacksonian epilepsy subsided in all the cases after excision of the cicatrix in the meninges and brain, with or without extraction of some sequester or scrap of metal. A flap of costal cartilage proved the best means to close the defect in the skull in these cases, but when there is a very large gap in the skull, with functional disturbance, a skin and bone flap from the vicinity or a bone-periosteum flap or cartilage flap can be used indiscriminately. In the epilepsy cases there is danger from proliferation of bone, so that cartilage is preferable.

Experimental Research on Gastro-Enterostomy.—Brancati gives the details of his experiments with gastro-enterostomy on twenty-four dogs. The results show that the gastro-enterostomy functions diversely according to the portion of the stomach in which the new opening is made, as he explains with illustrations. When made in the cardiac portion, it never functions perfectly and it modifies the functioning of the stomach. In the middle portion, that is, the lowest segment, conditions are most favorable, and the stomach content passes out this way even when the pylorus is permeable.

Inguinal Aneurysm.—Bonfanti's patient was a man of 35 who, for three months before the operation, had systematically applied compression to the external iliac artery for several hours every day to induce development of collateral circulation. This preparation for the operation on the spontaneous aneurysm aided materially in the operation which was a complete success.

Riforma Medica, Naples

May 7, 1921, 37, No. 19

- *Primary Tuberculous Splenomegaly. M. Bufalini.—p. 434.
- Double Fracture of Lower Jaw. G. M. Nejrotti.—p. 438.
- Psychosis as Sequel of Epidemic Encephalitis. V. Lojacono.—p. 441.
- Recent French Works on Anaphylaxis. P. Fornara.—p. 442.

Primary Tuberculous Splenomegaly.—The woman of 37 had been feeling weak for a month, and a tumor developed in the region of the spleen. On assumption of Banti's disease the spleen was removed, and complete recovery followed, but the spleen proved to be the seat of a tuberculous process of the miliary type. Bufalini compares with this case five similar ones from the records. The spleen was removed in all but one in which adhesions rendered splenectomy impossible. The general and focal reaction to a tuberculin test might aid in differentiation. If splenectomy is not practicable, roentgen exposures might be tried.

Rivista Critica di Clinica Medica, Florence

April 5, 1921, 22, No. 10

- *Test for Lactic Acid and Sugar. E. Pittarelli.—p. 109.
- The Symptoms of Empyema. L. Siciliano.—p. 112.

Test for Minute Quantities of Lactic Acid and Sugar.—Pittarelli describes some tests for minute quantities of lactic acid and sugar through their transformation into ethylic aldehyd and methylic aldehyd.

Archivos Españoles de Pediatría, Madrid

March, 1921, 5, No. 3

- *Meningococcus Infection in Children. A. Romeo Lozano.—p. 129.
- Intracranial Sarcoma in Child. V. Juaristi.—p. 182.

Meningococcus Infection in Children.—Lozano reviews his experience in sixteen cases of meningococcus meningitis in young children. He injects large quantities of the antiserum after lumbar puncture, repeating daily even after the symptoms have become attenuated. He advises utilizing the antiserum for the special type of meningococcus found. A hot bath at 37 C. for five to fifteen minutes two or three times a day aids in reducing the stiffness, pain and agitation. He warns that lumbar puncture should be done with the patient reclining, and the pelvis should be raised for two hours at least, turning the child on the back and sides and on its face, and it should be kept reclining for another six hours without a pillow. Eight of his sixteen little patients recovered, but one was left deaf and another lost both vision and hearing. The meningococcus seems to induce septicemia at first, and meningococcus septicemia should be suspected without waiting for development of meningitis. It may be possible thus to cure it with antiserum before the infection has attacked the vital organs. Three of his cases belong in this group, the septicemia having been evident for about two weeks before the meningitis developed. In one of his cases the septicemia dominated the clinical picture.

Archivos Latino-Amer. de Pediatría, Buenos Aires

March-April, 1921, 15, No. 2

- *Acute Polio-Encephalomyelitis. A. Gareizo.—p. 97.
- Hydatid Cyst Simulating Acute Appendicitis. J. S. Fabrès.—p. 107.
- Night Frights in Children. L. K. Wimmer.—p. 112.
- Epidemic Meningitis in Infants. L. Ayerza and C. M. Pico.—p. 116.
- Pneumococcus Septicemia. Alicia Armand Ugón.—p. 119.
- Tardy Tetanus. C. Pelfort.—p. 122.
- *Luxation of Hip Joint after Typhoid. A. Rodriguez Castro.—p. 125.

Acute Polio-Encephalomyelitis.—The child of 6 presented symptoms of both poliomyelitis and cerebral spastic hemiplegia, and Gareizo discusses how these two syndromes came to be superposed.

Typhoid Hip Joint Disease.—In Rodriguez' case a spontaneous dislocation of the hip joint was the result of a destructive process three weeks after a focus of osteitis in the tibia, on the same side, in the third week of typhoid fever. He mentions that Keen has compiled thirty cases of pathologic luxation of typhoid origin, including twenty-seven involving the hip joint. Broca has recently published a case of similar dislocation of the hip joint from a scarlatinal arthritis. As the inflammation subsides, reduction and a plaster cast will usually insure ankylosis in a good position.

Archivos de Neurobiología, Madrid

December, 1920, 1, No. 4

- The Trophic Reflexes Inducing Glycemia. A. Pi y Suñer.—p. 338.
 *Vocational Orientation. E. Mira López.—p. 356.
 *Pathogenesis of Tabetic Ataxia. G. R. Lafora.—p. 381.
 *The Pituitary in Adiposis Dolorosa. W. López Albo.—p. 389.
 *Paraphrenia. J. Sanchis Banús.—p. 405.
 *Coagulation of Spinal Fluid. B. Rodríguez Arias.—p. 416.

Vocational Orientation.—Mira López enumerates the various tests and appliances used at the psychotechnical laboratory at the Instituto de Orientación at Barcelona to aid in the selection of a trade or profession or special work.

Pathogenesis of Tabetic Ataxia.—Lafora remarks that the ataxia may be intense when the sensory disturbances are slight, or vice versa, so that there can be no question of parallelism between them. In a case of congenital tabes described, the ataxia had developed rapidly in the young man but there was no analgesia of joints and periosteum. The ataxia rapidly subsided after the second intraspinal injection, and with it the girdle pains. In two other cases of acute and intense ataxia, the periosteum sensibility was intact. Notable improvement was realized promptly under intraspinal treatment of the men of 34 and 42. In two other cases in men of about the same age the periosteum sensibility was lost, but the articular was intact in one; in the other the tendon reflexes were also abolished. There was no ataxia in either, but lightning pains and sphincter disturbances confirmed the presence of tabes. Such cases suggest that other factors besides the purely sensory are involved in the pathogenesis of tabes. He queries whether there are different forms of tabes, and whether other nerve centers may not be involved in their production, the brain, the optic nerve, the cerebellum or the labyrinth.

The Pituitary and Adiposis Dolorosa.—López Albo says that less than ten cases of adiposis dolorosa have been published in Spain, and he adds another to the list. No appreciable benefit has been derived to date in his case from pituitary, thyroid or ovarian treatment. The variety of lesions that have been encountered at necropsies in such cases shows the various factors liable to be involved and the necessity for individualizing treatment. In his case there are pains in the temples and back of the orbit, congestion in the optic disk, and the sella turcica seems small—all of which points to some anomaly in the pituitary gland as cooperating in the clinical picture. There seem to be points of contact between this disease and circumscribed edema and symmetrical painful lipomatosis, although the latter is more common in men. In conclusion various cases are cited in which widely different treatments proved effectual, with a basis of the proper organotherapy, tonics, sodium salicylate, dieting, hot baths, active exercise, electrotherapy, massage and antineuralgics.

Paraphrenia.—Sanchis Banús describes with minute detail a case of chronic mental derangement, commencing in the late thirties, of the expansion paraphrenia type, with no trace of schizophrenia.

Coagulation of Spinal Fluid.—The syndrome of Froin developed in the woman of 52, two years after removal of the breast for cancer. The spinal fluid coagulated spontaneously *en masse*. This was discovered during spastic paraplegia of recent onset, and the woman soon died with signs of metastasis in the lung.

Repertorio de Medicina y Cirugía, Bogotá

March, 1921, 12, No. 6

- Text of Resolutions Adopted at Sixth Sanitary Conference of American Republics.—p. 288.
 *Extraction of Calculus in Kidney Pelvis. G. Rico.—p. 295.
 *Fixation Abscess in Puerperal Mania. A. Gomez Calvo.—p. 305.
 Suggestions for Model Public Health Service. E. R. Coni.—p. 307.
 *Complications of Gastro-Enterostomy. A. Torres Martínez.—p. 321. Conc'n.

Extraction of Calculus in Renal Pelvis by Natural Routes.—Rico's patient had been having symptoms of nephrolithiasis for six years. Pyelonephritis finally compelled urgent measures, and he rinsed out the pelvis on each side, and later the right pelvis only, leaving the catheter in the ureter for

six hours and, again, for twelve hours, as the calculus moved slowly downward in the following weeks. It finally protruded from the mouth of the ureter in the bladder, but slipped back into the ureter. Again the greased ureter catheter was introduced for several hours. The calculus was then spontaneously expelled.

Fixation Abscess in Treatment of Puerperal Mania.—Gomez Calvo now has a record of fifteen cases rebellious to all other measures, and the mania subsided at once in every instance; only two of the women required a second injection. No benefit was apparent in mania of other origin. This is his second publication on the subject, and he reaffirms the practically specific action of injection of 1 c.c. of turpentine under the skin, repeated 3 or 4 cm. beyond. By the eighth day an ample incision releases 70 or 80 gm. of pus. In his cases no micro-organisms could be cultivated from the pus.

Complications of Gastro-Enterostomy.—A fatal case of what seemed to be a postoperative peptic ulcer is described in a man of 64. In a second case the peptic ulcer had formed in the afferent loop, and had opened into the colon. In a third case, a man of 40, acute dilatation of the stomach followed the gastro-enterostomy but this was soon brought under control. In one woman of 27 the afferent loop became so distended with secretions, the fourth to sixth day after the gastro-enterostomy, that it compressed the efferent loop until a supplementary jejunojejunostomy became necessary. In still another case, the gastro-enterostomy was done to relieve a tumor at the pylorus with great dilatation of the stomach. Repeated gastrorrhagia followed, rapidly debilitating the man of 41.

Siglo Médico, Madrid

April 30, 1921, 68, No. 3516

- "Pathogenesis of Tabetic Ataxia." Gonzalo R. Lafora.—p. 405.
 Typhoid Epidemics and Hazen's Theorem. F. Murillo.—p. 408. Cont'd.
 *Pharyngeal Tuberculosis. J. M. Barajas y de Vilches.—p. 413. Conc'n.

Tuberculous Lesions in the Pharynx.—Barajas comments on the difficulty of distinguishing between tuberculous and syphilitic lesions of the pharynx. He has applied heliotherapy in a number of cases, but the course of the lesion never seemed to be modified thereby. Radium has given gratifying results, applied directly to the focus. This local treatment must always be supplemented with general measures and tuberculin. He applied the filtered radium rays for two hours every fifth day. His cases include one of lupus of the pharynx treated in this way. In another case a scrap from the isolated lesion in the pharynx had suggested tuberculosis, but under tentative mercurial treatment the lesion retrogressed completely. The Bossan intratracheal vaccine therapy might be given a trial, he adds, when other measures are not available.

Acta Scholae Medicinalis Univ. Imp. Kioto

March 25, 1920, 3, No. 4

- Toxic Action of Extracts of Fibrin. T. Masuda.—p. 457.
 *Action of Drugs on Respiration. N. Ishiwari.—p. 501.
 Various Reactions of Heart to Toxins. J. Ono.—p. 539.
 *Cytotoxic Serums and Vital Staining. M. Ogata.—p. 563. *
 *Sugar in Cerebrospinal Fluid. I. Ino.—p. 609.
 Action of Salts of Aromatic Acids. K. Okushima.—p. 667.
 Toxicity of Organ Extracts. A. Nagamachi.—p. 695.
 *Effect of Diet on Thyroid Functioning. K. Tsuji.—p. 713.
 Intravital Transformation of Bromin. T. Yoshitomi.—p. 729.
 Metorchis Found in Gallbladder of Domestic Duck. H. Tanabe.—p. 733.

Action of Toxins on Respiration Center.—Ishiwari reports that epinephrin checked respiration when injected intravenously, but the functioning of the respiration center was increased by alcohol, camphor, caffeine and certain other drugs as well as by epinephrin in subcutaneous injection.

Vital Staining After Injection of Cytotoxic Serum.—Four colored plates are given showing the cytotoxic action after the animals had incorporated the carmin stain. The vital stain becomes deposited in the cells injured by the cytotoxic serum. The nephrotoxic and hepatotoxic serums seemed to be specific to species and organ. A goat cytotoxic serum which was very poisonous for rabbits had little effect on guinea-pigs and puppies.

Sugar in the Cerebrospinal Fluid.—Ino devotes fifty pages to this account of experimental research on the sugar in the cerebrospinal fluid. The article is in English.

Influence of Diet on the Thyroid Gland.—Tsuji's experiments were mainly on young rats. The results confirm the histologic changes in the thyroid in animals feeding on special diets. Growth could be arrested by a special diet, but would then start up anew when a minute quantity of certain growth-promoting substances was added to the food. Secondary changes were produced in the gonads, parotid and pancreas and other organs with the special diets. The article is in English and profusely illustrated.

Beiträge zur klinischen Chirurgie, Tübingen

1921, 121, No. 1

- *Luxation of the Patella. J. Hohlbaum.—p. 1.
- *Malignant Goiter. G. Wolff.—p. 56.
- *Location of the Bile Ducts. G. Pallin.—p. 68.
- *Cancer of the Bile Ducts. G. Pallin.—p. 84.
- *Decompressive Trephining. Gertrud Bodewig.—p. 138.
- *The Appendix in Hernial Sac. Niedlich.—p. 167.
- Rinsing Out the Pelvis in Peritonitis. A. Sohn.—p. 191.
- *Regeneration of Heart Muscle in Wounds. H. Klose.—p. 220.
- Treatment of Fracture of the Patella. W. Speck.—p. 226.
- Reconstruction of Finger Pulp by Pulp from Toe. Müller.—p. 234.

Luxation of the Patella.—Hohlbaum explains with illustrations how deformities may develop as the extreme of physiologic variations, his conclusions confirming that statics and dynamics combine to mold the leg.

Malignant Goiter.—Wolff's three colored plates and other illustrations show the photomicrograms of three cases of proliferating goiter, epithelial cancer of the thyroid, in two young men, brothers, and in a woman of 48.

Course of Biliary Passages.—Pallin describes how the bile ducts may show the same irregular, anomalous course in the fetus as in adults.

Cancer of the Hepatic and Common Bile Ducts.—Pallin analyzes 52 cases of this kind in Borelius' service. A radical operation was attempted in only 4, but an anastomosis operation was done in 9 cases, and in 7 the ducts were drained. No less than 25 of the 31 operated on died almost at once, and half of them succumbed to postoperative cholemic hemorrhage, and 2 to anuria, probably also due indirectly to the cholemia. Thus in 18 of the 25 fatalities, damage from the bile in the blood was responsible for the fatal outcome. The danger from the cholemia is seldom great until the jaundice has lasted for from three and a half to four weeks. Consequently on suspicion that severe persisting jaundice is from malignant disease, it should never be allowed to go over three weeks before operating. In comparison with the importance of having the operation done not later than the third week, all other efforts to reduce the death rate are comparatively negligible.

Decompressive Trephining.—Bodewig explains how the secretions from a focus in the brain spread along the line of least resistance until they meet with a solid obstacle, namely, the dura. The dura bulges and is tender and a decompressive operation at this counter-field should supplement the decompressive operation at the focus. The latter is located by the focal symptoms; the counter-field by the tenderness. The decompressive operation for accumulation of cerebrospinal fluid should always be in the back of the head; it is vitally important to protect the brain-stem against compression. Trephining the counter-field is useful mainly, if not exclusively, in the cases of gradually increasing but moderate pressure. When supplemented by an opening in the back of the head for constant draining away of secretions, choked disk subsides. In one of the thirty-six cases tabulated, the vision, the gait and other focal symptoms returned to normal. By the end of the year there was scarcely anything left but dizziness on stooping over. Necropsy seven years later revealed a tumor in the cerebellum just below the old trephining scar. The best results were obtained in the cases in which the focus and the counter-field or fields were on the same side of the head.

Appendix in Hernial Sac.—Niedlich compares with his 13 cases, 111 from the literature in which the appendix was included in the hernial sac. In 15 cases the appendix was alone but sound; in 29 it was diseased. The hernia was inguinal in 92 men and 5 women, and femoral in 3 men and 24 women. The leukocyte count may suggest involvement of the appendix.

Regeneration of Heart Muscle in Wounds.—Klose's experience has shown that a defect in the myocardium heals only by cicatricial tissue. There is no actual regeneration. Catgut induces more of a reaction than silk. Interrupted silk sutures are the best in operations on the heart.

Deutsches Archiv für klinische Medizin, Leipzig

April 29, 1921, 136, No. 1-2

- *Test Injection of Epinephrin. E. Billigheimer.—p. 1.
- *Heredity in Hemolytic Jaundice. E. Meulengracht.—p. 33.
- *Cardiography of Exposed Heart. W. v. Kapff.—p. 46.
- *The Reaction of the Pylorus to Atropin. E. Ötvös.—p. 58.
- *Glycuronic Acid in the Blood. W. Stepp and E. Diebschlag.—p. 66.
- *Treatment of Absolute Arrhythmia. W. Frey.—p. 70.
- Experimental Research on Jaundice. G. Lepehne.—p. 88.
- *Residual Nitrogen in the Blood. J. Löwy and R. Mendl.—p. 112.

Mode of Action of Test Injection of Epinephrin.—Billigheimer gives a large table showing the findings after test injection of 1 mg. of epinephrin in thirty-five persons. The sugar content of the blood, the blood pressure, the pulse, the hemoglobin and erythrocytes in the blood, glycosuria and the general reaction were determined at regular intervals after the injection. The effect of epinephrin on the concentration of blood and on the sugar content is discussed in detail, also the glycosuria and the effect on pulse and blood pressure. The glycemia curve does not seem to have anything to do with the increase in the concentration of the blood. It is due rather to the irritation of the sympathetic nerve innervating the liver. The amount of increase in the sugar content of the blood is less characteristic than the course of the curve. The change in the blood picture is the most constant symptom, and there are three types, at least, of angioneurotic action. It is important to bear in mind that nerves and ductless glands and their antagonists may have a reciprocal stimulating action on each other.

Heredity of Jaundice.—Meulengracht gives the genealogical tree of nine families in which hemolytic jaundice has appeared in three generations as a dominant property. It appeared suddenly and spontaneously, probably a mutation. From this member of the family it was inherited according to the rules of dominants, half of the children presenting it, the other half remaining free and their descendants also free from it.

Cardiography of Exposed Heart.—Kapff gives the cardiograms from different points in the ventricle which lay close to the skin in the man of 42, after removal of a large dermoid cyst with resection of several ribs.

The Reaction of the Pylorus to Atropin.—Ötvös comments on the great difference between the action of atropin on pylorospasm according as it is spontaneous or induced. It has no effect on the sound stomach, but it cures the spasm of the pylorus induced by morphin. He theorizes to explain this different effect, why atropin can cause retention with organic disease while it has no effect on the normal stomach.

Occurrence of Glycuronic Acid in Blood.—Stepp and Diebschlag report their research in this line in thirty-three cases of diabetes and kidney disease and a number of healthy subjects.

Quinidin in Treatment of Auricular Fibrillation.—Frey now has a record of fifty cases in which he has given quinidin, with highly satisfactory results in 42 per cent., the continuous arrhythmia subsiding. He gave it in 0.4 gm. doses, three times a day, for from six to eight days beginning with half this dose and gradually increasing to 1.2 gm. during the day. Doses smaller than 0.2 gm. are futile. Lost compensation must first be restored with digitalis, if possible. Then, after a week's suspension, the quinidin may do good service. Recent cases of auricular fibrillation are especially suited for this treatment. In almost every case the drug restores the normal heart beat when the fibrillation and arrhythmia have developed in consequence of an operation or pneumonia or trauma. Great relief is experienced as the sinus rhythm is restored. He says in conclusion that this drug will render especially good service in general practice. The paralyzing action of quinidin can be combated with caffeine or theobromin. The fibrillation was never brought back by caffeine in his experience. The best results are obtained with fibrillation of nervous origin. A much dilated heart cannot be brought back to its normal rhythm, or only transiently, and cases that do

not respond well to digitalis or other measures are generally refractory to quinidin also. In his fifty cases, in 12 per cent. the fibrillation was transformed to a regular flutter. No difference was observed between the cases with slow or rapid beat; about half of each were refractory. Two thirds of the cases with fibrillation of recent development were benefited; when the fibrillation was of more than one year's standing, only 4 per cent. improved. The sinus node seems to forget in time how to work automatically. In the cases with lost compensation or with dilatation, when benefit occurred, it persisted for more than one month in 66 per cent. of the cases.

Residual Nitrogen in the Blood Under the Influence of Venesection.—Löwy and Mendl report from their research in ten cases that both venesection and sweating procedures tend to induce hydremia. Venesection does not succeed in reducing the residual nitrogen content of the organism to any essential extent, but the reactions which follow frequent withdrawal of small amounts of blood may aid in further detoxication.

Deutsche medizinische Wochenschrift, Berlin

May 5, 1921, 47, No. 18

- Renal Functional Tests. L. Casper.—p. 493.
Streptococcus Endocarditis. P. Jungmann.—p. 496.
Chronic Bacillary Dysentery. Strasburger.—p. 499. Begun 16, p. 441.
Silver Salts in Mediterranean Fever and Infectious Abortion in Cattle. H. Ziemann.—p. 500.
Etiology and Therapy of Parenchymatous Keratitis. Uthoff.—p. 500.
An Apparatus for Diathermal Treatment. Maier and Lion.—p. 502.
Retractility of Placenta. H. Opitz and Matzdorff.—p. 504.
Differentiation of Blood Platelets. H. Zeller.—p. 505.
Problem of Influenza Complications. A. Müller.—p. 506.
Gallstone Ileus. W. Wortmann.—p. 506.
*The Sehrt Abdominal Aorta Clamp. R. Fleischer.—p. 508.
Artificial Vagina in Masculine Pseudohermaphroditism. Gruss.—p. 509.
Review of the Vitamin Theory to Date. L. Asher.—p. 510.
Acute Diarrhea in Infants. L. Langstein.—p. 512.

Use of the Sehrt Abdominal Aorta Clamp in Obstetric Hemorrhage.—Fleischer relates his experiences with Sehrt's device for isolated compression of the abdominal aorta, a description and illustration of which will be found in THE JOURNAL, Feb. 28, 1920, p. 640. He has used the contrivance in twenty-one cases of abnormal obstetric hemorrhages. Nine patients were in grave collapse, and the effect of the compression was prompt and exact. The uterus, which up till then was relaxed and extended to the costal arch, contracted and hemorrhage ceased. The pulse became stronger and quieter. On an average, the Sehrt instrument was left on for twenty-five minutes, the longest time being an hour. When the pressure of the clamp was removed, hemorrhage did not set in again. It requires some care to adjust the instrument correctly, so that the aorta shall not be only partially compressed, which is dangerous owing to temporary stasis followed by a rush of blood. In two cases it appeared as if the patients would scarcely have survived the collapse if the hemorrhage had not been thus promptly checked. Fleischer has introduced a few modifications in the instrument whereby the pressure on the back is distributed over a larger area, and the instrument can be taken apart to carry in the bag. No direct or indirect injury from the compression was observed in any instance, not even postmortem in the one fatal case, the already exsanguinated woman having succumbed notwithstanding the thirty minutes of application of the clamp.

Deutsche Zeitschrift für Chirurgie, Leipzig

May, 1921, 162, No. 3-4

- *Contractures. A. W. Meyer and N. Spiegel.—p. 145.
*Electrophysiology of Diseased Muscles. E. Rehn.—p. 155.
*Puncture of Gallbladder. H. Burckhardt and W. Müller.—p. 168.
*Pathologic Constitutions and Surgery. K. H. Bauer.—p. 198.
*Operative Correction of Median Paralysis. E. Huber.—p. 271.
*Fever with Arthritis. F. Rost.—p. 276.
Suprarenalectomy in Epilepsy. Pohrt.—p. 282.

Contracture Under Immobilization.—The research on thirty-four cats confirms what was learned from frogs, namely, that contracture does not occur, under an immobilizing bandage, when the nerve supply of the muscles has been cut off. The contracture is of nervous origin, the result of a fixation reflex.

The more irritated the nerve the prompter and more pronounced the contracture.

Electrophysiology of Diseased Muscles.—Rehn gives the curves from a number of cases of spastic and flaccid paralysis in which the electric responses were investigated by plunging a platinum needle from 0.5 to 2 cm. into the belly of the muscle. The findings confirm the difference between the cerebral and spinal forms of paralysis.

Puncture of Gallbladder.—Burckhardt and Müller give nine plates showing the introduction of a very fine steel cannula into the gallbladder in cadavers and in five clinical cases. By this means it is possible to inject a contrast fluid for roentgenoscopy, and the results already realized suggest the possibility of arresting in this way acute attacks of gallstone colic, and modifying catarrhal conditions and, possibly, direct dissolving of the gallstones. They describe their tentative research and the technic for reaching the gallbladder. In two of their clinical cases this proved impossible, but in one case morphin was injected and in the others the collargol injected facilitated roentgen examination. In these cases the gallbladder was removed the next day, confirming the puncture findings.

Pathologic Constitution and Surgery.—This subject was discussed at the recent German Surgical Congress, and one address was summarized in the Berlin Letter, June 4, 1921. Bauer devotes nearly 100 pages to discussion of the importance of the conception of *Konstitutionspathologie* for medical thinking, with special regard to surgery.

Operative Correction of Median Paralysis.—Huber has been able to restore function to the thumb and forefinger by suturing the abductor muscle of the little finger to the flexor of the thumb. Two incisions are required for this, one parallel with the little finger and the other axial to the thumb. The forefinger was brought under control by transplanting the abductor of the thumb to the tendon sheath of the profundus flexor of the forefinger. The article is illustrated.

Fever with Arthritis.—Rost reports experiments on rabbits which demonstrated that substances are absorbed from the joints as well as from the subcutaneous tissue, but more slowly. The amount of toxin to be absorbed is probably larger in a diseased joint than from an abscess in the soft parts, and encapsulation does not occur, while the exchange of fluids between the tissue cells and the bacteria does not proceed so regularly. These features of suppurating arthritis easily explain the high fever.

Monatsschrift f. Geb. u. Gynäkologie, Berlin

November, 1920, 52, No. 5

- *Lingual Goiter and Pregnancy. H. Rubeli.—p. 295.
*Spontaneous Delivery in Frontal Presentation. J. Heymann.—p. 303.
*Manual Separation of the Placenta. Hammerschlag.—p. 311.
*Statistics of Extra-Uterine Pregnancy. A. Wiegand.—p. 316.
*Case of Tumor of the Placenta. H. Roscher.—p. 325.
*Phantom Tumor of Bladder. A. Mayer.—p. 332.
*Diphtheria in the Newborn. F. H. Lietz.—p. 340.

Lingual Goiter and Pregnancy.—The lingual struma first appeared at puberty; it increased in size with menstruation, and grew much larger during a pregnancy. It reached such a size just before delivery that tracheotomy seemed imperative, but after cesarean section at term the goiter subsided to its former size before the pregnancy.

Spontaneous Delivery at Term in Frontal Presentation.—Heymann analyzes thirteen more cases of delivery of a well developed child at term in alleged mentoposterior frontal presentation. Eliminating the dubious cases, the one he here reports, he says, is only the eighth on record.

Manual Separation of the Placenta.—Hammerschlag relates that recently three patients treated by manual separation of the placenta on account of hemorrhage, with preexisting infection, all succumbed to septicopyemia. In a fourth similar case he removed the uterus through a laparotomy without attempting to separate the placenta. This woman was the only one in the group that recovered. Hence he advocates waiting only six hours before intervention in private practice; in the clinic expectant treatment can be kept up much longer. Turgidization of the placenta may render good ser-

vice in such cases. With manifest infection, streptococci in uterus and blood, and rigors, hysterectomy is safer than manual separation of the placenta.

Extra-Uterine Pregnancy.—Wiegand reviews the experiences with extra-uterine pregnancy at the Magdeburg maternity during the last thirteen years, a total of 210 operative cases. The mortality was 3.8 per cent., but in 2.9 per cent. death was due to preceding loss of blood.

Placental Tumor.—Roscher removed a tumor, a chorio-angioma weighing 150 gm. from the placenta of a woman of 32.

Phantom Tumor of the Bladder.—The tumor was the result merely of a peculiar spasm of circular contraction in the bladder wall. The subsidence of the tumor restored the capacity of the bladder from 50 to the preceding 150 c.c. The cystoscope had revealed three round holes which seemed to be the mouths of diverticula, but as the local contractions subsided, the mucosa smoothed out flat.

Diphtheria in the New-Born.—Lietz found that 14.4 per cent. of twenty-one new-born infants were diphtheria bacilli carriers and 2.5 per cent. of 606 born in the maternity in his charge. He made a practice of injecting antitoxin into both mother and infant when diphtheria bacilli were found, but the results were disappointing, and it has now been abandoned.

Münchener medizinische Wochenschrift, Munich

May 6, 1921, 68, No. 18

- Treatment of Tuberculous Pleural Empyema. W. Jehn.—p. 537.
Threshold Excitation the Secret of Protein Therapy. Zimmer.—p. 539.
Biologic Dosimetry in Roentgen Cancer Therapy. F. Keysser.—p. 543.
Treatment of Tardy Injury of Ulnar Nerve. Hohmann.—p. 546.
Schorrheic Eczema. P. G. Unna.—p. 547.
Match-Box Dermatitis. H. Stranz.—p. 548.
Buttermilk in Relation to Proteus Growth. Leichtentritt.—p. 549.
Differential Diagnosis of Myxedema and Ovarian Insufficiency. B. Kuhlmann.—p. 550.
Two Incarcerated Hernias; Femoral and Obturator. Hütten.—p. 552.
Late Conditions in Epidemic Encephalitis. W. Mayer.—p. 552.
Pituitary Treatment of Intractable Constipation. W. Pirig.—p. 553.
Microscopic Examination of Stools. K. Alpers.—p. 553.
Stereophotogrammetric Roentgen Reliefs. C. Müller.—p. 554.
Mercury Poisoning Originating in the Vagina. W. Joers.—p. 554.
Glaucoma. C. von Hess.—p. 555.

May 13, 1921, 68, No. 19

- Acute Atrophy of the Liver. W. Hildebrandt.—p. 569.
Need of Absolute Hemoglobin and Erythrocyte Count. K. Bürker.—p. 571.
Residual Air and Reserve Air of Lungs. R. Geigel.—p. 576.
Fractional Examination of the Spinal Fluid. F. Weinberg.—p. 577.
Hunger Edema in Infants. F. Hamburger.—p. 579.
Index of State of Nutrition. F. Rohrer.—p. 580.
Time Required for Development of Gallstones. E. Mathias.—p. 582.
Differentiation of Active Tuberculous Focus. L. Preiss.—p. 583.
Modified Lavage of Spinal Canal. K. Käding.—p. 583.
Intravenous Injections without an Assistant. Gänssbauer.—p. 584.
Toxic Action of Minute Dose of Apomorphin. E. Seuffer.—p. 584.
Subcutaneous Injections of Camphorated Oil. Heinrichsen.—p. 585.
Sequels of Dysentery. D. Gerhardt.—p. 585.
Artificial Pneumothorax in Tuberculosis. Plehn.—p. 586.

Wiener klinische Wochenschrift, Vienna

April 28, 1921, 34, No. 17

- Treatment of Gonococcus Infection of Adnexa. Bucura.—p. 195.
Effect of Alcohol on Flocculation of Lipoid Antigen. R. Müller.—p. 196.
Ulcerative Stomatitis. W. Wallisch.—p. 197.
Recidivating Desquamative Scarletiform Erythema. Fuhs.—p. 199.
Intravenous Therapy and the Effect of Intravenous Administration of Hypertonic Solutions. K. Stejskal.—p. 200.
Tension Pneumothorax After Injury to Diaphragm. Schönbauer.—p. 201.
Nomenclature of Version as Obstetric Operation. Klaar.—p. 201.

May 5, 1921, 34, No. 18

- Normal Weight. B. Sperk.—p. 210.
The Incision in Cholecystectomy. O. Förderl.—p. 212.
Osteomalacia. H. Schlesinger.—p. 213.
*Postoperative Lung Complications. F. Mandl.—p. 214.
Peculiar Injury from Explosion. F. Orthner.—p. 215.

Statistics on Postoperative Lung Complications.—Mandl found on studying the case reports of Hochenegg's surgical service in Vienna that following goiter operations lung complications were more frequent after general than after local anesthesia. After hernia operations the reverse was true. In operations on the stomach, the frequency of lung complications depended more on the character of the intervention than on the mode of anesthesia. Lung complications were more common after resection than after gastro-enterostomy. Grave

cases of pneumonia occurred oftener after general narcosis than following local anesthesia. It was noticeable that the farther away the operated area was from the region of the abdomen, which participates in the respiratory movements, the less frequent were the lung complications. After 1,379 hernia and abdominal operations such complications arose in 14.5 per cent. of the cases. After 1,585 operations on the head, neck, buccal cavity, mamma, rectum or the extremities, there were only 8.5 per cent. of cases of postoperative lung involvement. It was especially remarkable that after 478 radical operations on the rectum in the case of patients much weakened by carcinoma, lung complications followed in only 3.9 per cent. of the cases. That chilling of the patient is an important factor was shown by the marked increase in lung complications during the winter of 1919-1920, when, owing to the scarcity of coal, the operating rooms and the wards could not be adequately heated. At this time they began the use of digitoxin as a prophylactic measure to ward off postoperative lung complications. In this manner the percentage of lung complications was reduced from 27 per cent. (as of that period) to 8 per cent. The effect may perhaps be explained by the reaction of the pulmonary vessels and the change in the blood distribution thus produced.

Zeitschrift für Tuberkulose, Leipzig

February, 1921, 33, No. 5

- Tuberculosis in Young Children Since the War. F. Umber.—p. 257.
Partial Antigens in Surgical Tuberculosis. F. Landauer.—p. 261.
*Prophylaxis of Tuberculosis. C. Jaenicke.—p. 265.
*Artificial Pneumothorax. E. Mory.—p. 272.
*Pulmonary Tuberculosis After War Wounds. H. G. Austgen.—p. 274.
*Case of Tuberculous Articular Rheumatism. G. Michels.—p. 279.

Prophylaxis of Tuberculosis.—Jaenicke has been trying Petruschky's method of percutaneous tuberculin treatment in sixty-four children in 1917, and in 275 in 1919. The method is the inunction of a mixture of tuberculin and the antigens of the common micro-organisms that accompany tuberculosis, that is, the pneumococcus, streptococcus and staphylococcus. Petruschky calls the mixture the anticatarrhal liniment, and he has advocated this percutaneous treatment for systematic eradication of tuberculosis in communities. Jaenicke states that in his experience this treatment of the children threatened with tuberculosis has resulted in a striking number of cases in which the children made fine progress, and no injurious by-effects were observed in any instance. Time alone will show whether it is possible by this means to eradicate tuberculosis in families and in communities, but Jaenicke is convinced that the prospects are encouraging.

Artificial Pneumothorax.—Mory has never encountered in the literature a case like the one he describes. The retrospective diagnosis from the necropsy findings was that the right pleura had extended over the diseased left lung, and in inducing the pneumothorax the needle had traversed this abnormally located pleura and had pierced the wall of a bronchiectatic cavity. Air had thus penetrated into the right pleural sac, with a valve closure of the opening. This resulted in the right pleura becoming so distended with air that the right lung was completely compressed, while the diseased left lung was unable to keep up sufficient respiration.

War Injuries and Pulmonary Tuberculosis.—In four cases the pulmonary tuberculosis had developed after the lungs had been gassed. In thirteen the contusion of the chest was supposed to be the cause of the tuberculosis, but the history of the cases proved that the injury had merely roused the latent disease. In another group of fifty-eight men with war wounds elsewhere than in the chest there were only three in which a connection between the trauma and the pulmonary tuberculosis could be accepted.

Case of Tuberculous Articular Rheumatism.—Michels reports a case of what seemed to be acute articular rheumatism, developing in the course of pulmonary tuberculosis in a man of 32. The course was subacute but there were occasional exacerbations and involvement of other joints, but no endocarditis, and no modification of the disease by salicylates and other measures useful in rheumatism. As the pulmonary disease improved, the rheumatic phenomena retro-

gressed with it, and finally disappeared completely, with no recurrence during the two years to date.

Zentralblatt für Chirurgie, Leipzig

May 7, 1921, 48, No. 18

*Volvulus of the Stomach. E. Siegel.—p. 618.

*Deepseated Foreign Bodies in Esophagus. F. von Fink.—p. 623.
Hinge-Joint Casing for Flail Elbow Joint. W. Felix.—p. 626.

Volvulus of the Stomach.—Siegel reports a case of volvulus of the stomach in a 2 year old child. He found only one other case in the literature of volvulus of the stomach in childhood, and only about twenty cases in adults. In Siegel's case, after lavage the distention disappeared but returned in five hours. A median incision from the xiphoid process to the umbilicus was made. The stomach wall did not present a markedly changed appearance. The untwisting process was easily accomplished by traction on the stomach. The usual prophylactic measures to prevent recurrence—fixation of the stomach wall, or shortening of the hepatoduodenal ligament or the lesser omentum—he did not resort to, as there are so many disagreeable eventualities associated with such procedures. The child has had no further trouble during the four years since the operation.

Removal of Foreign Body in Esophagus by Way of the Stomach.—Fink recalls von Hacker's statement that the most dangerous position for a foreign body in the esophagus, by reason of the difficulty of removal, is at a distance of from 27 to 33 cm. from the upper teeth. Fink reports a case in which he removed a plate of five teeth from the esophagus by way of the stomach. The foreign body was located 33 cm. from the teeth, and several futile attempts to remove it under esophagoscopy had already been made elsewhere. In 1918 Hacker was able to collect only thirty-eight cases in which foreign bodies had been removed by the stomach route. In Fink's case, an incision 12 cm. long and parallel to the greater curvature and the vessels allowed the introduction of the gloved left hand. Without difficulty the cardiac opening could be reached with the forefinger, and the lower edge of the plate was located 3 cm. from its lumen. With the palpating finger he discovered that two opposite corners of the plate had penetrated the swollen walls of the esophagus and lacerated the mucous membrane. After trying several instruments, the plate was removed with curved forceps 25 cm. long, the forefinger being inserted in the esophagus to distend it and loosen the upper corner of the plate where it was impacted in the wall of the esophagus. The rubber plate had four incisors and the left canine tooth, the plate measuring 3 by $4\frac{1}{2}$ cm., the row of teeth spreading to $4\frac{3}{4}$ cm.

Zentralblatt für innere Medizin, Leipzig

April 30, 1921, 42, No. 17

*Residual Nitrogen in Blood and Tissues. H. Strauss and E. Becher.—p. 345.

Residual Nitrogen in the Tissues in Various Diseases.—Strauss and Becher present evidence that a marked retention of abiuret nitrogen in the blood and in the tissues before death is more common than is generally supposed, and that its presence is a contributory factor in the causation of death. Values were arrived at which showed the falsity of the assumption that the residual nitrogen in the blood does not increase until saturation of the tissues has taken place. The greatest accumulations of residual nitrogen in the body were found in cases with distinct symptoms of genuine uremia.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

April 30, 1921, 1, No. 18

*Reaction Time in Arm and Fingers. J. W. Rolder.—p. 2379.

*High Frequency Current in Therapeutics. H. C. Folmer.—p. 2404.

*Anesthesia for Tonsillectomy. A. S. Jacobson.—p. 2409.

*Ascarids Found in Inguinal Abscess. J. Wiegersma.—p. 2412.

*Rabies in the Netherlands. J. Hulshoff Pol.—p. 2453.

Reaction Time in Arm and Fingers.—This long report of experimental physiology and clinical research at the Amsterdam physiology institute confirms among other things that the reaction time is shorter for the arm than for the fingers, with both sensory and motor psychobiologic responses.

High Frequency Current.—Folmer lauds the cures he has obtained with systematic d'Arsonvalization in treatment of

various affections, including a case of long rebellious universal arthritis in a young man. After treatment with the high frequency current he regained his earning capacity and joined a football team. Also in a case of obesity in which the weight dropped 20 kg.; in relief from diffuse pruritus, and in cure of impotency, and of melancholia of ten months' standing. Great benefit was derived in three cases of pulmonary tuberculosis, the night sweats, expectoration and fever subsiding and the patients gaining in weight. Folmer adds in conclusion that we can scarcely overestimate the influence of d'Arsonvalization on the metabolism and its indirect influence on diabetes, gout, rheumatism and nervous diseases, pruritus and disfiguring scars, warts, angiomas, etc., which, he says, subside under this painless and simple treatment, sometimes without leaving a trace.

Anesthesia for Tonsillectomy.—Jacobson's experience confirms the special advantages of local rather than inhalation anesthesia for operations on the tonsils even in children.

Prophylaxis of Rabies.—Rabies is kept out of the Netherlands as a rule by the strict measures enforced against dogs, but some recent cases have called attention to the enormous distances a rabid dog may cover, thus starting foci at remote points. Pol, as chief health officer of the Utrecht province, advocates even stricter measures, namely, that for four months after a dog has been suspected of rabies all other dogs in the region must be muzzled and be held by a leash outside of the house; no dogs should be allowed to be taken out of the contaminated province, and all dogs running at large, even though muzzled, should be shot.

Acta Medica Scandinavica, Stockholm

May 17, 1921, 55, No. 1-2

*The Suspension Stability of the Blood. R. Fåhræus.—p. 3.

Speed of Sedimentation in the Blood.—The name of Fåhræus is connected with the early diagnosis of pregnancy by means of the increased speed of sedimentation of the corpuscles in citrated blood. He here devotes 228 pages to an exhaustive study of the subject (in English) from various standpoints and 400 tests. He commends the use of a pipet with an inner diameter of 2.5 mm.; with this a high blood column (200 mm.) is obtained with very little blood. The pipet is placed in a stand where a steel spring presses the mouth of the pipet against rubber. Most of his tests were made with tubes of 9 mm. inner diameter, the height of the 1 to 4 citrate-blood mixture being 150 mm. A 2 per cent. solution of sodium citrate is used, and the reading is made in one hour. In healthy men the sinking value averages 3.3 mm. per hour; in healthy women, 7.4, but in the pregnant it averages 44.9 mm. This increase is progressive, starting from the very first, and increasing week by week. The sinking values are notably increased in almost all pathologic cases, so that a single stability reaction has diagnostic significance only when the pregnant woman is otherwise normal. But a progressive increase in the response points almost certainly to pregnancy. Any values above 9 mm. per hour for men and 12 mm. for women, must be regarded as pathologic changes in the suspension stability of the blood. It can be directly and instructively studied in the capillary and retinal circulation. Heating reduces the agglutinability of the blood, thus reenforcing the suspension stability.

Ugeskrift for Læger, Copenhagen

April 28, 1921, 83, No. 17

*Meningitis from the Influenza Bacillus. M. Christiansen and M. Kristensen.—p. 551.

Meningitis from the Influenza Bacillus.—Christiansen and Kristensen describe three cases of meningitis in infants of 6 and 10 months and a child of 2, with necropsy in the younger children. The influenza bacillus was cultivated from the three cases in pure cultures. They think that meningitis due to Pfeiffer's bacillus is probably more common than generally recognized but escapes detection. Systematic lumbar puncture is the main reliance in treatment. In the case with recovery, a total of 560 c.c. of spinal fluid had been withdrawn in the course of the month.

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ACUTE POSTOPERATIVE DILATATION OF THE STOMACH*

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There are several reasons why the subject of acute postoperative dilatation of the stomach should be of interest to every surgeon. In the first place, this complication is of greater frequency than has usually been thought. Secondly, it is very often unrecognized or mistaken for some other condition. Finally, the surgeon's failure to recognize its nature is always serious, and not infrequently fatal, to the patient. There are few surgical complications in which early diagnosis is so directly reflected in the results to the patient as in the one under discussion. As Müller¹ has put it, "Here the diagnosis is everything" (Hier its die Diagnose Alles). It is the surgeon who is constantly on the lookout for this complication who will recognize it when it presents itself.

HISTORICAL

Although cases of acute gastric dilatation had undoubtedly been described before the report of Sir Hilton Fagge² in 1873, certainly this author deserves the credit for the first thorough presentation of the subject. From a purely clinical point of view, Fagge's classic description of the symptomatology will suffice for present-day purposes. He himself says that "dilatation of the stomach, independent of obstruction at the pylorus or in the small intestine, is a condition which has long been recognized." He alludes especially to cases previously reported by Brinton, Bennett, and Miller and Humby. The description by Brinton³ is of especial interest, as we shall see, from the standpoint of the etiology and mechanism of the condition.

Of the two cases reported by Fagge himself, one was observed in association with a retroperitoneal abscess following what was evidently a perforated duodenal ulcer; the second might be put in the "idiopathic" class. Both patients died, and in both postmortem examinations were made. Since Fagge's time the literature of the subject has grown to extensive proportions, and

quite a number of comprehensive reviews have been published (by Borchgrevinck, Laffer, Conner, Doolin, Braun and Seidel, Payer and others).

SYNONYMS

Cases of acute postoperative dilatation appear in the literature under a confusing variety of names, which reflect the differences of opinion as to the nature and cause of this complication. This is evident from a glance at some of these synonyms, viz., arterio-mesenteric obstruction, acute paresis of the stomach, gastroduodenal dilatation, gastromesenteric ileus, post-operative gastric paralysis, and acute paralytic dilatation of the stomach.

INCIDENCE

In Fagge's original paper (1873), reference is made, in addition to the two personal cases of the author, to only a few which had been previously mentioned in the literature. In 1899, Albrecht⁴ had collected eighteen cases, while in 1902 Campbell Thomson⁵ had gathered forty-four. The study of Conner,⁶ in 1907, was based on 102 cases, that of Borchgrevinck,⁷ in 1913, on 144. In the most recent review of the subject, Doolin⁸ has collected 1,188 cases, and to this number I can add thirty-nine, including the ten reported in this paper, thus bringing the total to 227. These figures, it should be explained, include cases of acute gastric dilatation due to all possible causes, and not only those following surgical operations.

The postoperative group, with which alone we are concerned here, constitutes the major portion, about 69 per cent. of all cases, according to Doolin. Borchgrevinck gives about the same proportion (66.6 per cent.). Laffer's⁹ was much smaller—only 38.2 per cent.

Of the ninety-two postoperative cases embraced in Borchgrevinck's study, seventy-one occurred after laparotomy and twenty-one after extra-abdominal operative procedures. The largest proportion (thirty cases) was seen after operations on the female generative tract; gallbladder operations come next with seventeen cases; appendix operations, eight cases; hernia operations, three cases; etc. There were six cases in which an operation on the stomach had been performed

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Müller, P.: Ueber akute postoperative Magendilatation, hervorgerufen durch arteriomesenteriale Duodenal-Kompression, Deutsch. Ztschr. f. Chir. **56**: 486, 1900.

2. Fagge, Hilton: On Acute Dilatation of Stomach, Guy's Hosp. Rep., Series 3, **18**: 1, 1873.

3. Brinton, William: Lectures on Diseases of the Stomach, 1859, pp. 343, 348, 353.

4. Albrecht, P. O.: Ueber arteriomesenterialen Darmverschluss an der Duodenojejunalgrenze und seine ursächliche Beziehung zur Magen-erweiterung, Virchows Arch. f. Path. Anat. **156**: 285, 1899.

5. Thomson, H. C.: Acute Dilatation of Stomach, New York, William Wood & Co., 1902.

6. Conner, L. A.: Acute Dilatation of Stomach and Its Relation to Mesenteric Obstruction of the Duodenum, Am. J. M. Sc. **133**: 245, 1907.

7. Borchgrevinck, O. J.: Acute Dilatation of Stomach and Its Treatment, Surg., Gynec. & Obst. **16**: 662, 1913.

8. Doolin, W.: Acute Dilatation of Stomach, Brit. J. Surg. **6**: 125 (July) 1918.

9. Laffer, W. B.: Acute Dilatation of the Stomach and Arterio-Mesenteric Ileus, Ann. Surg. **47**: 390 (March) 1908.

--one pyloric resection, four gastrojejunostomies, and one gastroduodenostomy. Of twenty extra-abdominal operations, five were on the kidneys, eight on the extremities, one on the face, and six on the thorax. Most frequently, in about 60 per cent. of cases, the condition is seen in women. It may occur at any age. The youngest patient, no doubt, was that of Belilios,¹⁰ a suckling infant of 9 months, who was found dead two hours after nursing. The postmortem examination revealed the stomach to be "as large as a football." The oldest patient was perhaps that of Moore,¹¹ the age in this case being 86.

SYMPTOMATOLOGY

The clinical picture produced by acute gastric dilatation is fairly distinctive. The most prominent symptom is vomiting. This, in a large proportion of cases, becomes conspicuous soon after the operation, so that it is commonly looked on as merely the usual post-anesthetic emesis. In other cases, the onset occurs many days after operation, perhaps long after the patient had recovered from its immediate effects. In about one third of Borchgrevinck's postoperative cases (twenty-three of sixty-six) the onset was within the first two days after operation. In nineteen patients, vomiting began three days after operation; in five cases, four days; in four cases, five days; in one case, sixty-one days, and in two cases, seven days. The onset has been described as occurring as late as the thirtieth day in one reported case (Jessop), and on the twenty-fourth in another (Borchgrevinck's Case 7). It is a question, however, whether a dilatation appearing so late after operation can fairly be put down as a postoperative complication.

The vomiting is characteristically of a regurgitant type, the gastric contents being spit up, as it were, with little retching or straining. The vomiting gives little or no relief to the patient, appearing to be only an overflow from the stomach, somewhat analogous to the urinary incontinence of retention.

The amount vomited may be small or it may be enormously large. In the case of Neck¹² it was 1.5 liters; in that of Borchardt,¹³ "a half bucketful," while in the case of Miller and Humby¹⁴ the stomach after death was found to hold "five basinfuls." Most frequently the vomited material is greenish or brownish, but it may in the later stages become almost black. In a number of reported cases, analyses have been made of the vomited stomach contents. Reynier¹⁵ found a hyperchlorhydria in several of his cases, while lactic acid has been found by various observers. In one of my cases the gastric analysis showed an absence of free hydrochloric acid.

The large amount of vomitus, far exceeding the fluid intake, is very characteristic and is to be looked on as evidence of a marked hypersecretion of the stomach. Many years ago (1883) Morris¹⁶ suggested, as a mat-

ter of fact, that it is this gastrorrhea which is the cause of the stomach dilatation, a view which is almost certainly incorrect. The evidence, as we shall see, indicates that the hypersecretion and the dilatation alike are caused by the same underlying disturbance of gastric innervation.

Pain is almost always a symptom, but its severity varies greatly. In some cases it has been so excruciating as to make the patient scream, while in others it has amounted to only a feeling of distress in the epigastrium. Collapse is noted in practically all severe cases, the pulse becoming rapid and thready, the skin cold and moist, the eyes sunken and hollow, the respiration rapid and shallow. On the other hand, there are many cases of milder degree in which the general condition of the patient may remain surprisingly good for a considerable length of time. Other symptoms emphasized by almost all authors are the great thirst and the scantiness of the urine, both obviously the results of the great loss of body fluid by vomiting.

Of the objective findings, probably the most characteristic is the distention of the abdomen. This is quite distinctive in its outline, the enlargement occupying chiefly the left side of the abdomen. In the milder cases it is chiefly above the umbilical line, but in the extreme instances it may extend far below this, so that most of the bulging is below the level of the navel. Durand (quoted by Doolin) mentions a case in which the resonance extended so far up into the thorax that a diagnosis was made of pseudopneumothorax. In another case, reported by Brown,¹⁷ a diagnosis of pancreatic cyst was made, after aspirating the tense fluctuating mass in the epigastrium. Even at operation the thin-walled cystic mass was looked on as a pancreatic cyst. It was evacuated and marsupialized. The necropsy disclosed the supposed cyst to be an acutely dilated stomach.

DIAGNOSIS

The symptoms which have been detailed, and especially the characteristically located abdominal distention, are usually sufficient to suggest the nature of the trouble. It is the stomach tube, however, which must usually be invoked to make the diagnosis certain. Introduction of the tube is followed by the escape of a large amount of gas and fluid, with immediate collapse of the stomach and disappearance of the abdominal distention, thus clinching the diagnosis. The amount of material which escapes is always large, the fluid content being most frequently of a dark brown color, resembling root beer. In some cases the amount has been huge, as has already been stated.

The two postoperative conditions which are most apt to be mistaken for acute gastric dilatation, and vice versa, are peritonitis and postoperative ileus. The differentiation will usually be suggested by bearing in mind such characteristics of gastric dilatation as the absence of fever or perhaps the even subnormal temperature, the frequent and copious vomiting of regurgitant type, the characteristic topography of the abdominal distention, the absence of marked abdominal tenderness or rigidity, the absence of marked leukocytosis, and, most important, the striking if temporary disappearance of the distention after the passage of the stomach tube. In this connection, Payer¹⁸ has called attention to the fact that when the distention is extreme, the stomach tube will

10. Belilios, D. A.: Acute Dilatation of Stomach Without Apparent Cause, *Brit. M. J.* 1: 74 (Jan. 10) 1903.

11. Moore, J. W.: Gastro-Mesenteric Ileus, Report of Two Cases with Autopsy Findings, *New York M. J.* 105: 544, 1917.

12. Neck: Ueber akute Magenvergrößerung und sogenannten arterio-mesenterialen Darmverschluss, *München. med. Wchnschr.* 53: 1561 (Aug. 7) 1906.

13. Borchardt: Zur Pathologie und Therapie der Magenvolvulus, *Verhandl. d. Deutsch. Gessellsch. f. Chir.*, 33 Congress, 1904, Part 2, p. 300.

14. Miller and Humby: Enormously Dilated Stomach, *Tr. Path. Soc. London* 4: 137, 1853.

15. Reynier, P.: Gastric Paralysis, Post-Operative or Complicating Certain Peritoneal Affections, *Ann. Gyn. & Pediat.* 18: 71, 1905.

16. Morris: The Stomach from a Case of Acute Gastrorrhea or Acute Dilatation of the Stomach, *Tr. Path. Soc. London* 34: 82, 1883.

17. Brown, W. H.: A Case of Acute Paralytic Dilatation of the Stomach, *Lancet* 2: 1017, 1899.

18. Payer, A.: Die post-narkotische Magenlähmung, *Mitt. a. d. Grenzgeb. d. Med. u. Chir.* 22: 411, 1910.

not reach to the bottom of the organ, and he therefore advises placing the patient in the elevated hip position before lavaging, thus facilitating the emptying of the stomach.

In both peritonitis and obstruction the abdominal enlargement is more diffuse and rounded, and is not appreciably relieved by gastric lavage. The amount of vomitus, and of material recovered by lavage, is also commonly much smaller. In addition there is usually more or less fever and leukocytosis in peritonitis. In postoperative ileus, again, the onset rarely occurs as early as does that of gastric dilatation, pain is more severe, and vomiting is not such an overshadowing symptom. Furthermore, ileus most frequently involves the lower portion of the intestinal canal.

It cannot be too strongly emphasized that a moderate degree of gastric dilatation is a frequent concomitant of peritonitis, and that it is a more frequent mistake to diagnose acute gastric dilatation when peritonitis has developed than vice versa. On the other hand, it is certain that many patients with acute gastric dilatation have died of what has been called peritonitis, or postoperative ileus.

PROGNOSIS

Acute operative dilatation of the stomach may be classed as one of the grave surgical complications. In former years, when it was so commonly unrecognized, the mortality was very high indeed, but as surgeons are learning to recognize and treat the complication earlier the mortality is showing a gratifying decrease from year to year. Neck's figures, in 1906, gave a mortality rate of 73.43 per cent.; Laffer, in 1908, gave 63.5 per cent.; Payer, in 1911, gave 53.43 per cent.; Borchgrevink (1913), 54.1 per cent. The latter emphasizes, however, that of eighty cases in his series reported after 1907, the death rate had decreased to 36.2 per cent. No tendency to spontaneous cure has been noted. Of thirty-one treated medically or untreated, twenty-nine died.

It is interesting to speculate—for it must remain a speculation—as to what would have been the outcome in the cases recognized during operation, in a number of which, as in my Cases 1 and 2, the stomach showed no tendency to redilate when the patient left the table. Had such a case escaped attention at the time, or had the dilatation occurred after closure of the abdomen, would it have gone on to the production of the familiar picture of serious and perhaps fatal dilatation? There seems little reason to doubt that this would have been the case.

GASTRIC DILATATION DURING OPERATION

Altogether I have collected thirteen cases of gastric dilatation observed during operation, including the two of my own appended to this paper (Cases 1 and 2). In almost all of these, Moorhead,¹⁹ Richardson,²⁰ Mayoral,²¹ Luckett²² (two cases), Lee,²³ Harrigan²⁴ (two cases), Doolin, Reardan²⁵ (three cases) and Novak

(two cases), the prompt passage of the stomach tube (in Doolin's case puncture with a scalpel) brought quick relief from this distention, with little or no disturbance after the operation. The only exception to this good record is encountered in the case of Lee, in which redilatation of the stomach took place during closure of the incision, following a posterior gastro-enterostomy for perforating duodenal ulcer. Death occurred very soon after, before the patient left the table. The postmortem examination revealed enormous dilatation of the stomach. As Lee himself seems inclined to think, there may have been other factors in causing this patient's death. Certainly it would be most unusual for acute dilatation of the stomach to cause death within a few minutes.

ETIOLOGY AND MECHANISM

Perhaps the most interesting problem in connection with the subject of acute gastric dilatation is as to the cause and mechanism of the condition. Around this question there has arisen, as Doolin says, a "riot of theories." Of these the two which have been most prominent are (1) the theory of duodenal occlusion by the upper border of the mesentery, with the contained superior mesenteric vessels, and (2) the theory of paralysis of the muscular wall of the stomach.

The conception that acute gastric dilatation might be due to shutting off of the duodenal lumen by the mesenteric vessels originated with Rokitsky,²⁶ in 1863. No case illustrating this form of mechanism seems to have been described, however, until 1891, when Kundrat²⁷ reported three such cases, all fatal, in a paper with the title "Concerning a Rare Form of Intestinal Incarceration." Postmortem examinations were made in two of these three cases, and both revealed enormous dilatation of both stomach and duodenum. Another case of similar type was reported in 1895 by Schnitzler,²⁸ who first suggested the postural form of treatment which has since become so popular. Byron Robinson,²⁹ in 1893, endorsed the views of Rokitsky in a paper based on many dissections. Bloodgood,³⁰ Müller and many others have contributed articles bearing on this general view.

There are different opinions as to the exact mechanism by which the duodenum may be compressed by the upper border of the mesentery. According to some the important factor is a sinking into the pelvis of the intestinal coils, thus causing traction on the mesentery and stretching it, as it were, over the horizontal portion of the omentum. Others, again, are inclined to believe that the overdistended stomach presses downward on the mesenteric root and thus causes the duodenal occlusion which, in turn, precipitates the acute dilatation, thus completing the vicious circle.

There are many objections to the theory of duodenal occlusion, which up to a few years ago was perhaps the most widely accepted of all. These may be thus summarized:

1. Duodenal dilatation, while a frequent concomitant of gastric dilatation, is not by any means a constant one, occurring in noticeable degree in only 25 per cent.

19. Moorhead, E. L.: Acute Dilatation of Stomach During Anesthesia, *J. A. M. A.* **52**: 1996 (June 19) 1909.

20. Richardson, W. E.: A Case of Acute Dilatation of Stomach Occurring in the Course of an Operation for Duodenal Ulcer, *Brit. M. J.* **2**: 1202, 1913.

21. Mayoral, Antonio: Report of a Case of Acute Dilatation of the Stomach, *J. A. M. A.* **64**: 146 (Jan. 9) 1915.

22. Luckett, W. H.: Visible Acute Dilatation of the Stomach During Laparotomy, *J. A. M. A.* **64**: 2055 (June 19) 1915.

23. Lee, B. J.: Acute Operative Dilatation of Stomach, *Ann. Surg.* **63**: 418 (April) 1916.

24. Harrigan, A. H.: Acute Dilatation of Stomach, *Ann. Surg.* **69**: 510 (May) 1919.

25. Reardan, F. B.: Acute Dilatation of Stomach: Report of Six Cases, Three Occurring During Anesthesia, *California S. J. Med.* **15**: 253 (July) 1917.

26. Rokitsky: *Lehrbuch der pathologischen Anatomie*, Ed. 3, 1863, Vol. III.

27. Kundrat: Ueber eine seltene Form der inneren Inkarzeration, *Wien. med. Wchnschr.* **41**: 352, 1891.

28. Schnitzler: Ueber mesenteriale Darmincarceration, *Wien. klin. Rundsch.* **9**: 579, 1895.

29. Robinson, Byron: Dilatation of Stomach from Pressure of the Superior Mesenteric Artery, Vein and Nerves on the Transverse Segment of Duodenum, *Cincinnati Lancet-Clinic* **45**: 577 (Dec. 8) 1900.

30. Bloodgood, J. C.: Acute Dilatation of Stomach-Gastric Mesenteric Ileus, *Ann. Surg.* **2**: 736, 1907.

(Doolin). Conner gives the proportion of cases in which a whole or a part of the duodenum is dilated as 38 per cent.

2. There is only one case in the literature, that of Bäumler,³¹ in which the obstruction seems to have been sufficiently definite as to cause any marked constriction of the duodenum. In this case the postmortem examination disclosed a reddened groove, 2 cm. in width, on the upper surface of the bowel, after a release of the constriction.

3. It would be impossible for duodenal occlusion to cause such a very sudden dilatation of the stomach as has been noted in a number of cases, which have been observed during operation. Two personal cases, of this type, are described at the end of this paper.

4. As a matter of fact, in the few cases of very high intestinal obstruction which have been reported in the literature as a result of various causes, dilatation of the stomach has not been, by any means, a characteristic or even a common symptom. Genuine duodenal obstruction, as by tumors, bands, etc., is characterized by a more sudden onset than acute gastric dilatation, by pain which is more intense, by earlier prostration, and by the fact that vomiting, while it occurs, is apt to be less constant and less copious than with acute dilatation of the stomach. This is well illustrated in the case reported by Harrigan, in which volvulus of the stomach occurred as a result of incarceration of the upper jejunum in the fossa of Treitz. An important point in the microscopic picture was the fact that the stomach was "extremely swollen, red, congested, as in the case of a loop of obstructed intestine in a strangulated hernia." In the case of the ordinary postoperative dilatation, on the other hand, the stomach is thin walled, without congestion or other evidence of interference in circulation. Bloodgood reported four cases of high intestinal obstruction, but in none of these was noteworthy dilatation of the stomach found at operation or postmortem. Borchgrevinck, again, reports a case of acute duodenal obstruction by a gallstone, and emphasizes that in such cases there is an "absence of both gastric ectasy and the clinical picture of the acute dilatation of the stomach."

5. Acute dilatation is rare after childbirth, when the intestines might be expected to gravitate into the pelvic cavity after the delivery of the child, and thus, according to the views quoted above, cause mesenteric constriction of the duodenum.

6. A sine qua non of the duodenal occlusion theory, as Conner says, is the assumption that the small intestine sink into the pelvis, and thus make traction on the mesentery. And yet, in my two operative cases (Cases 1 and 2) the stomach dilatation took place when the patient was in the Trendelenburg position.

7. If the duodenal conclusion were a factor of much importance, there would exist an almost perfect indication for the performance of gastro-enterostomy. As a matter of fact, this operative measure, like most others that have been done, has been notoriously unsuccessful in its results.

8. Were there a definite mechanical occlusion of the duodenum, it would be hard to explain the fact that a large proportion of patients, certainly more than a half,

have recovered by the simple use of the stomach tube, without operation and without postural treatment.

9. Acute gastric dilatation has occurred in a number of cases after the operation of gastro-enterostomy. My own Cases 3 and 5 are examples of this type of case. Similar observations have been made by others.

THEORY OF GASTRIC PARALYSIS

In 1859, Brinton³ first suggested that acute gastric dilatation is the result of a disturbed innervation of the stomach wall, with consequent paresis. I can do no better than give his own words, which express so well the trend of modern opinion:

It is evidently a lesion of the nervous tissue connected with the stomach: a lesion which, whether structural in the sense of being recognizable by the aided or unaided eye, or merely what our ignorance conveniently terms "functional," prostrates (often apparently paralyses) the stomach in all its tissues, and in all their offices. Its mucous and muscular coats, its secretion and motion, respectively, are alike interfered with: nay, more, those muscles of the locomotive system which are linked with the contractile tissues of the stomach in the ordinary act of vomiting are also affected. In short, it is not merely the sympathetic, but the cerebrospinal center, which is injured or deranged—a fact which seems to concur with the violent pain and general prostration in pointing to the prevertebral center (or solar plexus) of the former, or to the pneumogastric trunks of the latter, as the parts chiefly affected.

This theory has since then had the able support of many who have written on the subject, although it was for a period of years somewhat eclipsed by the theory of arteriomesenteric occlusion of the duodenum, already discussed. A few elementary facts in connection with the physiology of motor activity of the stomach may be mentioned, so far as they bear on the question under discussion. The extrinsic nerves of the stomach are, of course, the vagus and the splanchnics. The former are commonly looked on as being chiefly motor, and the latter as chiefly inhibitory. It was long ago shown, first by Carion and Hallion,³² that section of the vagi in animals results in acute dilatation of the stomach. Many of the animals thus operated on exhibited symptoms suggesting uremia, these being explained by absorption of the toxins from the distended stomach, as in the case of gastric tetany. This observation is of peculiar interest to me in that one of my cases (Case 7) was characterized by what seems to have been a typical attack of tetany involving the upper extremities. I have encountered no similar case in going over the literature. A demonstration of the effect of vagus section was unwittingly made in the human being by Hartwell,³³ who observed acute gastric dilatation following the accidental severance of the vagus nerve during a difficult thyroidectomy.

That abdominal injury or manipulation may reflexly produce gastric paralysis is certainly no more remarkable than that a pithed frog's heart may be made to stop in diastole by mere light tapping on the frog's abdominal wall with the handle of a scalpel. Of the same general type is the atony of the bladder, with retention of urine, seen so frequently after operations about the perineum or arms. Similar, also, is the sudden extreme local paralysis of the uterine wall observed occasionally during curettage, to the dismay of the gynecologist, for

32. Carion and Hallion: Dilatation de l'estomac par section des nerfs vagues, *Bull. méd. de Paris* 9: 809, 1895.

33. Hartwell, J. A.: Discussion on Paper by Moschowitz, *Ann. Surg.* 55: 615, 1912.

31. Bäumler: Ueber akuten Darmverschluss an der Grenze zwischen Duodenum und Jejunum, *München. med. Wehnschr.* 1: 657, 1901.

the relaxation is so extreme that no resistance to the curet can be felt, and the operator fears that the uterus may have been perforated.

In the case of gastric dilatation the afferent impulse may have its origin elsewhere than in the abdominal cavity, as observed, for example, in those cases which follow injuries to the extremities. In the nonsurgical cases, again, the mechanism would seem to be a purely local one. It is scarcely worth while, in the present state of our knowledge, to speculate as to whether the reflex has to do chiefly with an inhibition of the vagus or a stimulation of the splanchnics. Nor can we as yet determine the relative importance of the rôles played by these extrinsic nerves, on the one hand, and, on the other hand, by the local nerve mechanism of the stomach, i. e., the plexuses of Meissner and Auerbach. All in all, however, it may be said that the weight of evidence is rather overwhelmingly in favor of the paralytic theory of postoperative dilatation of the stomach, that this theory, more than any other, explains the varied immediate etiology of the condition, and that it alone would seem to explain those rapidly occurring dilations occasionally observed during operations.

THE SOURCE OF THE GAS IN THE STOMACH

In most cases the distention of the stomach is gaseous. In the early cases, such as these observed at operation, the contents of the stomach are usually entirely gaseous. It is probable that the enormous amounts of fluid which later are evacuated from the stomach are the results of a hypersecretion which, like the muscular paralysis, is the result of a disturbance in innervation. There has been much discussion as to the source of this gas. For that matter, there is much doubt as to the origin of the gas normally contained within the stomach. As to its physiologic importance, there can be little question.

Cannon³⁴ concludes from his experimental studies that "gastric peristalsis results from tension produced by internal pressure acting on the tonically shortened gastric musculature, for (1) distention of the inactive stomach causes peristalsis when the musculature is tonically controlled, but not when it is relaxed; (2) considerable intragastric pressure (sustained tension) prevails in the stomach manifesting peristalsis; (3) within limits peristalsis is augmented or weakened as intragastric pressure is experimentally increased or decreased." The significance of these observations, if they be applied clinically, lies in the fact that they seem to explain the persistence of the gastric paralysis and distention, once they have been produced. The observation that the greatly increased intragastric pressure resulting from the dilatation inhibits motility is supported also by Barber.³⁵

ANESTHESIA

There has been much discussion as to the part played by the anesthetic in the production of acute postoperative dilatation of the stomach. The fact that many cases are recorded in which dilatation has occurred in nonsurgical conditions, i. e., when an anesthetic has not been given, is conclusive evidence that anesthesia is not an all-important factor in the production of the condition. On the other hand, there is much reason to believe that it is a predisposing factor of considerable

importance. The most interesting study of this matter, and one which has apparently been more or less overlooked, is that of Payer. This investigator, as a result of observations in 300 cases, concluded that in nearly all patients, after anesthesia, there could be demonstrated a significant degree of gastric atony. The greater curvature not infrequently is found to extend to the umbilicus, or even considerably below this. As a rule this stomach paresis disappears within from twelve to twenty-four hours. Especially interesting is Payer's statement that the severity of postanesthetic vomiting is directly dependent on the degree of gastric atony which occurs. The critical period, he says, occurs on the third to the fifth days, when solid feeding is ordinarily begun. Since becoming interested in this question I have, whenever possible, noted the condition of the stomach during abdominal operations, and I have been impressed with the frequency with which moderate though perhaps clinically unimportant degrees of gastric atony are noted.

CLASSIFICATION OF TYPES

From what has been said, it would seem that two principal varieties of acute postoperative dilatation of the stomach may be distinguished, a primary and a secondary.

Primary.—Since the immediate cause of the gastric dilatation appears to be a disturbance of gastric innervation, it would seem that the most common form of the complication is precipitated by the operative procedure, whatever that may be. This is certainly the logical assumption in those cases which have occurred during operation.

In some of the cases, as in my Case 1, the dilatation occurred almost instantaneously, the whole process being a matter of seconds. No other explanation seems possible than that there has been a sudden reflex paralysis of the stomach wall. The only other factor which can be thought of in a causative way is that of the anesthetic, although this is perhaps of importance only as a predisposing factor. This is indicated by the not infrequent cases in which no anesthetic has been used, and also by the fact that the relaxing effect of the anesthetic would probably be much more gradual than is sometimes the case.

As to the postoperative cases, which of course make up much the larger proportion, it is obviously even harder to fix the mechanism than in those which occur directly under the eye. It seems logical to assume that in many instances, always of course excluding those associated with peritoneal sepsis, the mechanism is not unlike that of the cases observed during operation. Furthermore, there is no doubt that many cases of so-called postoperative dilatation have really had their beginning during the operation, at which time they were not detected. In such cases the vomiting occurring after operation is construed as the ordinary postanesthetic emesis, and it is not until the patient's condition becomes grave, perhaps, that the true nature of the trouble is appreciated.

Secondary.—(a) Septic: One of the most distended stomachs I have ever seen was observed in a recent necropsy on a patient who was admitted to the hospital three days after forceps delivery by a physician in the patient's home. She died shortly after admission of a violent streptococcus peritonitis. There was an enormous distention of the abdomen, exaggerated, no doubt, by the extreme atony of the abdominal walls consequent to the recent pregnancy. At the postmortem examina-

34. Cannon, W. B.: The Nature of Gastric Paralysis, *Am. J. Physiol.* 29: 250, 1911-1912.

35. Barber, W. H.: Gas and the Motility of the Surgical Stomach, *Ann. Surg.* 69: 271, 1919.

tion, the entire intestinal canal was ballooned to a most unusual degree, from the cardia to the rectum. The stomach distention was only a part here of the general gastro-intestinal paresis, the latter, in turn, being the result of the violent peritoneal infection. The point I wish to emphasize, in other words, is that dilatation of the stomach is not infrequently an incident in the picture of peritonitis, and may even be the dominant clinical manifestation. It is in such cases as these, for example, that gastric lavage and postural treatment are apt to be unsuccessful, the patient succumbing to the peritoneal infection. Paralytic ileus of the intestine is, of course, a frequent result of peritonitis, and is commonly explained as due to the paralytic effect of the toxins on the intestinal walls. The same explanation suggests itself for the gastric dilatation seen in these cases, the gastric paralysis being perhaps due to the directly injurious effect of the bacterial poisons on the local nerve apparatus in the stomach—the plexuses of Meissner and Auerbach.

(b) Obstructive: Little further need be added with regard to the supposed rôle played by occlusion of the duodenum by the upper border of the mesentery. Suffice it to repeat that the evidence indicates that such obstruction, if it occurs, is almost always secondary to the gastric dilatation. Reasoning *a priori*, it seems incredible that the relation of the mesentery to the duodenum should leave such a small factor of safety that a mere gravitation of the small intestines into the pelvis, such as must occur in every individual when standing, could precipitate a life-endangering obstruction of the bowel. The various arguments against this theory have already been presented, however, and I am inclined to think that this factor is of little or no importance in the etiology of postoperative dilatation of the stomach. It is true, of course, that in the rare cases of high intestinal obstruction, acute dilatation of the stomach may sometimes be observed as a late symptom; but this, after all, is not the question under discussion.

TREATMENT

Treatment of acute postoperative dilatation of the stomach, to be successful, must be instituted early. There are few postoperative complications in which prompt recognition is so important to the patient. The diagnostic features of the condition have already been discussed. The two principal measures for the relief of the gastric dilatation may be discussed briefly as follows:

Gastric Lavage.—The stomach tube has saved the lives of many patients who have developed postoperative dilatation of the stomach. This fact has not always been appreciated, for, as has already been stated, many a case of gastric dilatation has been wrongfully diagnosed as peritonitis. Fortunately, however, the stomach tube has often been used just the same, to the advantage of these patients. Certainly gastric lavage should be carried out in every case of postoperative dilatation, first for diagnostic and later for therapeutic purposes. In some the distention of the stomach is so great that the tube must be introduced much farther than usual in order to evacuate the contents. Payer has advised the employment of lavage in the elevated hip posture, in order that advantage may be taken of the factor of gravity in facilitating complete evacuation of the stomach. The frequency with which the lavage is to be carried out depends on the amount of gas and fluid evacuated. This, as has been seen, is often very

great, owing to the extreme degree of hypersecretion present in many cases. In such cases, lavage is often necessary at intervals of every few hours. When the lavage treatment is instituted early, the results are as a rule very gratifying; when begun late, the treatment may prove of little avail. According to Borchgrevinck, in forty-eight cases treated by lavage alone, twenty-four patients got well, and twenty-four died. The latter group undoubtedly, however, embraced some late and some complicated cases.

The Postural Treatment.—Originally suggested in 1895 by Schnitzler, the treatment of postoperative gastric dilatation by the postural method has been carried out in a large number of recorded cases. It is based, of course, on the theory that the dilatation is the result of duodenal occlusion by the mesentery, and that this can be relieved by placing the patient in the prone or knee elbow position, thus lifting the intestine and mesentery off the duodenum, as it were. The results reported from the method have been, in the main, favorable, although it is by no means invariably successful in the relief of the symptoms. The method is still employed, even though, as we have seen, there is little doubt as to the incorrectness of the theory on which it is based. It was used in two of my cases with satisfactory results. In one case the relief given to the patient by being placed in the prone position was immediate and striking, in the other it was less pronounced but quite definite.

The good results of this position are not to be taken as a proof of the correctness of the duodenal occlusion theory. Certainly the evacuation of the stomach by vomiting is prompted by the assumption of these postures irrespective of the presence of a mechanical block in the duodenum. It should furthermore be mentioned that in many of the cases in which postural treatment was resorted to, gastric lavage was employed synchronously. Aside from the prone and the knee elbow position (Bäumler) recommended by Schnitzler, other forms of postural treatment have been suggested. Robinson and Müller recommend placing the patient on the right side to facilitate emptying of the stomach into the bowel. Payer, indeed, advises placing all patients of the right side after operation as a prophylactic against this complication. Kelling's³⁶ suggestion, on the other hand, is to place the patient on the left side, thus overcoming the valvelike closure of the cardia to which he attributes the dilatation. This conception is probably erroneous, and the Kelling posture is not to be commended. Finally, allusion has already been made to the apparently worth-while recommendation of Payer, to place the patient in the elevated pelvic position during lavage, in order to empty the stomach more completely.

Operative Measures.—From the standpoint of both rationale and of clinical results, I believe it may be stated that there is no place for operative measures in the treatment of acute dilatation of the stomach. Various forms of operation have been done in an effort to relieve the condition, but the results have been so unfavorable as not to justify them. Doolin found that of thirty-one patients operated on, only eight recovered. The following operations were done in this series: gastrotomy, six cases, with five deaths; gastrostomy, seven cases, with six deaths; gastro-enteros-

36. Kelling, G.: Ueber den Mechanismus der akuten Magendilatation, Arch. f. klin. Chir. 64: 393, 1901.

tomy, seven cases, with four deaths; jejunostomy, one case, one death; exploratory laparotomy, eight cases, five deaths.

CONCLUSIONS

1. Acute postoperative dilatation of the stomach is an important and dangerous surgical complication which is probably less infrequent than is generally believed.
2. Its early recognition is of vital importance to the patient, for on it, to a large extent, depends the success of treatment.
3. The use of the stomach tube is the most important means of diagnosis.
4. Especially important is the differentiation between gastric dilatation, on the one hand, and peritonitis or postoperative ileus, on the other.
5. Dilatation of the stomach is a frequent concomitant of peritoneal infection.
6. The evidence points strongly to gastric paralysis as the immediate cause of the dilatation.
7. In the primary cases, such as those occurring during operation, the gastric paresis is explainable as a simple reflex. In the secondary cases, the dilatation is the result of septic factors, although it is possible that occlusion of the upper intestine may in rare cases be the primary factor.
8. The two important therapeutic measures are gastric lavage and the postural treatment advocated by Schmitzer. The latter is incorrect in theory, but often successful in its results.
9. There is no place for operative measures in the treatment of acute postoperative dilatation of the stomach.

REPORT OF CASES

The ten cases reported below are taken partly from my own surgical work and partly from the records of the gynecologic department of the Johns Hopkins Hospital. For the privilege of including the latter group I am indebted to Dr. Thomas S. Cullen, the head of the department.

CASE 1.—A woman, aged 29, was operated on in my service at the South Baltimore General Hospital, Nov. 12, 1919, the operation consisting of modified Gilliam suspension and the separation of abdominal adhesions following an appendectomy performed elsewhere seven years before. There was nothing of significance in the past history except that the patient had had some digestive trouble for a number of years (belching, occasional discomfort after eating, etc.), apparently as a result of marked visceroptosis. There had been severe dysmenorrhea and backache since the birth of a child, four years previously. During the course of the operation the stomach suddenly became tremendously dilated so that it filled the whole upper abdominal cavity and pushed down into the incision, which was a suprapubic one. The enlargement was easy to observe, for no packs had been used, the patient being in the Trendelenburg position. There was only slight acceleration of the pulse rate, and no swallowing efforts were observed by the anesthetist. Within a very short time, certainly less than thirty seconds, the stomach had reached an enormous size. A stomach tube was promptly passed, causing instantaneous collapse of the organ. Within eight or ten minutes the dilatation again occurred in exactly the same way and was again relieved by the stomach tube. There was no further recurrence of the distention, either during the operation or during the period of convalescence, which was uneventful.

CASE 2.—A woman, aged 43, underwent supravaginal hysterectomy and perineorrhaphy, March 7, 1921, at the South Baltimore General Hospital, because of uterine myomas and relaxation of the vaginal outlet. The operation itself was a

simple one. While the uterus was being removed the patient's respiration became somewhat embarrassed, the pulse somewhat accelerated, and the face slightly cyanotic. The breathing was for a few moments irregular, and interspersed with gulping efforts, apparently at swallowing. The stomach became enormously distended so that its lower border extended well into the suprapubic incision. The distention was promptly relieved by the passage of a stomach tube, and there was no subsequent recurrence of the phenomenon, although the stomach remained rather atonic. There were no gastric disturbances during the convalescence.

CASE 5.—May 1, 1916, a posterior gastro-enterostomy was performed at the Mercy Hospital on a man, aged 52, the symptoms having been present for eighteen years. The operation was rather more difficult than usual, owing to the fact that there was great fatty infiltration of the omentum and that the patient took the ether badly. The condition at the close of the operation, however, was quite satisfactory. There was considerable postanesthetic vomiting, and on the second day the upper abdomen became tense and rounded. The vomiting soon became incessant and was of the regurgitant type, the patient literally spitting up great quantities of root-beer colored fluid which seemed to overflow from the stomach. There was great epigastric distress, and the patient's condition soon became alarming, with extreme prostration, cold, moist skin, rapid pulse, and subnormal temperature. Lavage was repeatedly carried out, each time bringing away great quantities of the same dark brownish material which was being vomited. In spite of the desperate condition to which the patient was reduced, he began to show improvement on about the fourth day after the operation. In addition to the repeated lavage, he received large quantities of fluid by rectum and under the skin, together with vigorous stimulation, until he had been tided over the worst of his trouble. Improvement was gradual, the later convalescence being uninterrupted.

CASE 8.—A woman (Gyn. No. 18557), aged 35, on whom a right nephrectomy was performed at Johns Hopkins Hospital, Aug. 1, 1912, had persistent emesis, after the operation, which became marked, August 4. At one time 800 c.c. of greenish fluid was vomited. The pulse varied between 120 and 130, and was weak. The stomach extended below the umbilicus. On lavage, the organ contained at least 1,000 c.c. of fluid. The vomiting continued in spite of treatment, the patient growing progressively weaker, and death took place, August 10.

ABSTRACT OF DISCUSSION

DR. F. B. TURCK, New York: For the last twenty-five years I have been making experiments on shock, shock produced in animals by tissue extracts from the animals, specific to the animals. In a large percentage of these cases, acute dilatation of the stomach always supervenes on the intravenous injection of autolyzed tissues that are homologous to the animal. At once changes in all the muscle cells, akin to what is known as fatigue of the muscles, is produced. Examination of frozen sections shows that this is due to absorption of "tissue toxin," which is liberated during a surgical operation and by anesthesia. The shock toxins caused the same pathologic condition. Small injections of tissue burned to ash produced chronic states. Thus we actually produced acute, subacute and chronic dilatations.

DR. ALBERT J. OCHSNER, Chicago: A symptom which is the one that the nurses recognize first is the effect of the dilatation on the heart. The heart is displaced. The nurse notices that the heart has "gone bad" and thinks that something has happened, but does not recognize the cause. In regard to prophylaxis: For many years we had occasional cases of acute postoperative dilatation of the stomach. Now we have a standing order that the moment a patient vomits, or is nauseated, or complains of gas pressure, gastric lavage is made with water at a temperature of 105 F. The heat stimulates contraction of the stomach and cleanses it of any jejunal contents which may have regurgitated into the stomach. For the last fourteen or fifteen years since this routine has been followed, we have had no further cases of dilatation. Placing

the patient across the bed on the face is the first thing the nurse should do; then the stomach tube is passed and the stomach washed out.

DR. P. B. SALATICH, New Orleans: I have been unfortunate enough to lose two cases of acute dilatation of the stomach. It is important to recognize the condition early. A patient operated on by another surgeon for a ruptured appendix got along all right for forty-eight hours, and then developed tremendous distention of the abdomen. Everybody thought the patient had peritonitis and the family was informed that the case was hopeless. I saw the case in consultation and recognized it as an acute dilatation of the stomach. After gastric lavage the patient soon felt comfortable and went on to recovery. I examine the urine every day, and when casts appear that is a bad sign. Twelve hours before death the urine will contain many casts. Suppression takes place and then the prognosis is always bad.

DR. EMIL NOVAK, Baltimore: The slides shown illustrate very well the characteristic topography of the abdominal enlargement in these cases, especially the prominence on the left side. In extreme cases the apex beat of the heart may be pushed well upward and to the left. As to the theory of the postural treatment: The purpose of placing the patient in the prone position is to unload the small intestine, as it were, from the duodenum. In the two cases I reported of acute dilatation occurring during operation, the patient was in the Trendelenburg position, with the small intestine well up in the abdomen, so that this factor of duodenal occlusion could scarcely have been of any importance. Whenever possible, I perform pelvic operations without using abdominal packs, the abdomen being opened in the Trendelenburg position after the patient has been anesthetized thoroughly. It was, therefore, possible to observe the progress of the dilatation very clearly. Physiologists tell us that many points concerning the motor physiology of the stomach have not yet been cleared up; hence it is not surprising that the mechanism of acute dilatation is still rather obscure. The explanation suggested by Dr. Turck lacks confirmation. It illustrates the multiplicity of hypotheses concerning the mechanism of this phenomenon.

TREATMENT OF CHRONIC NEPHRITIS WITHOUT EDEMA

AN EVALUATION OF METHODS *

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Chronic nephritis can be divided sharply into two groups; the type with edema, and that without edema. The former is often the direct and evident result of bacterial invasion and may perhaps be regarded as a form of subacute nephritis. The latter possesses a more elusive etiology, and yet is the more frequent; it is of this disease that I write.

Chronic nephritis without edema is not a disease of the kidney alone, for in the resulting disturbed physiology other organs, notably the heart and arteries, play an equally important part, and in last analysis it is the efficiency of these other organs which determines as a rule the fate of the patient. Dependence on the urinary findings alone frequently leads to error. Many individuals will show albumin and casts in the urine for years without other signs of nephritis, while at the same time they demonstrate their ability to withstand without injury all sorts of fatigue and hardship. Such people cannot be said to have nephritis; they require no treatment.

TREATMENT OF THE PATIENT AS A WHOLE

The patient should be studied as a whole. His general appearance, his sense of well-being, his emotional stability, his reaction to physical exercise and mental strain, his vision, his digestion, and his maintenance of body weight, all warrant attention. In addition, such general information as that gained from certain laboratory tests, when it is taken in the proper clinical setting, is of definite value. For example, the phenolsulphone phthalein output is a fairly dependable criterion of kidney efficiency. This test also possesses the great advantage of simplicity. Of still greater value, but not so readily available, is the chemical analysis of the blood. Early in the disease the blood usually shows increased amounts of sugar and uric acid; later there occurs a gradual increase in the blood urea; and lastly, when uremia is imminent, the creatin begins suddenly to rise. The prognostic as well as the diagnostic value of these blood changes is evident.

More important still, because of its wide applicability, is the knowledge to be gained from observing the quantitative behavior of the urine. When a person is obliged to get up at night to urinate, or when the night urine is found to exceed 600 c.c., chronic nephritis should be suspected. The question: "Do you get up at night to pass your urine?" should be asked every patient. In line with this is the changed behavior of the specific gravity. Instead of fluctuating from time to time, the specific gravity of the urine, which is lower than normal in this disease, shows a tendency to become fixed, and in this respect the several specimens passed at two-hour intervals all show a striking constancy. Simple as it is, indeed, because of its very simplicity, this two-hour test, of all others, is the most important.

In the treatment of chronic nephritis the first effort, here as elsewhere, is to remove the cause. This is difficult; and since we still are in the dark as to ultimate etiologic factors, it is in most instances impossible. The vogue of indiscriminate tonsillectomy and tooth extraction is on the wane. I would not inveigh against the removal of definitely diseased tonsils, for it is not improbable that years of infected tonsils will cause chronic nephritis. Before advising removal of the tonsils, however, we should first satisfy ourselves that they are infected, and, secondly, we should take into consideration the influence of such an operation on an organism which, with no remaining factor of safety, is already tottering under a heavy load. The same applies to oral sepsis. Diseased gums must be treated and genuine apical abscesses eradicated; but there is nothing to justify the removal of a tooth merely because it is pulpless. Not only should the patient's comfort be considered before his teeth are extracted, but the dangers incident thereto should be carefully reckoned. I have seen a man go into fatal uremia following the extraction of one tooth.

In the treatment of the disease as in its diagnosis, attention should be devoted to the patient himself rather than solely to his kidneys. The character of his work and his manner of living often need correction. He should be taught to readjust himself to the new conditions under which he is to live and to reconcile himself to the necessary limitations. The amount of work should be so regulated that the physical and mental strain under which he labors is reduced to

* Read before the Medical Association of the State of Alabama, Montgomery, April 19, 1921.

to a minimum, and to this end I have found it an excellent plan to insist that following the midday meal each day the patient take an hour's rest. A definite amount of recreation is essential. Frequent vacations are advisable, and at times a long rest away from home is necessary in order to enable the patient to regain his equilibrium. Violent exercise is bad, but moderate exertion well within his capabilities is beneficial. Walking is excellent; I know of nothing better than golf.

The amount of fluid permitted these individuals varies according to the physician's bias and the degree of his adherence to the teachings of the past. The rigid restriction sometimes advised with a view of reducing the blood pressure often does harm. On the other hand, no good can be accomplished by giving such patients the enormous quantities of water sometimes prescribed, while real injury may be wrought. A moderate daily amount of fluid is advisable, say between 1 and 2 quarts.

REGULATION OF THE DIET

Diet is a traditionally important factor, but the strict limitations imposed in the past, particularly as regards meats, are not warranted. I doubt whether such rigid restrictions ever accomplish good; they often do harm. The keynote of the dietary should be moderation. The total calories should be low and yet so balanced and of sufficient amount to keep the patient alive and relatively fit through the months and years of his expectancy. He is frequently told that he must eat no meats, above all must he avoid red meats, and at the same time he is advised that the breast of chicken is relatively harmless. Let me remind you that the patient must have at least his minimum of protein, and that as far as his kidneys are concerned there is not the least difference between beefsteak and the breast of chicken; pound for pound, each imposes an equal burden on these organs.

An appropriate diet for the average individual with chronic nephritis contains from 50 to 75 gm. of protein and a sufficient amount of other foods to give a daily intake of about 2,500 calories. One small helping of any meat, together with one egg per day, when added to the protein contained in the other foods is sufficient. The patient with chronic nephritis can with safety be permitted this amount of meat. To give him much less will surely in the course of months or years mean an appreciable loss in strength and vigor.

Precision in feeding does not require that the patient keep before him a pencil and paper and a table of food values. It does demand, however, a little thought such as any one is capable of giving. It is well to place in his hands some little book on food values to which he may refer when necessary, such for instance as that written by Locke, or Bulletin 28 of the Department of Agriculture. Both physician and patient can in a short time familiarize themselves with approximate food values, and for the patient it becomes a simple matter after a little coaching to arrange his own menu. There is nothing cryptic about this: merely a little trouble.

The character of the other foods is likewise of importance. Meat broths contain extractive substances which are of no food value and yet which must pass through the kidney; therefore they should be definitely interdicted. It seems needless today to speak of the dangers of alcohol. Emphasis should be laid on the entire elimination from the dietary of

all condiments, and in order to spare not merely the kidneys but the digestive organs as well the food should be simple and plain.

Chlorid restriction in nephritis has received a great deal of attention, yet its efficacy in the type under consideration is still a matter of discussion. Allen has advised most drastic chlorid restriction and has even suggested the possibility that sodium chlorid is the long sought for poison of uremia. He states that the rigid restriction of the patient's salt will greatly reduce the blood pressure and in other ways achieve material benefit. In my own recent studies the almost total elimination of sodium chlorid from the diet for a limited period failed in most instances to reduce materially the blood pressure or to influence definitely the course of the disease. I am led to believe that the excessive use of salt does real harm and that its restriction does good; but I have not found that rigid restriction, such as Allen advises, accomplishes anything more than the benefits which follow the dietary limitations ordinarily imposed. I should perhaps add that the almost absolute restriction of sodium chlorid for a period of two weeks has in certain instances appeared to depress the patient to a dangerous degree. I would conclude that it is sufficient to say to the patient that he must eat no food which contains an unusual amount of salt, and that he must add no salt to his food after it comes to the table. If he follows this admonition, his salt intake will be reduced to about 2 gm. per day, an amount which I believe is within the limits of safety.

OTHER MEASURES

The condition of the gastro-intestinal tract sometimes influences the course of chronic nephritis, and for this reason it is essential that the patient secure a good daily bowel movement. Foods containing a large amount of vegetable fiber are helpful to this end, but with many patients the frequent administration of a mild saline purgative is advisable. The large doses of mercury sometimes administered as calomel must do harm to the kidney, and I would warn against the frequent and continued use of this drug.

Baths and sweats aid elimination. Sweats obtained by hot packs and by various other physical means are sometimes beneficial, and particularly is this true in the more advanced stages of the disease.

It scarcely seems necessary to speak of diuretics in a disease in which diuresis is an outstanding symptom. When the kidney is already working to its full capacity and is secreting an abundance of urine, diuretics can only do harm. The more we know of nephritis, whatever the type, the more cautious do we become in the use of diuretics.

Uremia in chronic nephritis is of grave consequence, for if it is not fatal in the first attack it is likely to repeat itself, and eventually it will carry off the patient. Threatened uremia sometimes can be averted by putting the patient to bed with purgation and sweating. Most effective is venesection. Enough blood should be taken to accomplish appreciable good, and for the average individual this means not less than 600 c.c. At this point I should like to warn against the practice of administering physiologic sodium chlorid solution after venesection. If fluids cannot be taken by mouth, sufficient plain water should be administered by rectum, and the patient will thus be spared the dangers incident to the ingestion of a large quantity

of sodium chlorid. Following the bleeding, quiet and absolute rest in bed for a period of two or three weeks is advisable. During this period the patient should be given mild purgation and should receive a limited amount of food.

SUMMARY

The patient with chronic nephritis without edema should be studied as a whole and treated as a whole. He should be permitted a fairly well balanced low calory diet with small amounts of meat and very little salt; and lastly, his entire life should be so reordered as to obtain for him an abundance of rest, some peace of mind, and a fair amount of play.

AN AUTOMATIC METHOD FOR SERIAL BLOOD PRESSURE OBSERVATION IN MAN*

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It is well known that blood pressure in man fluctuates rapidly and widely in health and in disease. With due allowance for inherent inaccuracy of instruments and observers, still these many variations in blood pressure are hard to understand. Psychic factors are known to have their effect, but they are difficult to evaluate. The influence of sleep also is practically unknown, certainly the influence of sleep on pathologic blood pressures. It has seemed reasonable to me to assume that it would be very valuable to be able to make repeated observations at regular intervals over a long space of time with the psychic factors partly eliminated, and it has seemed especially desirable to know what the blood pressure is during sleeping hours. Ordinary methods have been attempted for the serial measurement of blood pressure, but the amount of labor involved and the ever present psychic factors have interfered with successful series. Especially has it been impossible to obtain reliable blood pressure determinations without waking the patient. With the idea of overcoming all these difficulties at one stroke, I have devised an apparatus which automatically makes oscillometer tracings, from which the systolic and diastolic blood pressure can be measured directly with a workable degree of accuracy. No satisfactory apparatus of this sort has been in use; in fact, only one has been described. Fantus,¹ in 1917, devised a method by modifying the Erlanger oscillometer with the addition of a recording mercury manometer, but apparently no further use of this device has been made.

The apparatus here described is contained in a cabinet, which can be rolled to the bedside, and when the cuff is applied to the arm and connection made with a rubber tube of convenient length, the cabinet may be closed and satisfactory tracings obtained hourly, for a period of from eight to fourteen hours, with no further attention from the operator and no more cooperation from the patient than that he remain perfectly quiet during the brief time that the cuff is inflated. The

patient may assume any position in bed between times, and unless he is unduly wakeful, he sleeps through the night without interruption. He is provided with a push button which he keeps within reach to signal at the end of each hour if he is awake. The tracing, when studied, gives the systolic and diastolic blood pressure as measured by a millimeter scale from the base line to characteristic points on the tracing, and if the patient is intelligent, the tracing should also show when he was awake.

The apparatus is not complicated. It is constructed of standard laboratory equipment with the addition of a recording mercury oscillometer constructed on a new principle. In accordance with this principle, two mer-

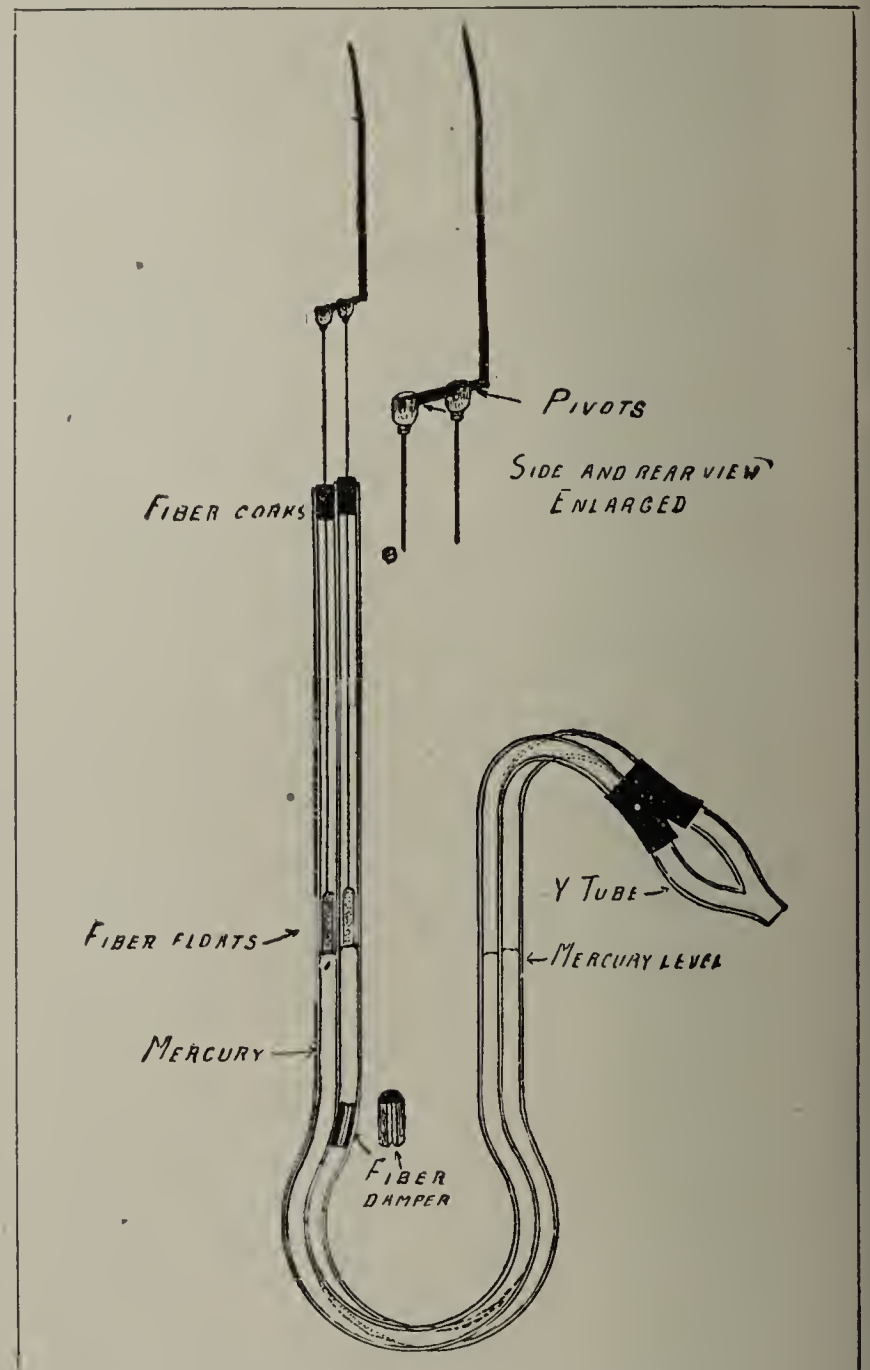


Fig. 1.—Combined oscillometer and manometer.

cury manometers (U-tubes) are used to function as one, serving two purposes, one to record pressure and one to record oscillations. These manometers are as nearly matched in all dimensions as is possible. The manometer which records pressure is made insensible to oscillations by an obstruction within the tube and beneath the mercury. The other manometer, being quite open, is free to oscillate in response to the pulsation of the artery under the cuff. These two manometers are mounted together parallel in all vertical planes. A wooden float rides the mercury in each, and two very delicate steel rods mounted on these floats transmit the movements of the columns to a system of

* From the Medical Department of Western Reserve University, Lakeside Hospital.

* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Fantus, Bernard: An Automatic Method of Prolonged Serial Blood Pressure Registration in Man, J. A. M. A. 48: 1807 (June 16) 1917.

levers above. These levers are so constructed that the steel rod mounted on the nonoscillating manometer serves as a pivot for the lever of the oscillating one, magnifying the oscillations about eight times. These features of the manometer are illustrated in Figure 1.

This combined manometer and oscillometer is by no means without defect, but it is without two very common faults inherent in other mercury oscillometers: In the first place, it oscillates widely enough to give

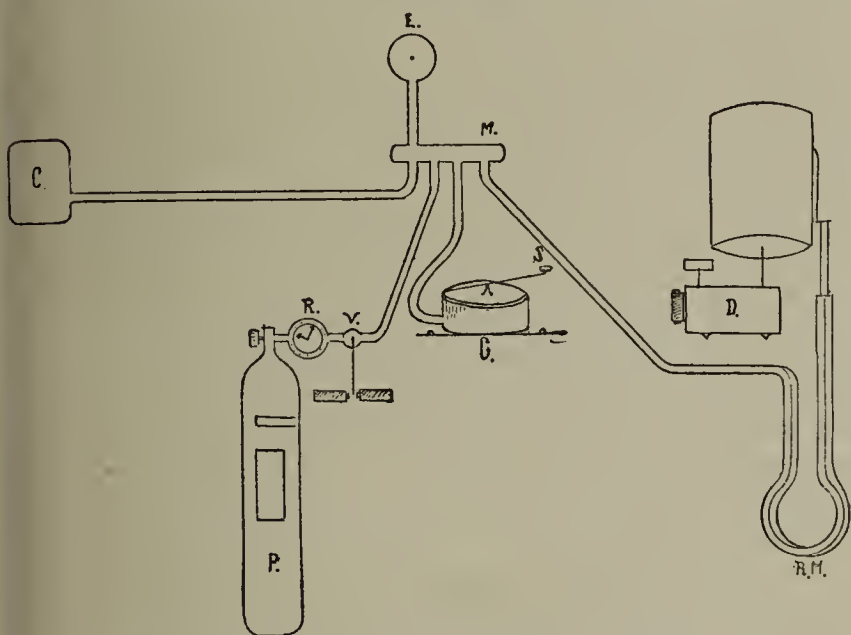


Fig. 2.—Arrangement of pneumatic system: P, pressure tank; R, reducing valve; V, electric valve; M, manifold; C, pneumatic cuff; E, escape valve; G, governor; S, adjustable contact to regulate pressure; R, M, combined oscillometer and manometer applied to smoked drum; D, kymograph.

good tracings with clear criteria. Secondly, its moving parts, being very light, have little inertia and a frequency great enough to accommodate the usual pulse rate. To insure satisfactory and uniform records, great care must be used in construction and great accuracy in adjusting the entire recording device. In the hands of more skilful technicians I am certain that numerous improvements could be developed in applying the new principle.

This manometer with its recording levers is made to write on a smoked drum by means of a long and flexible aluminum pointer. The pointer of necessity moves tangentially across the circumference of the drum, but keeps its contact by means of its great flexibility. To make this contact more precise, drums of exceptionally large diameter are necessary. In practice, the manometer constructed on this principle records accurately at all times the pressure applied on the cuff and records fairly accurately at the same time the pulsations as they occur at various levels.

The manometer is furnished with an electrically controlled valve, which produces air pressure from a storage tank at the end of each hour, as determined by an electrical time switch. This time switch, being driven by a clock, can be adjusted to give records every half hour as well as every hour. The manometer is further equipped with a governor, which shuts off the air pressure when a certain level has been reached. It is also provided with an adjustable escape valve, which gives a uniform rate of escape sufficiently slow to be comfortably borne by the patient. The smoked drum is mounted on an ordinary kymograph, which also has an electric control, so that the drum moves in each period far enough to receive every separate tracing. This entire pneumatic system—that is, electric valve, manometer, governor, escape valve and cuff, with all their connect-

ing tubes—is mounted in a cabinet with the greatest economy of space possible.

It has been found by repeated trials that the capacity of the pneumatic system must be reduced to a minimum in order to conserve the energy of oscillations which will be transmitted to the recording manometer. The pneumatic system is arranged according to Figure 2, and the electric connections according to Figure 3. The details and specifications for the various parts of both the pneumatic and the electric system have been furnished by the laboratory technician, Mr. Warnick.

SPECIFICATIONS

Pressure tank: Oxygen tank (Ohio Chemical Company), 130 gallons at 1,500 pounds pressure; reducing valve (Ohio Duplex Reducing Valve, Ohio Chemical Company) adjusted to deliver 10 pounds pressure.

Electrical valve, furnished by Wallace, Tiernan & Co., New York.

Time switch, furnished by Universal Time Switch Company, Cleveland.

Recording manometer: U-Tubes, length of long arm, 16 inches; length of short arm, 9 inches; inside diameter, $\frac{23}{64}$ inch; diameter of hole through obstructing plug, $\frac{3}{64}$ inch. Total weight of floats, supporting rods and lever system, 5.7 gm. Diameter of float, $\frac{21}{64}$ inch. Length of float, $\frac{21}{64}$ inch. Length of supporting rods, $10\frac{1}{8}$ inches. Diameter of supporting rods, $\frac{3}{64}$ inch (drill rod). Cross-bar of aluminum, $\frac{3}{64}$ inch thick, $\frac{7}{64}$ inch wide and $\frac{7}{8}$ inch long. Vertical lever, aluminum, $\frac{2}{64}$ inch thick at the base; 0.007 inch thick at the point; length, $3\frac{3}{4}$ inches.

Escape valve: Hole through brass plate, 0.02 inch.

Drum: 10 inches high by 9 inches in diameter.

Cabinet: 34 by 20 by 18 inches, with a shelf midway.

Batteries: Six dry cells in series parallel.

The time required to inflate the entire system to 150 mm. is seven seconds.

The rate of escape to average diastolic pressure is thirty-five seconds.

The rate of escape to zero is one minute.

These specifications are the result of repeated trials, and in order to insure satisfactory operation they must be rather rigidly adhered to.

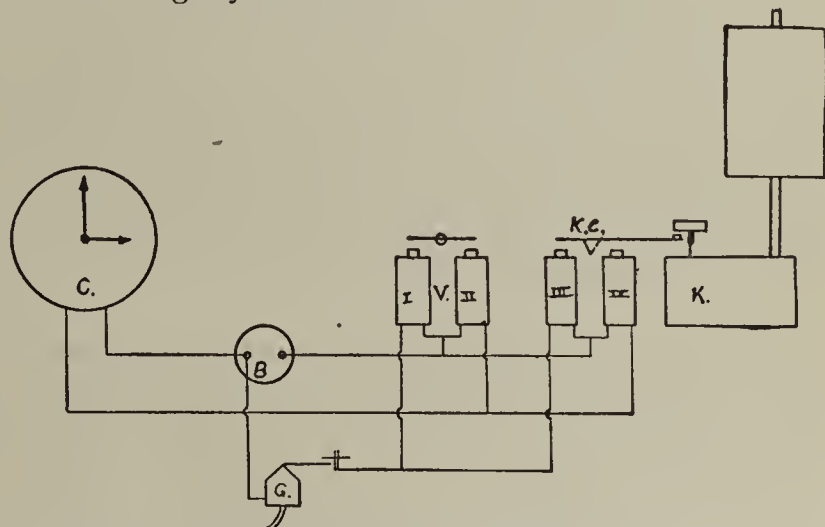


Fig. 3.—Arrangement of electric system: B, batteries; C, time switch; G, governor; V, electric valve; K, C, kymograph control; I, II, III, IV, Magnets I, II, III, IV. The time switch makes contact each hour, which pulls Magnet II, opening valve V, and pulls Magnet IV, starting the kymograph. The governor in response to rising pressure makes contact, which pulls Magnet I, closing valve V, and pulls Magnet III, stopping the kymograph.

The escape valve deserves particular attention, for it has been with considerable effort that this problem has been solved. Given an aperture of constant dimensions and a falling pressure, air escapes too rapidly at high pressures and too slowly at lower pressure. To correct this fault, the escape valve was made as follows:

An ordinary tin ointment-box was soldered shut and a tube soldered into its wall. In the center of the lid a small

brass plate was soldered, through which a minute hole was drilled into the cavity of the box. A needle with an adjustable screw was mounted just above the hole in such a way that the point of the needle just enters the hole. When air pressure is introduced into the box, the lid bulges up, partially obstructing the hole. At this stage air escapes at a high pressure from a minute opening, and as the pressure drops and the lid recedes from the needle, air escapes at a lower pressure from a larger opening. By this device the escape is almost constant at all levels of pressure.

The entire device is provided further with a switch which, when operated by hand, starts the mechanism and makes a record independently of the time switch. This is a convenience in operating the machine at short intervals.

Tracings by this manometer are variable in their general characteristics, as must be expected from the nature of many conditions which modify the rate and vigor of arterial pulsation. I have thus far been unable to apply to these tracings the same criterion for select-

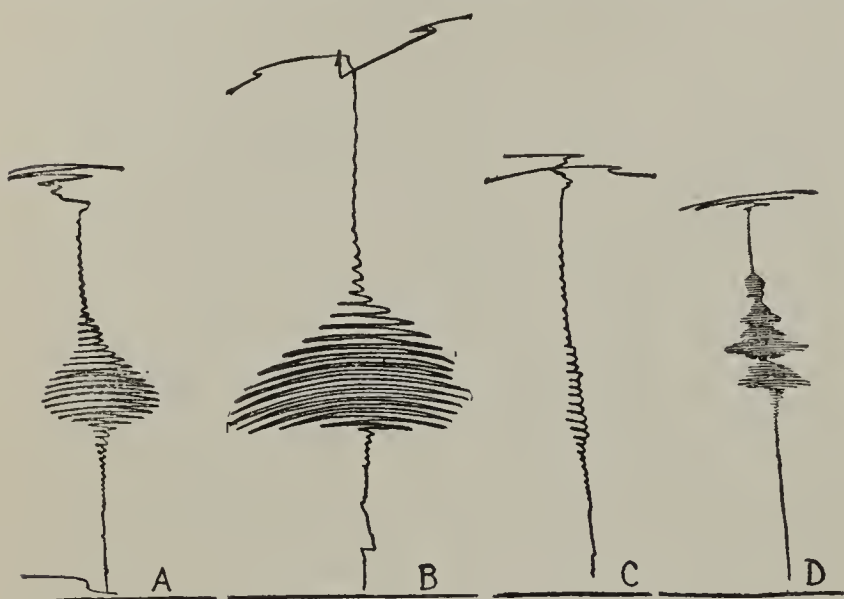


Fig. 4.—These tracings for reproduction have been photographed through, giving a true image but reversing the contrast. Each stroke to the left is almost synchronous with the sound heard below the cuff. The signal is recognized as a waviness or blurring of the tracing. The signal acts by tapping lightly on the support rod of the recording lever. *A*, the tenth sound was signaled. The eighteenth sound marked the fourth phase, and the twentieth the fifth phase; *B*, wider oscillations than are common. The signal here is obscure, but is accentuated by a black dot. The fourteenth sound marked both the fourth and fifth phases. Note how abruptly oscillations cease, although very vigorous. *C*, slow pulse with little excursion of vessel walls. Signal again reinforced. The fifteenth sound marked the fourth phase, and the twentieth sound the fifth phase. *D*, average pulse, slow escape. Signal, being too vigorous, disturbed the tracing but is distinct. The fifty-fourth sound marks the fourth phase, and the sixtieth or thereabouts the fifth. The tracings have been reduced one half.

ing the systolic end point that applies to the Erlanger oscillometer. I have chosen rather to put the systolic pressure at that point where there is an abrupt change in the amplitude of oscillations. In most cases this has been found to correspond absolutely with the appearance of the first Korotkoff sound. In many tracings the first oscillations seen have blunted or plateau-like tops, which change very soon to sharper peaks. This changing to sharp peaks is apparently comparable to the spreading of the lower limbs seen in Erlanger tracings. Often this peaking is coincident with an abrupt increase in amplitude. The tracings often show the two phases of maximum oscillations seen in the Erlanger tracings, and very often the same abrupt change from wide oscillations to very small. The diastolic pressure is read where there is an abrupt change from wide oscillations to small. This has been found to correspond very closely to the fourth phase in Korotkoff sounds—that is, where there is an abrupt change from a loud to a

soft sound. In some tracings this abrupt change is marked also by a blunting of the peaks at the right-hand side of the tracing. In some instances there is no abrupt change from wide oscillations to small, and as a consequence it is impossible to locate the diastolic pressure with any degree of certainty. In many cases, when there is no such change in the character of the oscillation, there is found to be no abrupt change in the sounds. If the diastolic pressure under such circumstances is to be taken, as advocated by many, where all sound disappears, I have assumed it safe to take the diastolic on my tracings where large oscillations cease, for often there are but a few millimeters between the point of abrupt change in oscillation and the disappearance of large oscillations.

As auscultation is now the method chosen to determine blood pressure in man, the tracings submitted herewith have been standardized by that method and the end points established. In doing this, photographic records of the Korotkoff sounds were made simultaneously with tracings on the oscillometer with an observer listening in on the artery just beneath the cuff. When listening in, I have found it impossible to signal accurately either the first sound or the last sound; but all the sounds may be accurately counted and, if they occur rhythmically, a certain predetermined one may be very accurately signaled and the total number easily noted at the end of the series. Therefore, I have in each experiment carefully counted the sounds as they appeared but signaled only the tenth sound, and have kept a note of the entire number of sounds heard. The signal was arranged to register simultaneously on the tracing and on the photograph. By this method the tenth sound was absolutely identified both with a certain oscillation on the tracing and a certain wave on the photograph. Then by counting both ways from the signal near the middle, the two records could be synchronized exactly. Furthermore, if a well defined fourth phase occurred, I made mental note of its appearance and, the proper serial number for it being known, this fourth phase also could be accurately located. In this manner I have shown definitely that in most instances the first sound heard under the cuff is accompanied by an abrupt increase in oscillation, and that with an abrupt diminution in the loudness of sound there is an equally abrupt damping of oscillations.

Before making a series of observations, it has been my practice to correlate the blood pressure as determined by auscultation with the tracings obtained by this method, assuming that, if they agree at one level of blood pressure, they will not disagree very greatly at others. It has not been my ambition to construct a more accurate blood pressure device, and I lay no stress on variations in blood pressure which fall within the range of error of the machine. I must also acknowledge that I have occasionally taken tracings which I cannot interpret. By using a very slow escape, thus making oscillations record in very close file, the systolic criterion can be made very precise—so precise that in most cases respiratory variations are seen. But for automatic records this slow escape cannot be used on account of discomfort in the arm of the patient.

I have recorded my own blood pressure on three consecutive nights, being awakened twice during the first night, once the second night, and not at all the third night—this with no previous preparation other than the usual round of activities. Record has been made on a number of normal individuals in the wards and on hos-

pital interns. From the records obtained, it is quite certain that a fairly accurate idea of fluctuations in blood pressure was obtained. At this time it has been tried on only a few patients with high blood pressures; of whom some have slept quite as well as normal persons, and others have been disturbed by the pressure on the arm. In dealing with high blood pressure it is necessary to make the pressure on the arm almost painful in order to obliterate the pulse. This is a complication which in some instances will probably be insurmountable. Another difficulty is that, in studying the blood pressure on normal subjects during sleep, I have found that some of them show a substantial drop in systolic blood pressure when turning from the supine to lateral postures. In some instances there is a change as great as 20 mm., which will be difficult to differentiate from a drop due to sleep. Until these factors and many others have been evaluated, pressure studies in the sick must be interpreted with caution.

If hourly serial blood pressure records, secured with psychic factors eliminated and as accurate as ordinary clinical methods allow, will be of any value in the diagnosis and management of pathologic blood pressure, such records will soon be forthcoming.

ABSTRACT OF DISCUSSION

DR. PAUL D. WHITE, Boston: The method described by Dr. Blankenhorn seems to offer a means for future investigation not only of conditions existing during sleep but also under drug and other experimentation. During the war, realizing the very frequent and rapid changes in blood pressure, particularly among nervous young men, I used the Pachon oscilometer in addition to the ordinary sphygmomanometer. I found that the oscillometric method gave from 10 to 20 mm. higher readings for the systolic pressure than did the auscultatory method. Dr. Blankenhorn's remarks about checking up his records with the auscultatory method and finding close agreement show that the usual discrepancies of the oscillometric method are done away with apparently by the less delicate mechanism of his apparatus.

The methods which have been used up to the present have largely recorded either continuous systolic pressure or systolic pressure at intervals. Here is an instrument that will detect the diastolic pressure as well as the systolic. I have not used this method, but I believe it will give information of value.

Prescription of Alcohol in Prohibition Norway.—The *Tidskrift* for den Norske Lægeforening publishes a letter from a physician who says that until last August he had refused to write any prescriptions for liquor. The consequence was that his patients were constantly arguing with him on the usefulness of alcohol. He wearied of this, and from that date agreed to prescribe alcohol on demand to his old patients and members of the insurance company with which he is connected. He asks three crowns for each such prescription, and turns the money over at once to the hospital or insurance treasury. He says, "I do not wish to keep this money as I am a physician and I do not want to be a whisky dealer." He stamps on each prescription "Gratis," and sometimes, "Injurious for Health." This arrangement has been working very nicely and all are content, and the demand is growing less. The journal comments on this letter that alcohol should not be prescribed "on demand," but only as the physician thinks it is required. It adds that the majority of physicians of Christiansand have decided not to take any payment for prescriptions for liquor. They give the prescriptions as they deem wise, but mark them all "Gratis." This tends to discourage the better class of patients from asking for such prescriptions as they do not like to be branded as charity patients.

FURTHER CLINICAL STUDIES ON THE USE OF MERCUROCHROME AS A GENERAL GERMICIDE*

HUGH H. YOUNG, M.D.

EDWIN C. WHITE, M.D.

AND

ERNEST O. SWARTZ, M.D.

BALTIMORE

Since the publication in 1919 of the preliminary laboratory and clinical study of "mercurochrome-220,"¹ this compound has been used extensively in many urologic conditions in the Brady Urological Institute and in other genito-urinary and gynecologic services and dispensaries. The satisfactory results in urologic practice have led to its application in other branches of medicine and surgery in which a deeply penetrating, nonirritating germicide of low toxicity and relatively quick action is desired. As a result of our experience with this drug over a period of two years, we believe that our early expectations of its great value have been realized. In many cases it has proved effective when other drugs have failed, and there have been cases in which the reverse was true. It is no more a panacea for all urinary infections than is any other disinfecting agent, but it is unquestionably a valuable addition to the comparatively few powerfully germicidal substances which can be applied to sensitive surfaces, such as the mucosa. Since our first publication, several articles have appeared.

LITERATURE

In ophthalmology it has been used extensively in infections of the cornea and conjunctiva due to the gonococcus and to other organisms. "A Clinical and Laboratory Report on the Use of Mercurochrome-220 in Ophthalmology"² was made by Lancaster, Burnett and Gaus before the Section on Ophthalmology at the New Orleans session of the American Medical Association. They reported that from the cases treated the results were such as to warrant an extended use of this drug in ophthalmologic practice. The laboratory tests conducted to determine the activity of mercurochrome³ in the presence of tears, mucus and pus gave germicidal values which corresponded very closely to the values given by our tests of this compound in the presence of urine, serum, etc., due allowance being made for difference in diluent, medium and technic.

In the discussion of this paper, Travis⁴ reported several severe cases of chronic streptococcus infection of the middle ear in which he had secured remarkable results by the use of mercurochrome, after the failure to secure results with other drugs used over long periods of time. Since that time, in a personal communication, Dr. Travis has reported marked success in long-standing and refractory cases treated by the local use of this drug alone. Later, its use in middle

* From the James Buchanan Brady Urological Institute, the Johns Hopkins Hospital, with the aid of funds granted by the United States Interdepartmental Hygiene Board for the study of the prevention and cure of venereal disease.

1. Young, H. H.; White, E. C., and Swartz, E. O.: A New Germicide Used in the Genito-Urinary Tract: "Mercurochrome-220," J. A. M. A. **73**: 1483 (Nov. 15) 1919.

2. Lancaster, W. B.; Burnett, F. L., and Gaus, L. H.: Mercurochrome-220: A Clinical and Laboratory Report on Its Use in Ophthalmology, J. A. M. A. **75**: 721-724 (Sept. 11) 1920.

3. We shall hereafter refer to the drug simply as "mercurochrome."

4. Travis, B. F.: Discussion on paper by Lancaster, Burnett and Gaus (Footnote 2).

ear and mastoid infections was advocated by Callison,⁵ who reported satisfactory results with it.

In the treatment of ophthalmia neonatorum, Clapp and Martin⁶ report that mercurochrome has proved to be very efficacious, and they published reports of a number of cases in which it was used with good results.

DeWitt,⁷ experimenting with the action of certain organic mercurial compounds, found that mercurochrome inhibits the growth of the tubercle bacillus completely at 1:5,000, and partially at 1:10,000. These dilutions are fifty and 100 times the average dilution recommended for intravesical use. Mercurochrome in 10 per cent. solutions, but not in less concentrated solutions, kills the tubercle bacilli in twenty-four hours so that they will not infect guinea-pigs. These laboratory findings naturally suggest the use of the drug in the tuberculous ulcerating lesions of the genital tract.

SUCCESS OF MERCUROCHROME IN CURING CHRONIC DIPHTHERIA CARRIERS

Gray and Meyer⁸ report:

In searching for a germicide, we had to consider the enemy we were engaged against [diphtheria bacillus], knowing full well his predilection for hiding places in crypts of the tonsil, between the folds of the mucous membranes, in erosions, ulcers and also behind any shelter he can find in the nasal and pharyngeal passages. The report by Young, White and Swartz on the uses of mercurochrome, lauding the marked penetrating and germicidal properties of that drug, and demonstrating that it can be utilized in relatively concentrated solutions on the mucous membranes of the bladder and urethra without causing irritation, gave us the suggestion to use this germicide to reach diphtheria bacilli in the nose and throat.

Of our total number of carriers we were able to treat, consecutively, thoroughly and systematically, only ninety.

The 1 per cent. solution of mercurochrome was used as a routine application by means of a medicine dropper, spray or swab. In the more resistant cases we used the 2 per cent. strength. When persons complained of the application of the drug by means of the nasal swab, we used the medicine dropper and had them hold their heads back for a minute or two after the application, until the drug passed back into the nasopharynx. We relied on the medicine dropper in the nasal tract almost entirely and on the swab for the tonsils. In patients with nasal obstructions we utilized the nasal spray.

In addition to systematizing the treatment of diphtheria carriers, we have found that the germicide of choice is a solution of mercurochrome in 0.5, 1 or 2 per cent. strength. By using this drug we were able to obtain in our series of ninety carriers of diphtheria bacilli eighty-eight carrier-free persons, following an average of 19.1 applications of this solution, with an average of only 12.7 sick days, as compared to an average of 23 days, the best results we have found recorded for a large number of carriers.⁹

USE OF MERCUROCHROME IN DENTISTRY

Darnall¹⁰ reports:

The high germicidal power of mercurochrome, coupled with its lack of irritating effect and its thorough penetration, make it particularly suited to oral pathological conditions.

In gingivitis and stomatitis the treatment used was practically the same for both. The membrane is dried and protected by use of cotton, and the area touched with a 3 per cent. solution of mercurochrome. In infected sockets the socket is washed out with a strong antiseptic spray, all necrotic tissue removed, and the solution carried down into the socket with a small pledget of cotton.

In pyorrhea, after prophylaxis, the teeth are isolated with cotton rolls buccally and lingually, and the surface dried as much as possible. The solution is carried down into the pocket with a small wisp of cotton wrapped on a broach. Care should be taken to protect the crown of the tooth from staining.

In root resection, after curettement, the cavity is touched with a 3 per cent. solution of mercurochrome. In putrescent root canals it is our belief that this germicide will prove to be as efficient as any used in this branch.

This drug is especially suited to the treatment of gingivitis and stomatitis. A 3 per cent. solution was used with impunity in all open lesions, no irritation resulting. The best results are obtained by drying off the part affected and applying the solution not oftener than every other day.

OUR CLINICAL EXPERIENCES WITH MERCUROCHROME

URETHRITIS *	
Cases of acute urethritis treated with mercurochrome....	187
Cases tabulated	100
Cases not tabulated because details were lacking, but in which satisfactory results were obtained.....	87
Of the 100 tabulated cases:	
Percentage developing complications after starting treatment	7
Percentage with anterior urethral involvement alone...	61
Percentage with anterior and posterior urethral involvement	39
Number followed until apparently cured.....	32
Number discontinuing treatment.....	68
Shortest time required to render the urethral discharge free from organisms.....	4 days
Longest time required (a) by injection.....	36 days
Longest time required (b) by irrigations.....	84 days
Average time required.....	16.8 days
CYSTITIS	
Number of cases tabulated.....	40
Cases cured	30 (75%)
Cases improved	7 (17.5%)
Cases not improved.....	3 (7.5%)
Smallest number of treatments needed to render urine free from organisms.....	1
Smallest number of days under treatment.....	1
Largest number of treatments needed to render urine free from organisms	23
Largest number of days under treatment.....	60
Average number of days under treatment.....	18.5
Average number of treatments.....	7.6
PYELITIS	
Number of cases tabulated.....	17
Patients cured (sterilized).....	10 (58%)
Patients improved	4 (23.2%)
Patients not improved.....	3 (17.4%)
Average number of pelvic lavages given in cases cured...	9.2
Smallest number of treatments needed to sterilize.....	3
Largest number of treatments needed to sterilize.....	12

* These patients are all public dispensary cases, and many of them negroes.

REPORTS BY LETTER OR IN PERSON

In order that we might not be carried away by "the lively expectation of important results which is the cause of such exaggerated estimates of the therapeutic values of new remedies," we sent a questionnaire to a number of physicians and surgeons to whom we had previously sent a supply of mercurochrome for clinical trial, asking for their opinion of its therapeutic value in the conditions in which they had used it.

Replies were received from twenty physicians who had used this product in their clinical work. Their reports are abstracted and included in this paper for the clinical data submitted to us. Wherever details were given in the case histories, the cases were incorporated in our tables. The accompanying table gives

5. Callison, J. G.: The Treatment of Chronic Purulent Otitis Media, New York M. J. **111**:1072 (June 19) 1920.

6. Clapp, C. A., and Martin, M. A.: Use of Mercurochrome-220 as a Germicide in Ophthalmia Neonatorum: A Preliminary Report, J. A. M. A. **74**:1224 (May 1) 1920.

7. DeWitt, Lydia M.: Action of Mercurochrome-220 and of Mercuraphen: A Preliminary Report of Effects on the Human Tubercle Bacillus and on Experimental Tuberculosis in Guinea-Pigs, J. A. M. A. **75**:1422 (Nov. 20) 1920.

8. Gray, G. A., and Meyer, B. I.: Diphtheria Carriers and Their Treatment with Mercurochrome-220, J. Infect. Dis. **28**, No. 4 (April) 1921.

9. See also the report from Stewart.

10. Darnall, W. L.: Preliminary Report on Mercurochrome-220, as a Germicide in Dentistry, U. S. Naval Bull. **15**:194 (Jan.) 1921.

results of the questionnaires and the replies received. Reports were received from various Army camps and hospitals through the courtesy of the Surgeon-General.

It is scarcely necessary to call attention to the great difficulty of securing reliable, accurate data of clinical results in the treatment of urethritis, both specific and nonspecific, in our general dispensaries. A large majority of the patients do not cooperate with the physician, and a still greater percentage discontinue treatment just as soon as annoying symptoms, such as pain and discharge, have disappeared.

Drs. Scott and O'Malley, working in the U. S. Public Health Venereal Clinic at Mercy Hospital, Baltimore, found the stain caused by mercurochrome to be a very serious objection to its use in acute gonorrhea in public dispensaries. The stains are easily removed from the hand and skin by the use of acid alcohol, vinegar, permanganate and oxalic acid solution, sweet spirit of niter, surgical solution of chlorinated soda (Dakin's solution) or Harrington's solutions, but stains on the clothing are more persistent and may present telltale evidence of a condition which the patient does not care to have known. As we anticipated early in our work with mercurochrome, we have found the stain to be a serious objection to its use by the patient.

SUMMARY OF CLINICAL USES

Acute Urethritis.—The work of Swartz and Davis¹¹ established the fact that solutions of mercurochrome in a strength of 1:16,000 will kill the gonococcus in twenty minutes in vitro. Mercurochrome, 1:800, in urine will kill *B. coli* in one minute, while 1 to 100 acriflavine requires one hour to kill *B. coli* in urine. In 50 per cent. dog serum mercurochrome, 0.5 per cent., kills *B. coli* in one minute, while 0.5 per cent. fails to kill *B. coli* in one hour. Solutions of mercurochrome, 1 per cent., are, as a rule, well tolerated by the urethra, and we have used as high as 5 per cent. solutions in the urethra in some instances. Occasionally, a 1 per cent. solution may prove to be irritating, and a weaker solution must be employed. This is in accord with clinical experience in the use of any antiseptic in the urethra. In our work, complaint of burning, other than a temporary smarting, has been very infrequent. It is our opinion that solutions of from 0.25 to 0.5 are sufficiently concentrated to produce a satisfactory germicidal effect in the urethra and are always nonirritating. Emphasis should be laid on the desirability of using fresh solutions, as Swartz and Davis have shown that the solutions deteriorate on standing.¹² In spite of the high test tube germicidal activity of these solutions, the results obtained by local use of these solutions in acute gonorrhea have not been vastly superior to those obtained by the intelligent use of argyrol or acriflavine. The introduction of the water-soluble sodium salt and the abandonment of the use of the alkali-soluble form of the drug is responsible for a diminution in the amount of irritation produced by these solutions.

Excess of free alkali proved irritating to the mucosa of the urinary tract. Cases reported in our first paper¹ were treated with solutions made from the alkali-soluble dye. Cases reported in this paper were all treated with the later water-soluble compound.

The stain led a number of patients to discontinue treatment, and has been a factor in preventing the accumulation of accurate clinical data. In acute gonorrhea (100 cases) we were able to render the urethral discharge microscopically free from organisms in an average of 16.8 days, and in a great many cases no gonococci were found after the first week. The length of time necessary to render the discharge organism-free depends, within certain limits, on the frequency of treatments and on the length of time the drug is retained in the urethra. In some of the cases, the treatments were often four days apart, while in others they were given several times a day, by which technic the best results are obtained. Mercurochrome should be continued several days after the gonococcus has disappeared. Then gradually discontinuing the use of the drug in these cases and substituting copious hot irrigations of weak permanganate, silver nitrate or acriflavine, the discharge ceases and early cures are effected. Mercurochrome has shown up as an excellent agent for injection in gonorrhea, but the deep penetration of the gonococcus into urethral glands and prostate make quick sterilization difficult for any drug. In cases seen in the first twenty-four hours, very quick cures have been obtained. We have not seen any stricture formation that we felt was due to the drug such as has been described after the use of other antiseptics. We have not seen the severe reactions reported to us by Kleiner.¹³

Chronic Urethritis.—In the treatment of the chronic infections, the value of mercurochrome is that of a quick-acting, penetrating, nontoxic and nonirritating germicide of great power. The most satisfactory results obtained by the use of the drug in the urethra were in chronic urethritis. Used as an instillation and combined with needed instrumentation, the results have been very satisfactory. This with but few exceptions is the consensus of opinion of the men who replied to our questionnaire. Very satisfactory results were also reported in nonspecific urethritis.

In chronic posterior urethritis, associated with chronic prostatitis and vesiculitis, its beneficial action has been clearly demonstrated. We have recovered the dye from the prostatic secretion, obtained by massage, more than a week after its injection into the urethra. The purulent secretion expressed by massage two or three days after injection is often stained a deep pink. Our procedure in these cases was as follows: The urethra was irrigated and the bladder was filled with sterile water, physiologic sodium chlorid solution or weak permanganate solution. The prostate and vesicles were massaged and stripped. The bladder was then emptied by voiding, and the mercurochrome solution placed in the posterior urethra by means of a Keyes posterior instillator, or forced back into the prostatic urethra by a small hand syringe (rubber bulb type).

Roberts¹⁴ reports having obtained the dye from the seminal vesicles two weeks after its injection into the vas (vasotomy) in cases of chronic seminal vesiculitis.

11. Swartz, E. O., and Davis, D. M.: Action of Mercurochrome-220 on the Gonococcus, J. A. M. A. 76: 844 (March 26) 1921.

12. This drug, which is a disodium salt of dibromo-hydroxymercurofluorescein, was originally prepared in our laboratories in the Brady Urological Institute as the free acid soluble in the theoretical amount of alkali. Although the preparation of the solution in this way was quite satisfactory under chemical control, it was not suitable for use by the average physician, and we had reports of irritation, due, doubtless, to the presence of excess alkali. Later, Messrs. Hynson, Westcott & Dunning, Baltimore, prepared a satisfactory water-soluble sodium salt. Germicidal tests on solution of this salt have shown that it is equal in germicidal value to the earlier alkali-soluble form. The preparation and chemistry of the drug have been presented elsewhere (E. C. White: Mercury Derivatives of Phthaleins, J. Am. Chem. Soc. 42: 2355, 1920).

13. Kleiner, Israel, New Haven, Conn., personal letter to the authors, Sept. 25, 1920.

14. Roberts, G. M.: A Plea for a More Modern Treatment of Acute Gonorrhea, Tennessee State M. J. 13: 184 (Sept.) 1920.

Cumming¹⁵ also reports very satisfactory results with this treatment.

In nonspecific urthritis, Grantham¹⁶ reports prompt sterilization of the canal by the use of a 2 per cent. solution retained for ten minutes, three times a day.

Cystitis.—The results obtained in many cases of old, long-standing cystitis have been remarkable, especially those due to *B. coli*. Observers continually report the clearing up of old cases as a result of a few instillations of 1 per cent. solutions. The drug does not yield such striking results when used in the coccus infections of the bladder or kidney pelvis. This clinical finding is in agreement with laboratory results recently obtained by J. H. Hill, bacteriologist to the Brady Institute. In a 50 per cent. serum medium, mercurochrome has been shown to be more effective against *B. coli* than against *Staphylococcus aureus*. The former is killed in one minute by a 1:200 dilution of the drug, but not by a dilution of 1:300. To kill *Staphylococcus aureus* under the same conditions, a dilution of 1:50 is required, showing a ratio of 4:1 in favor of *B. coli*. In exposures of one hour in the same medium, *B. coli* is killed by a dilution of 1:600; *Staphylococcus aureus*, by 1:200.

We have seen no bad results from its use, but occasionally patients complain of burning; these are the exceptions to the rule. We do not know why a 0.5 per cent. solution should prove to be irritating in an occasional case and not at all irritating in almost all other cases. We feel that the preliminary irrigation of the bladder with sterile water or physiologic sodium chlorid solution to cleanse the bladder is essential. The solutions of mercurochrome should then be injected into the bladder and retained as long as possible. This may be repeated as often as three times a day, depending on the tolerance of the patient. As the object is to sterilize the bladder quickly, at least two treatments daily should be given if possible. It is best to begin with a weak solution, 0.5 per cent., and increase the strength of the solution to 1 per cent. in a day or two, though in many cases two injections of 1 per cent. solution daily are well borne. Solutions should be made fresh and kept in colored bottles, as there is some deterioration in solutions kept a long time, with consequent loss of germicidal power. The use of old solutions, and in frequent treatments, accounts for many failures to sterilize.

There has been a marked relief seen in some cases of tuberculous cystitis treated by daily instillations of mercurochrome. In some cases the rapidity with which a foul, purulent cystitis of long standing becomes sterile and the urine clear and free from pus is remarkable.

Pyelitis.—A large number of cases of pyelitis were treated with mercurochrome. The incomplete records prevent accurate statistical studies as to the relative efficiency of this drug and of silver nitrate, which is in common use. As a result of our experience, we feel that mercurochrome has about as great a germicidal action in the renal pelvis as 1 per cent. silver nitrate solution, and has the advantage of not producing the painful reaction usually noted after the use of the silver solution. A reaction following pelvic lavage with mercurochrome is rare in our experience. In resistant cases, the use of mercurochrome alternately with silver nitrate solution seems to be efficacious when results

cannot be obtained by the use of either drug alone. As many cases of "pyelitis" are due to foci of infection elsewhere (teeth, tonsils, etc.), cures are often impossible from pelvic lavage alone.

An objection to the use of mercurochrome in the kidney is the persistence of the stain, which may interfere with the colorimetric reading of the phenolsulphonephthalein output. The technic used in pelvic lavage is that described in our former publication.¹

Venereal Ulcerations.—Venereal ulcerations (chancroids, buboes, etc.), almost without an exception, when dressed with mercurochrome (either the solution or the paste) promptly become cleaner and the granulations healthy looking. Bowman¹⁷ reports less contraction after healing of ulcers which have been treated with this drug. Buboes dressed with mercurochrome gauze heal very rapidly, and the period of disability is materially shortened. The results obtained are excellent, the only objection being the stain.

Other Uses of Mercurochrome.—Randall¹⁸ uses this drug to keep operative wounds of the genitalia sterile, and Healy¹⁹ used it on vulvar ulcerations with good results. Baca²⁰ reports unusually good results obtained in carbuncles which had resisted the use of Dakin's solution for prolonged periods. When the cavities were packed lightly with gauze saturated with mercurochrome, there was an immediate cleaning of the wound and a rapid healing.

Used instead of tincture of iodine to prevent infections in shop injuries, mercurochrome is proving very satisfactory in industrial surgery.²¹ It does not irritate the epidermis, and inflammatory reaction disappears.

Chronic Discharging Sinuses.—We have found mercurochrome particularly valuable in discharging sinuses, especially those following removal of tuberculous kidneys or epididymides. We also have reports from sanatoriums for tuberculosis attesting its value in various forms of discharging sinuses and fistulas. A 1 per cent. mercurochrome solution may be injected gently into a fistula with impunity, daily. Its low toxicity and the escape of the excess fluid make it much safer than bismuth paste in the treatment of deep sinuses.

ABSTRACTS OF CLINICAL RESULTS OBTAINED BY OTHER OBSERVERS

Keaney²² declares that the use of mercurochrome was most satisfactory in the U. S. Naval Hospital at Brooklyn. Smears became free from gonococci in from seven to ten days. Also mercurochrome was very successful in chancroids.

Klingensmith²³ reports twenty-seven cases of chronic gonorrhea which had remained uncured after long treatments with acriflavine and protargol. Twenty were cured in an average of twenty-five days with 1 per cent. mercurochrome.

Bowman¹⁷ reports twenty cases of acute gonorrhea. One per cent. mercurochrome injections were given twice daily; all patients were rendered sterile in from eight to fifteen days. Five patients with chronic cystitis were cured in from five to ten days with irrigations of mercurochrome, 1:500, and instillations of mercurochrome, 5 per cent. Chancroids healed rapidly with mercurochrome paste, 1 or 2 per cent.

17. Bowman, Major P. N., Genito-Urinary Department, Camp Hospital, Camp Meade, Md., Sept. 10, 1920.

18. Randall, Alexander, Philadelphia, personal letter to the authors, 1920.

19. Healy, W. P., New York, personal letter to the authors, 1920.

20. Baca, J. F., Walsenburg, Colo., personal letter to Hynson, Westcott & Dunning.

21. DeHart, S.: Varying Systems in Plant Hospitals: Hospital Management, August, 1920.

22. Keaney, F. P., U. S. Naval Hospital, Brooklyn, personal communication to the authors, 1920.

23. Klingensmith, Major W. R., chief, Urological Service, U. S. Army General Hospital No. 41, Fox Hills, Staten Island, N. Y., 1920.

15. Cumming, Lieut. R. E., chief, Section of Urology, Walter Reed U. S. Army Hospital.

16. Grantham, W. F., Asheville, N. C., personal communication to the authors, 1920.

Anderson²⁴ reports thirteen cases of acute gonorrhea, "all cured promptly." Of eight chronic cases, three were cured and the others improved.

Skeer²⁵ reports fifty cases of acute gonorrhea, thirty-six anterior, fourteen posterior, all rendered gonococcus free in from five to twenty-four days (four injections with 1 per cent. mercurochrome daily).

Young²⁶ reports unsatisfactory results in acute gonorrhea, but very satisfactory results in subacute and chronic gonorrhea.

Burns²⁷ reports six cases of chronic colon bacillus cystitis treated with 1 per cent. mercurochrome; three were cured, three improved.

Robinson²⁸ reports ten cases of acute anterior urethritis cured in from four to ten days; seven chronic anterior cases, five cured within a month (after resisting other treatment over a long period of time); seven chronic vesiculitis and prostatitis, all greatly improved.

Estes²⁹ writes: "In bladder infections, results with mercurochrome are very striking. The urine becomes bacteria free in from ten to fourteen days."

Crowell³⁰ reports brilliant results with mercurochrome in *B. coli* infections of the bladder and kidney; also in chronic urethritis; less effective in acute urethritis.

Kleiner³¹ obtained excellent results with mercurochrome in vesical tuberculosis and chronic cystitis. Results were not so good in urethritis.

Neel³¹ reports excellent results in acute vaginitis and endocervicitis. One case was sterilized by six treatments.

Healy¹⁹ reports three cases of severe pyelitis of pregnancy cured by pelvic lavage with 0.5 per cent. mercurochrome.

Wilder³² reports three cases of chronic *B. coli* cystitis sterilized by four treatments, and one not yet cured by three instillations of 1 per cent. mercurochrome.

Wynne³³ reports two cases of *B. coli* cystitis cured by seven and thirteen instillations of 0.5 per cent. mercurochrome. Six cases of acute urethritis in the female were treated by mercurochrome; five were cured and one was unimproved.

Randall,¹⁸ at the Philadelphia Hospital, reported: "Mercurochrome is doing something that nothing else did before in clearing up chronic infections—sometimes miraculous." "Have aborted five cases of acute urethritis in which treatment was begun in first thirty-six hours." Mercurochrome valuable in operations on the genitalia, urethra and prostate, and to prevent urethral chills following instrumentation.

Snyder³⁴ wrote: "As a result of my experience, I consider it the most valuable urinary antiseptic available."

Hinman³⁵ reported fourteen cases of *B. coli* cystitis cured by mercurochrome and considers it "one of the most valuable additions to urinary antisepsis, especially in chronic cystitis. . . . Results have been most remarkable, sometimes clearing up in three instillations."

Tankersley³⁶ wrote: "I have used 1 per cent. mercurochrome in bladder and kidney several hundred times and find it the most satisfactory antiseptic. I also use mercurochrome in wounds and compound fractures, in clean and infected wounds, appendical cavities, etc., with good results. It is a splendid, nonirritating antiseptic."

Roberts¹⁴ said: "I have used 0.25 per cent. mercurochrome as an injection in seminal vesiculitis after vasotomy, 10 c.c. being injected often in each side very successfully."

Clapp³⁷ reported: "In gonorrheal ophthalmia, if used early and at intervals of two hours, 2 per cent. mercurochrome causes disappearance of organisms and pus more rapidly than any other antiseptic we have used." Also valuable in corneal ulcers.

Crowe³⁸ reported: "We have used mercurochrome in the otolaryngological department of the Johns Hopkins Hospital during the past year with most gratifying results. In 5 and 10 per cent. solutions it is nonirritating and nontoxic, and on account of penetrating properties is especially suitable as a bactericidal agent, and most efficacious. Acute coryza may be aborted if treated within the first twelve hours. Have used mercurochrome in chronic antrum infections in 5 per cent. solution and in acute in 1 per cent. solutions, in about 150 cases. In postoperative treatment of mastoid and ethmoid cavities, mercurochrome is preferable to Dakin's solution, as it does not kill young granulation tissue. In chronic suppurative otitis media, 5 per cent. mercurochrome causes rapid cessation of discharge."

Bidgood³⁹ reported: "In the Hunterian Laboratory, mercurochrome is most useful in treating open wounds in animals."

Cumming¹⁵ reported: "In the Department of Urology, Walter Reed U. S. Army General Hospital, mercurochrome is used almost exclusively in the treatment of gonorrhea with highly satisfactory results. In fifteen cases have injected mercurochrome into vesicles through vas with good results."

SPECIAL CASES

In the complete report, a series of seventeen specially interesting cases are given in full. Briefly, they were as follows:

CASE 1.—Man, aged 58; prostatitis, cystitis, pyelitis of twelve years' duration; *B. coli*; two pelvic lavages with 1 per cent. mercurochrome sterilized kidneys; twelve treatments of bladder and prostate were required to render urine and prostatic secretion bacteria free.

CASE 2.—Man, aged 49; chronic *B. coli* pyelitis, bilateral, cystitis. Four lavages with 1 per cent. mercurochrome cured pyelitis. Prostatic massage and eight 1 per cent. mercurochrome instillations cured cystitis. Examined one month later, well.

CASE 3.—Man, aged 51; double pyelitis, *B. coli*. Sterilized by thirteen lavages with 1 per cent. mercurochrome. Examined two months later; urine clear and sterile.

CASE 4.—Man, aged 31; chronic cystitis (median bar), *B. coli*. Sterilized by ten instillations with 1 per cent. mercurochrome. Punch operation, reinfection of bladder. Sterilized by four instillations with 1 per cent. mercurochrome (Dr. Frantz).

CASE 5.—Man, aged 34; chronic cystitis, prostatitis, *B. coli*. Sterilized by six instillations with 1 per cent. mercurochrome. Examined six months later; urine uninfected.

CASE 6.—Woman; chronic cystitis, *B. coli*. Sterilized by 1 per cent. mercurochrome in five days. Followed two months; urine clear, no infection.

CASE 7.—Man, aged 22; chronic urethritis, bacilli and cocci in urethral discharge. Treatment twice daily with injections of 1 per cent. mercurochrome. After three days, urethra sterile; slight discharge still present.

CASE 8.—Man, aged 44; chronic prostatitis, *B. coli* and cocci in prostatic secretion and urine; treated two or three times daily with irrigations and instillations of 1 per cent. mercurochrome and occasional prostatic massage. Urine and prostatic secretion sterile after eight days.

CASE 9.—Man, aged 51; chronic cystitis, prostatitis, *B. coli* and cocci. Treated with irrigations, instillations of 1 per

24. Anderson, Lieut. J. K., O'Reilly General Hospital, Oteen, N. C., 1920.

25. Skeer, Jacob, Brooklyn, U. S. Navy case reports sent to Brady Institute, 1920.

26. Young, C. F., Fort Scott, Kan., personal letter to the authors, 1920; reply to questionnaire.

27. Burns, J. E., Kansas City, Mo., personal letter to the authors, 1920.

28. Robinson, M. A., Reno, Nev., personal letter to the authors and report, 1920.

29. Estes, W. L., Jr., Bethlehem, Pa., personal report to the authors, 1920.

30. Crowell, A. J., Charlotte, N. C., personal letter to the authors, 1920.

31. Neel, J. Craig, San Francisco, personal report to the authors, 1920.

32. Wilder, W. C., Springfield, Mass., personal letter to the authors, 1920, reply to questionnaire.

33. Wynne, H. M. N., Minneapolis, personal letter to the authors, 1920.

34. Snyder, K. F., Freeport, Ill., personal letter to the authors, reply to questionnaire.

35. Hinman, Frank, San Francisco, personal letter to the authors, 1920.

36. Tankersley, J. W., visiting surgeon, St. Louis Hospital, Greensboro, N. C.

37. Clapp, C. A.: Report from Department of Ophthalmology, Johns Hopkins Hospital.

38. Crowe, S. J.: Report from the Department of Laryngology, Johns Hopkins Hospital.

39. Bidgood, C. Y.: Report from the Hunterian Laboratory, Johns Hopkins University.

cent. mercurochrome and prostatic massage; sterile after eight treatments. Followed six weeks; urine clear and sterile.

CASE 10.—Man, aged 39; chronic cystitis, coccus infection. Sterile and free from pus after three instillations with 1 per cent. mercurochrome. Followed five weeks; no return of infection.

CASE 11.—Man, aged 49; chronic cystitis, *B. coli*, chronic prostatitis. After six treatments, given twice daily, and prostatic massage, urine and prostatic secretion became sterile. Followed six weeks.

CASE 12.—Man, aged 69; stricture of urethra, vesical calculus, instrumentation, infection of bladder, coccus. Sterilized by ten instillations with 1 per cent. mercurochrome (and a tin preparation by mouth). Followed five days.

CASE 13.—Man, aged 58; prostatitis, vesiculitis, urine sterile, prostatic secretion, cocci and bacilli; after five treatments—massage and instillation with 1 per cent. mercurochrome—secretion found free from infection. Massage treatment continued two weeks, still sterile.

CASE 14.—Man, aged 70; stricture of urethra with infected urine, *B. coli*. Treated by dilatations of stricture, irrigations, instillations with 1 per cent. mercurochrome once daily. Urine sterile after ten days. Followed three weeks, sterile.

CASE 15.—Man, aged 42; chronic cystitis, *B. coli*. treated twice daily with irrigations, sterile water, and instillations of 1 per cent. mercurochrome. Urine sterile after ten treatments. Followed three months; urine clear and sterile.

CONCLUSIONS

1. Mercurochrome has proved to be a very valuable drug in acute gonorrhea, but the intense stain is a drawback to its use as an injection by the patient. Acriflavine is free from this objection and, although not so good a germicide, is often preferable in acute cases.

2. In chronic infections of the urethra, prostate and vesicles the great value of mercurochrome has been amply proved. It penetrates deeply and may be found in the prostatic secretion several days after posterior instillation.

3. The results obtained in many cases of chronic cystitis are remarkable, long standing infections often clearing up in a few treatments. In some cases which fail to become sterile, constant reinfection of the bladder is found to occur from kidneys or prostate.

4. Mercurochrome is less irritating and produces less reaction in the renal pelvis than silver nitrate solutions, while possessing about equal germicidal powers; but in some cases both drugs should be used alternately, and sometimes silver is better.

5. In some cases of pyelitis, the infection comes from the teeth, tonsils, etc., and sterilization of the pelvis is impossible until the primary focus is cured.

6. Continued use has proved it to be a most satisfactory dressing for venereal ulcerations and buboes.

7. In general surgery, reports indicate that mercurochrome is very valuable in dressing open wounds and sinuses.

8. The germicidal efficiency of the drug in other branches of medicine and surgery has been proved, especially in the treatment of infections of the throat, nose, sinuses, ear and eye and teeth. It is reported to be most efficient in disinfecting the throats of diphtheria carriers.

Medical Ethics and Medical Progress.—Wherever there are good hospitals and good nursing there always good surgery is to be found. On the other hand, it is quite impossible even to imagine the development of anything like satisfactory surgery where the hospitals are poor and, above all, unclean, and where there is no nursing such as would be helpful in the after care of surgical patients.—J. J. Walsh, *Hospital Progress* 3:53, 1921.

MEDICAL JURISPRUDENCE

THE GENERAL RULES OF LAW GOVERNING THE COMPENSATION OF PHYSICIANS AND SURGEONS *

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It is a safe assumption that the average medical man has given but scant thought to the matter of his compensation for services rendered or to be rendered, other than the subconscious knowledge that he earns his livelihood by his professional skill, that in the past he has rendered bills for his services, that they have been paid with or without dispute or discussion, and that the same course of procedure and practice will probably continue in the future.

The law governing physicians and surgeons' compensation follows so closely the dictates of natural justice that more than an occasional conflict between the practitioner's ideas of what is right and just and the legal doctrines on the same subject is not to be expected. Such conflicts, however, are by no means unknown, and when precipitated create a situation with which the daily practitioner may at any time find himself face to face. When such occasion arises, the physician will doubtless express his amazement at the large body of law which has been created by judicial utterance and the determination of juries on this subject.

Astounding as it may seem, the old common law doctrine denied to the physician the right to sue for his fees. Within comparatively recent times this doctrine has been overthrown and the medical man today is in the same position as any other professional to sue and recover for services rendered. For some time, it was held that the practitioner virtually warranted his skill, and that if he mistook the nature of the disease, such error of judgment or lack of skill would constitute a complete bar to any recovery for compensation. The rule today, however, requires of the physician only the exercise of a reasonable degree of care and skill, and there is no warranty that he will effect a cure. If he possesses and uses reasonable skill, judgment and diligence, such as is ordinarily possessed and employed by members of his profession, he is entitled to recover his compensation. It has been held in an Iowa decision that when a physician is guilty of negligence in the treatment of his patient which results in damage to the latter, he is not necessarily precluded entirely from recovering compensation, but that the amount of his recovery, if anything, depends on the amount of damage suffered because of his negligence. On the other hand, it has been determined in New York that a physician may not recover for visits to a patient in the course of which he treated a broken limb when he had been guilty of malpractice, as the court held that the implied contract for services was not severable but was an entire one. That the surgeon is not required to possess or exercise the highest degree of skill, provided the operation is beneficial to the patient although it might have been performed more successfully by others, has been decreed by the Tennessee courts.

In some parts of the United States the so-called "No cure, no pay" agreement is in effect, particularly in those communities in which the residents are financially impecunious. When such an agreement exists between

* The large majority of the statements made in this article are not the writer's opinions, but are based on decisions of the higher courts.

the physician and the patient, the courts have uniformly required the physician to adhere to his bargain. In other words, if he undertakes to treat a patient on the understanding that he is not to be compensated unless there is a cure, he will be held to his agreement and will not be entitled to compensation in the absence of proof that a cure has been effected. Whether or not a substantial benefit to the patient or improvement in his condition would warrant a recovery for compensation even in the face of a "No cure, no pay" agreement, in an action based on an alleged quasicontractual relationship, is doubtful, although in my opinion there is substantial justice in support of such a contention, notwithstanding the fact that it appears to conflict openly with the terms of an express agreement. There is no good reason why such a claim should not be held to be analogous to the established law covering sales of merchandise; for in such cases, although merchandise contracted for does not meet the specifications of the contract, the vendor is permitted to recover the actual value of the merchandise if the merchandise is retained by the vendee. Since services rendered by a physician cannot be returned by the patient or recalled by the medical man, as would be possible with merchandise, it would seem as though the dictates of justice should require payment for such services as have been rendered, provided they have proved of benefit to the patient even in the face of a "No cure, no pay" agreement.

It is, of course customary for the physician to render his services only on the request either of the prospective patient or of some intimate member of his or her family. When the patient himself solicits the services he incurs the liability for compensation. When the services are solicited by a parent for a child, the obligation is that of the parent to pay for the services rendered, as the law requires the parent not only to properly feed, clothe, educate and generally protect the child, but also to furnish it with necessary medical attention.

When the services are directly rendered to an adult at the request of another adult, the charge is properly made against the individual to whom the services are rendered; but there is an obligation cognizable at law whereby the individual soliciting the services may be held to have obligated himself to pay therefor. Whether the physician elects his remedy by rendering his bill to the individual to whom the services were rendered and thereby waives any claim against the individual who solicited his services is a subject on which the courts are not in accord. It would seem, however, that if a relationship of consanguinity exists, the individual soliciting the services assumes the obligation to pay therefor. In the absence of a definite understanding the practitioner should assure himself, when services are requested to be rendered to an adult through the agency of another adult, as to the individual who assumes the obligation to pay for the services. He may otherwise find himself in an embarrassing situation and in considerable difficulty if he should find it necessary to litigate his claim.

There is one class of cases, however, in which no obligation is imposed upon the individual soliciting the services, and that is when emergency services have been rendered to an unconscious person by a physician or surgeon at the request of a third party who bears no relationship to the patient. The rationale for this rule makes itself readily apparent and was well expressed

by the Missouri Appellate Court in the case of *Meisenbach v. Southern Cooperage Company*:

When a person is dangerously wounded and perhaps unable to speak for himself, or suffering so much that he does not know how to do it, any person will run to the nearest surgeon in the performance of an ordinary office of humanity. If it were the law that the person so going for the surgeon thereby undertakes to become personally responsible for the surgeon's bill and especially for the surgeon's bill through the long subsequent course of treatment, many would hesitate to perform this office and in the meantime the sufferer might die for the want of the necessary immediate attention. Nor is there a common and fair understanding that the person making the request or ordering it to be made in behalf of the sufferer under the circumstances assumes responsibility for the surgeon's bill.

The patient treated under such circumstances is, of course, liable for the reasonable value of the services rendered; and, in the event of his death, his estate is properly chargeable with such compensation. If the patient should be devoid of worldly goods, the daily practitioner, called on to perform so many acts of charity, will not quarrel with this rule.

It is probably needless to state that a person cannot recover for services rendered as a physician or surgeon unless he is possessed of a certificate or license to practice, as required by statute. This salutary rule causes some difficulty when a physician from one state or county renders services in another state or county. It would appear to me as though the "full faith and credit" clause of the federal constitution should be held to require the courts and statutes of one state to accord to the physician the right to sue in its courts for services rendered within its borders, if he is a member of the profession in good standing in a sister state. This is gradually becoming the rule, although there have been decisions denying the right to sue for compensation under such circumstances.

VALUE OF SERVICES

Now that the fundamentals on which the physician's right to recover compensation rest have been discussed, the next question that presents itself is the amount of compensation to which he is entitled and the basis on which such amount is to be computed.

An attempt was made in some very early cases to establish the amount of compensation on the basis of what the physician had charged for similar services. This measure was repudiated in an early Alabama decision; and while it has never been adopted as an absolute test of value, the inhibition against it has been relaxed to the extent of permitting such proof as collateral to actual proof of value. The established method of proof of value of a physician or surgeon's services is the customary charge of physicians or surgeons for like services in the same locality or neighborhood. It is generally accepted that a physician need not prove the value of his services to the defendant, but that the ordinary and reasonable value of like services will be deemed sufficient.

It is, of course, unnecessary for the practitioner to prove the existence of an express contract for compensation, as the law implies a promise by the patient to pay a reasonable sum for the services rendered arising out of the mere act of employment itself. The proof of the reasonableness of the charge is not, however, sufficient when the patient is able to show that prior services were rendered by the physician for a lesser charge. In other words, a physician may be able to

prove that a certain charge per visit is in all respects reasonable; but if he has been treating the patient in the not distant past for a lesser sum, the patient may show the compensation which he has been paying the practitioner, who will then be limited to such charges in the absence of any agreement increasing the rate of compensation. While this holding may at first blush appear to be harsh, mature consideration will convince the reader that in the absence of a new agreement covering compensation, it would be unjust to permit the physician to increase his charges without notice to the patient when the patient has doubtless been relying on the previous scale of charges.

While it is a well established and recognized practice, particularly with surgeons, to be guided in their charges by the financial ability of the patient to pay, proof of such financial condition is inadmissible and the surgeon will be relegated to the reasonableness of his charge, irrespective of the patient's financial status. This doctrine has not, however, been universally adopted, and there are some decisions that permit proof of the patient's financial ability to pay. In considering the amount payable to the surgeon for the performance of an operation, his measure of recovery is not limited to a sum commensurate with the labor performed and his skill or responsibility, but the jury may take into consideration the exhausting study, the time consumed and the expense incurred in acquiring professional knowledge and skill.

In Michigan it has been held that the value of a physician's services is not to be determined by the actual average daily receipts to the extent of excluding competent opinions as to what the services were worth, and in New York it is competent for a physician to show the nature of a patient's disease and its mode of treatment, in order to prove the value of his services. On the other hand, the practitioner is bound by the value of his services as evidenced by his "receipt in full" for such services, and he cannot recover more though the estimate was too low when based on an estimate of reasonableness, in the absence of proof altering the effect of the receipt. It is, of course, competent to show the character and skill of a physician or surgeon in order to prove the value of his services, and he may also show that his professional standing is high as bearing on the value of his services.

Expert witnesses are competent to testify as to the value of the medical man's services in an action to recover therefor, and such testimony stands on the same plane as testimony in other cases, and is to be weighed by the jury to aid it in coming to a conclusion as to the value of the services rendered, if it is satisfied with it. The jury is not bound by the expression of opinion of expert witnesses on such a question, and the testimony of such experts is not, as a matter of law, conclusive on the jury. As a rule however, where the experts are men of standing in the profession and do not palpably exaggerate the value of the plaintiff's services, juries are inclined to accept their testimony as fixing a reasonable value. The practitioner may be allowed to prove that a patient required unusual attention; and, if he establishes this fact by adequate proof, he may be allowed compensation for operations and time spent in addition to the regular visits.

On the question of what the patient impliedly promised to pay, the physician may show his customary charges to other persons in the vicinity, that his rates were well known, and were known by the patient, and

in general submitted to. It may be said that the value of professional services may be proved by usage; but such usage must be shown by expert testimony on the question of the value of the services or the customary rule of compensation.

The patient is not liable to the physician for other than reasonable compensation when a successful experiment has been tried by the practitioner, even though very great skill may have been exercised and unusual attention given, as a patient is not liable for extraordinary services in the way of experiments.

Evidence is inadmissible to show the results of treatment by a physician subsequently employed as bearing on the compensation payable to the prior physician, as the treatment of the subsequent physician cannot alter the value of the services of the first physician.

An unusual and interesting case in Kentucky arose out of a suit by a physician for the value of his services where he had been called on to treat a patient who was ill of typhoid fever. The patient's wife repeatedly objected to the physician's visiting her husband while he was treating other patients for smallpox. Notwithstanding this objection, the physician continued to treat both the typhoid fever patient and his other patients afflicted with smallpox. Smallpox thereupon broke out in the typhoid fever patient's family. The court held that evidence of the wife's objections and the reasons therefor, together with the physician's subsequent course of conduct, was admissible in reduction of the physician's claim for services rendered while treating his patient and family both for typhoid fever and for smallpox.

The patient is entitled, on demand, to a specific bill of the medicines and attendance for which the physician claims compensation. In the matter of the number of visits, the physician is deemed the best and proper judge of frequent visits; and, in the absence of proof to the contrary, the court will presume that all of the professional visits made were deemed necessary and were properly made.

The question of whether or not medical services were rendered gratuitously is one for the jury; and even when there is distinct evidence tending to show that the services were rendered gratuitously, it has been held that such evidence constitutes no legal bar to a recovery, but should be submitted to the jury for their determination.

Contracts between a physician and a patient for a limited period of time covering general medical attendance or services are, of course, valid; but a contract to furnish a patient medical services for life has been frowned on in the only two cases on record. In declaring that such a contract is totally void in point of law, the court used the following language:

It is plain that the existence of such an agreement is a direct premium to the medical adviser to accelerate that death, upon the happening of which he is to have £25,000. . . . You must look at the agreement as it stood at the time it was made; and it must be admitted that the human mind is so constituted as that this agreement might be a temptation to some persons to do the very thing which it is obvious it was the duty of the party who took the agreement not to do.

In the matter of appeals, it is the uniform rule that the finding of the jury as to the value of the services will not be disturbed when the evidence on that subject at the trial was conflicting and the services were properly and successfully rendered.

120 Broadway.

UTERINE PROLAPSE

PERMANENT FIXATION BY FASCIAL FLAPS *

W. BURTON THORNING, M.D.

HOUSTON, TEXAS

If there is any excuse for suggesting another method for the relief of uterine prolapse, it lies in the fact that the very multiplicity of previous methods proves that no one of them has given universal satisfaction.

Every case of uterine prolapse constitutes a separate and distinct problem, and should be viewed from every conceivable angle before any operative procedure is attempted. If this is done and the operator is possessed of sound surgical judgment, he will be compelled to vary his technic to the extent of adopting what seems to be the best method for a given case. In other words, he will not adapt patients to operations, but operations to patients.

It is not my purpose in this paper to enter into the etiology of uterine prolapse, any further than to refer briefly to the type of patients in whom it appears to me that this particular operation is indicated; nor will reference be made to repair of the damaged pelvic outlet, which will be assumed, or to the methods previously described and widely used.

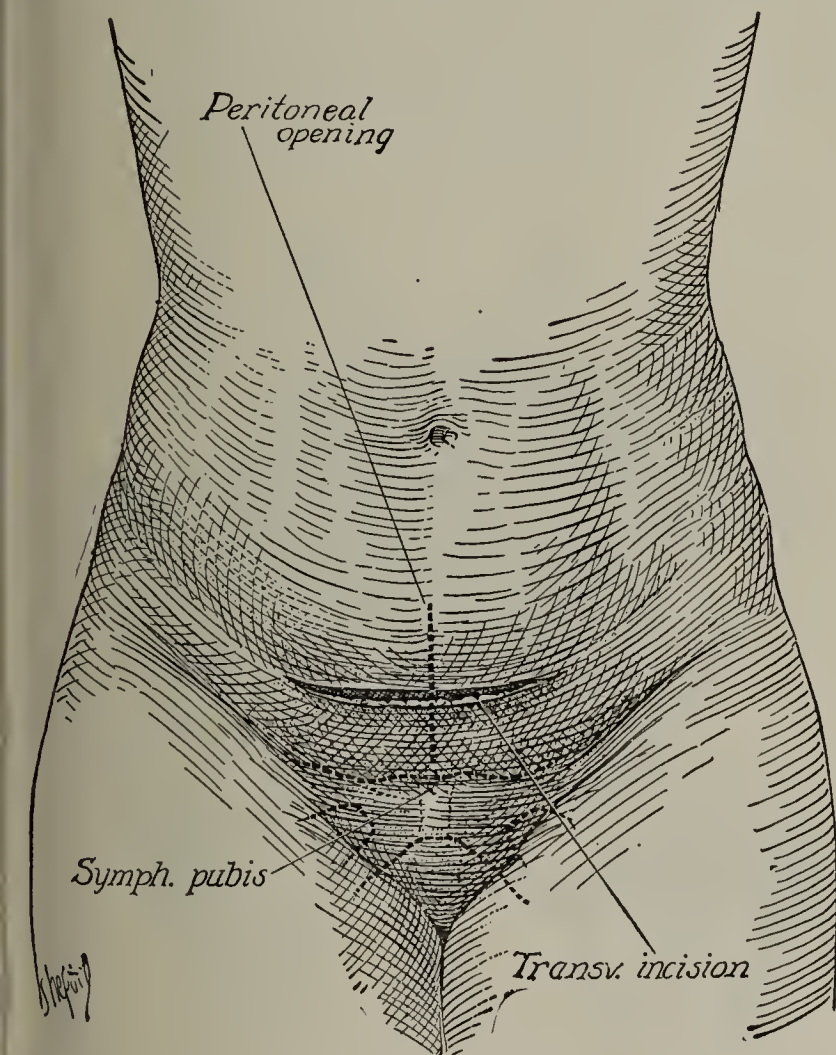


Fig. 1.—Transverse incision through skin, subcutaneous tissues and aponeurosis of the rectus muscles: dotted line, incision in peritoneum.

The method to be described will be found to have a very limited field of usefulness; and to those who believe that the uterus should always be removed in every case of prolapse, it will not appeal at all. There are those, however, who can see no reason for removal of an otherwise perfectly normal uterus simply because, through loss of its natural supports, it has become pro-

lapsed. There are others who will argue that any superstructure should rest on a foundation at its base instead of being suspended from its summit; and as pure theory, this view is correct. From a practical standpoint, however, it will be found that this method will not suffice for all cases.

It may also be argued that a failure with any of the various popular methods is the fault, not of the method but of the operator, in that he was guilty of faulty

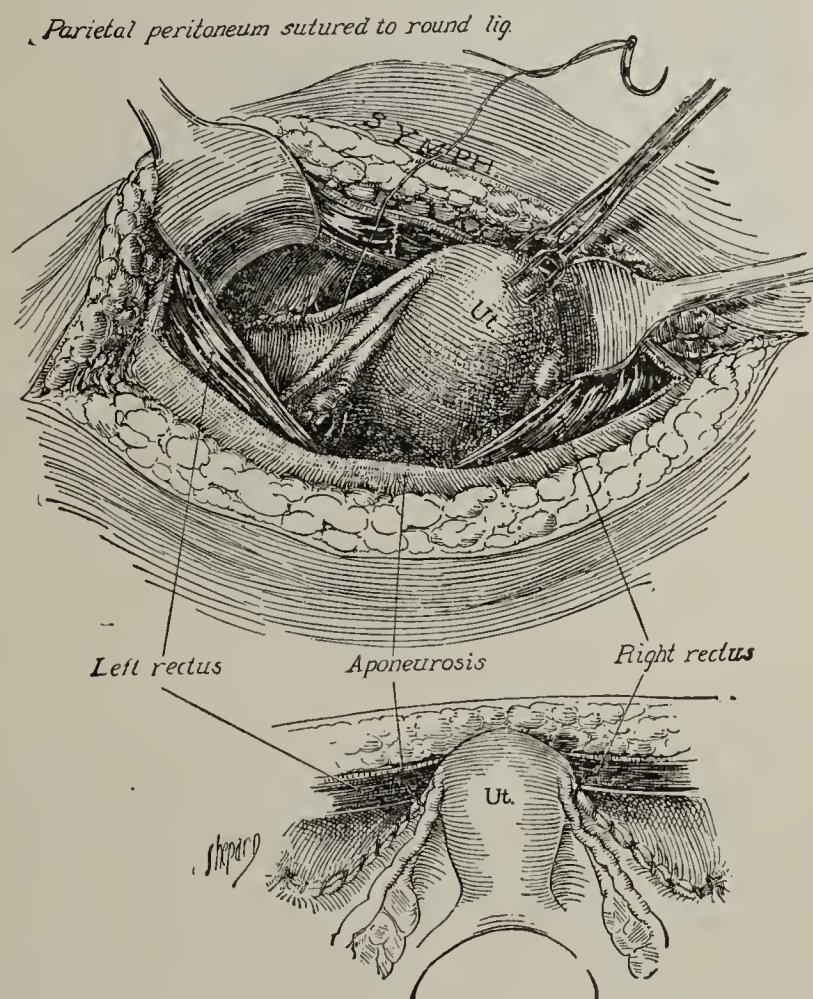


Fig. 2.—Running suture of plain gut, attaching round ligaments to parietal peritoneum; inset, suture completed.

technic or of an error in judgment in applying that particular method to the case in question. This would undoubtedly be true in many instances; but the fact remains that with all the knowledge, judgment and skill that we possess we are compelled to record a failure now and again with any and all methods.

It was one of these "failures" in a patient who had been operated on some years before in another clinic that led me to attempt a permanent fixation to the anterior abdominal wall by means of a strip of rectus sheath carried directly through the fundus. As stated before, this procedure will not prove adaptable to more than a small proportion of the cases of prolapse. It is now slightly more than five years since I did my first one; since that time I have had only seventeen more in which I felt certain that it was to be preferred over all other methods.

A total of only eighteen cases is of little value to statistics in demonstrating the desirability of any surgical procedure, and my only purpose in presenting it is to accord the profession the opportunity of determining for itself whether it is worthy or unworthy of trial at other hands. If the method is a useful one it should be more widely used; if not useful, it should be rejected.

I believe that there is a certain type of women in which this fixation will prove more generally satisfac-

* Read before the Southern Surgical Association, Dec. 14, 1920.

tory than any other method with which I am familiar. We all recognize the typical enteroptotic figure with the slightly stooping shoulders, the flat chest, the flabby breasts, the pot-belly and the broad hips. These patients are usually constipated, suffer from headaches and other toxic symptoms, and the prolapsed uterus may, to a certain extent, be part and parcel of the gen-

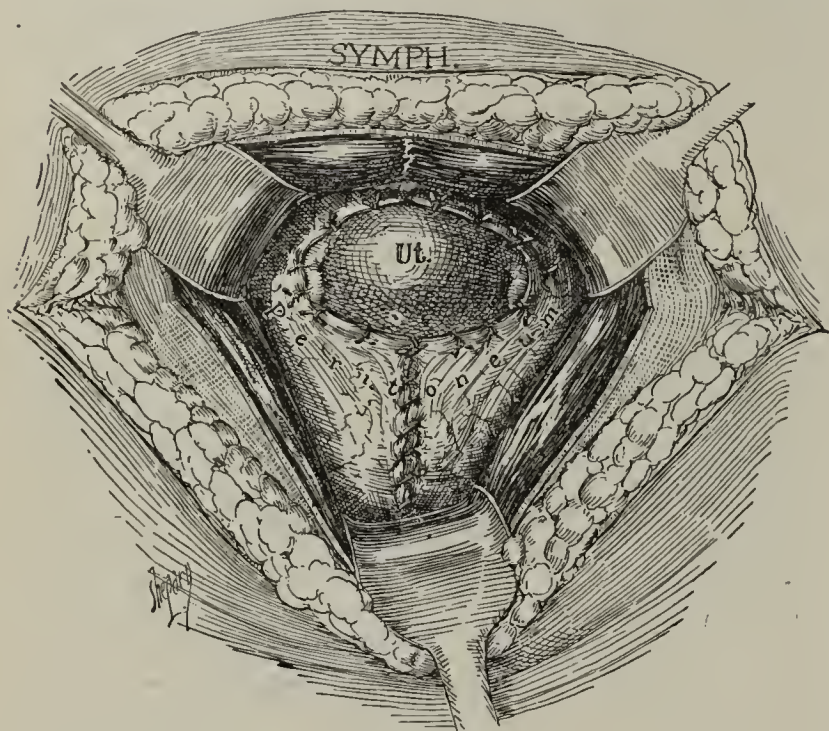


Fig. 3.—Peritoneum closed snugly around fundus with continuous or interrupted suture of plain gut.

eral visceroptosis. In all these cases we find the entire muscular system soft and flabby, the uterine ligaments relaxed and attenuated, and the entire pelvic diaphragm presenting the appearance of having been torn loose from its attachments. In this class of women we get no permanent support from the perineal body, no matter how carefully it may have been rebuilt; we can expect no permanent help from the anterior pubic or the utero-sacral ligaments; there is a giving way of the whole perineal segment; the pelvic diaphragm and pelvic organs are low in the vagina, intra-abdominal pressure is exerted in the wrong plane, and recurrence, with anything short of fixation, is almost inevitable.

In common with all other fixations, this method should not be employed if there is any question of malignancy or fibroids or in women in the child-bearing age, unless sterilized, or in badly infected uteri. Of the eighteen patients, all were past the menopause except one; and she had previously been subjected to a bilateral salpingectomy. There has been no mortality, and in fourteen cases the results have been exceedingly gratifying.

Of the eighteen, two have been operated on more than five years, two more than four years, three more than three years, four more than two years, three more than one year, one has been lost sight of, and three have been operated on since January, 1920, too recently to be included in statistics.

Of the fourteen included in this study, all have been examined at least one year following operation, and several have returned for examination three or more times. In every instance, they have been entirely relieved of their symptoms and there has been no recurrence of the prolapse.

In one case in which a ventral suspension had been performed ten years before, the uterus was much elongated and a year after operation still appeared to

be carried somewhat low; but the patient was symptomatically well.

In only one case has there been any postoperative complication. It was the first case; and as we did not allow for drainage, we were somewhat humiliated by having a hematoma form under the skin flaps, which delayed the convalescence by several days.

This leads me to call attention to one step in the procedure which, theoretically, is a violation of a surgical principle, namely, the cross-section of the vessels running to the fundus. Practically, it presents no difficulties if a small rubber tissue drain is carried down to the incision in the uterus and allowed to remain for from twenty-four to forty-eight hours.

TECHNIC

An ordinary transverse incision, which for the most part is below the upper margin of the pubic hair line, is carried through the skin and subcutaneous tissues and the aponeurosis of the rectus muscles (Fig. 1). The upper flap is then separated from the muscles upward for a distance of 3 inches or more as necessary to provide working space. The transverse incision in the fascia of the rectus muscles should be not less than $1\frac{1}{4}$ inches nor more than 2 inches above the pubic symphysis. The rectus muscles are then separated, and the peritoneum opened in the usual way. Through this incision any necessary pelvic work may be done. The fundus is then grasped with volsella and the rectus muscle retracted in the opposite direction while a running suture of plain gut attaches the round ligament to the parietal peritoneum of the anterior abdominal wall on each side (Fig. 2). This step in the procedure is not taken with the idea of securing additional support, but for the purpose of shutting off the pelvic cavity below

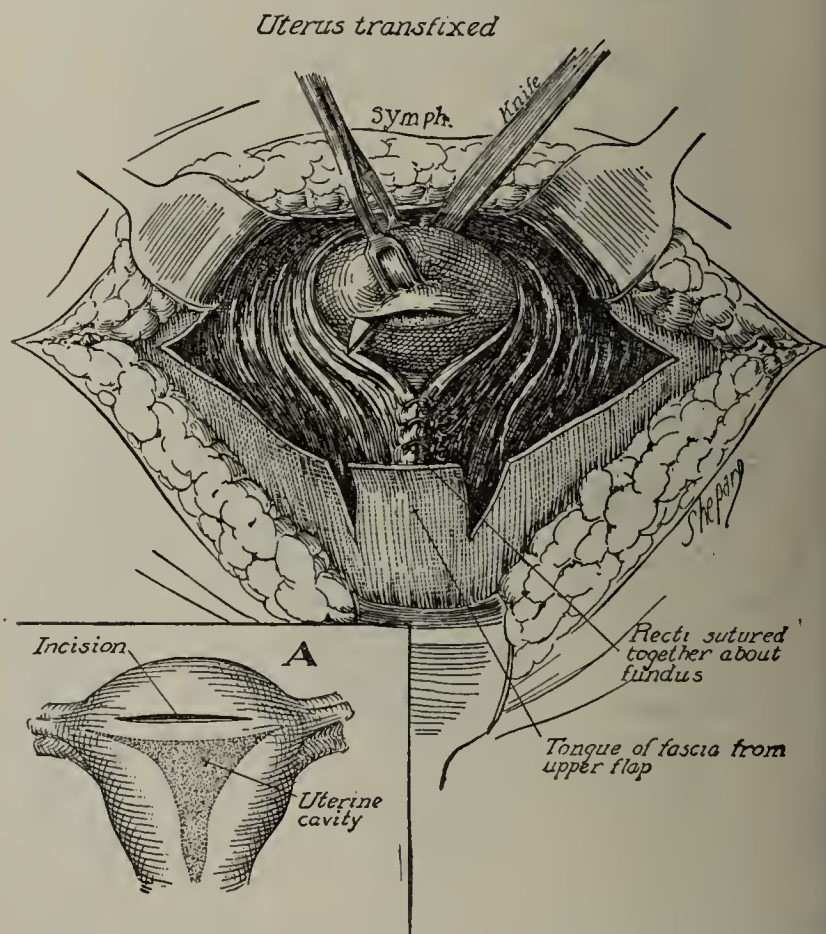


Fig. 4.—Rectus muscles brought together; incision through fundus; tongue of fascia split from upper flap; A, relation of incision to uterine cavity.

the point of fixation. The peritoneum is then closed with a running suture, bringing it snugly around the fundus as shown in Figure 3.

The rectus muscles are then brought together by interrupted sutures as nearly to the fundus as possible (Fig. 4).

Next, a strip or tongue from 1 to $1\frac{1}{2}$ inches wide is split from the middle of the upper fascial flap. The fundus is then transfixured with a scalpel which carries the incision from

one side to the other; the incision is placed as deeply as is possible without entering the uterine cavity (Fig. 4). The strip of fascia is then carried through the incision in the fundus and sutured to the point on the lower fascial flap where it was originally divided (Fig. 5).

The divided fascia is then reunited by interrupted chromic catgut sutures (Fig. 5).

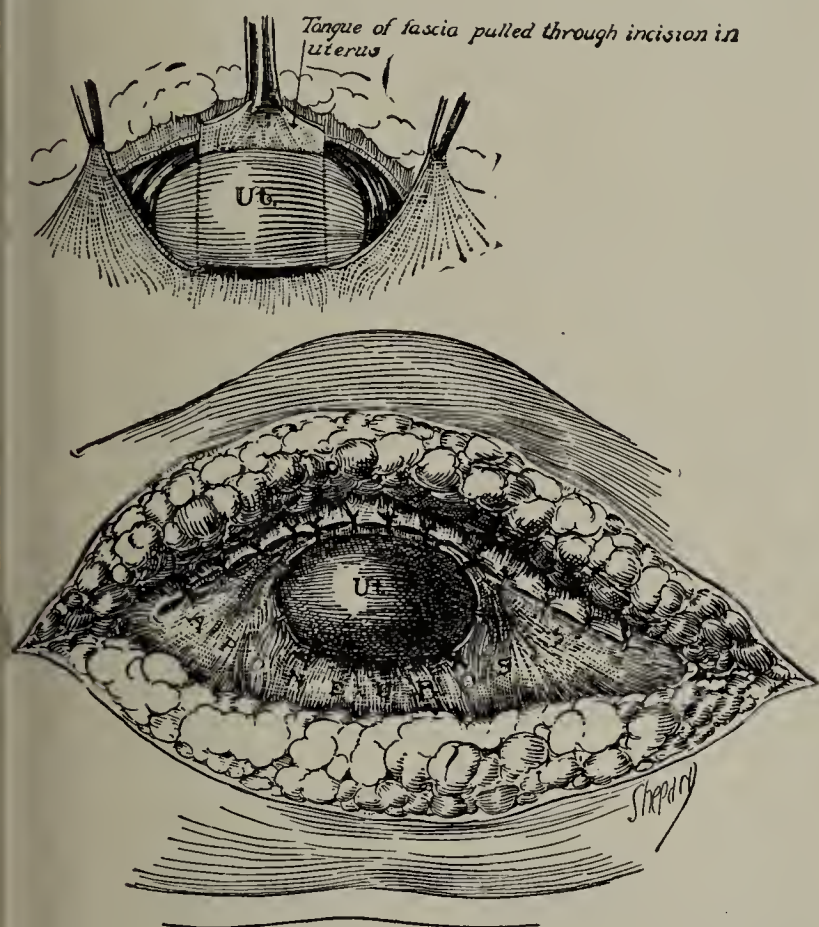


Fig. 5.—Divided fascia reunited with interrupted sutures of chromic catgut; inset, tongue of fascia being drawn through incision in fundus.

The skin is closed in the usual manner.

Some variation in placing the incision in the uterine wall will be necessary according to the degree of mobility present.

When there is great relaxation, it can be carried down the anterior wall and emerge as low as the uterovesical fold of

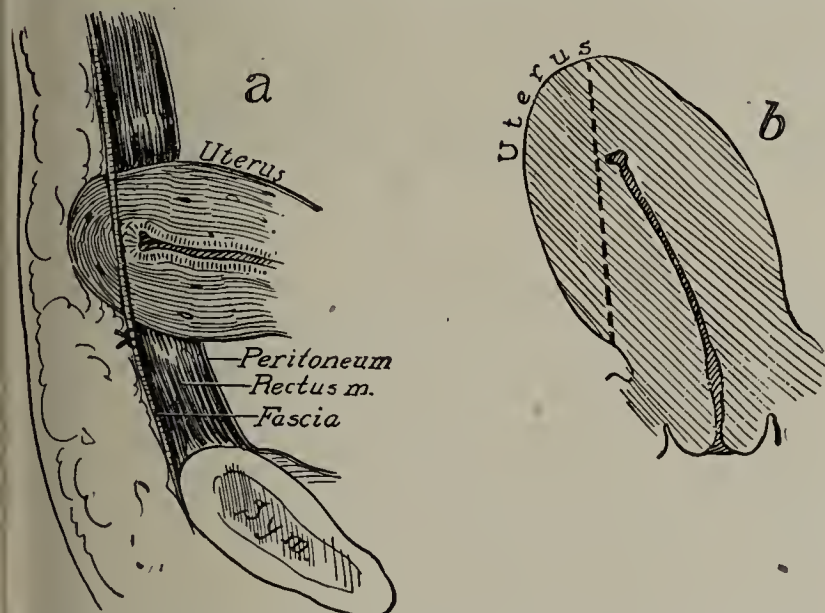


Fig. 6.—a, ordinary incision through fundus; b, incision where relaxation is extreme.

peritoneum (Fig. 6b). In two cases we dissected the bladder loose from the anterior wall and brought the fascial flap out through the cervical portion, transplanting the bladder by packing sutures to the anterior fold of the broad ligament.

A little experience will enable one to estimate with considerable accuracy the location of the incision which will afford the necessary degree of support.

Kress Building.

INTRACRANIAL BIRTH TRAUMA OF THE NEW-BORN

FROM THE STANDPOINT OF THE OBSTETRICIAN *

HUGO EHRENFEST, M.D.

ST. LOUIS

Within the last decade an extraordinary amount of information concerning intracranial birth lesions has been offered in the medical literature of Europe and of this country. In the light of this newer knowledge, prevailing conceptions in regard to the causation of these injuries, their diagnosis, and their immediate, and especially remote, effects on the infant are in urgent need of thorough revision. In a large monograph dealing with the birth injuries of the new-born child, to be published in the near future by D. Appleton and Company, I shall have ample opportunity to discuss thoroughly also the subject of traumatic intracranial lesions. I feel confident that in this volume I shall be able to justify fully many of the statements which here are made seemingly in a rather apodictic manner. However, the allotted fifteen minutes offer no chance for quoting references or arguing mooted points, if one endeavors to present, within this limited time, an adequate answer to the one question, most important to us as obstetricians: To what extent can the obstetrician prevent such intracranial birth lesions?

The terms intracranial birth lesions and intracranial birth hemorrhages rather generally are employed promiscuously. For merely clinical purposes this may be justifiable, because the clinical importance of these lesions is almost limited to the hemorrhages. But this lack of discrimination in using the terms obscures much that is significant and essential for the correct understanding of the causation of these lesions. Only since Beneke's special method of opening the skull of the new-born at necropsy (published in 1910) has been more generally adopted, has the important problem of the tentorial lacerations, which are not necessarily associated with hemorrhage, been adequately appreciated. A study of all the larger statistics on the incidence of intracranial birth lesions establishes the noteworthy fact that with every succeeding year, figures, based on a large amount of necropsy material of new-born infants, show an ever increasing percentage of such findings. During the last few years they range as high as from 30 to 40 per cent. of postmortem examinations of all infants, that were either stillborn or that died within the first few days of life. It has become evident that such traumatic tentorium tears may represent only accidental findings in no way related to the actual cause of death. Experimental studies have furnished additional information especially concerning the mechanical causes of dura lesions.

ETIOLOGY

The problem of the etiology of the most important of intracranial birth traumatism, which are the dura lesions, can be presented briefly, thus: These injuries, practically without exceptions, primarily are due to definite mechanical causes. The dura mater is stretched, and with it the large blood sinuses and particularly the veins emptying into them, are pulled and eventually are ruptured. This stretching to the breaking

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

point is either the result of excessive overlapping in the sutures of adjoining skull bones, or is effected by the strong compression of the head in one direction, chiefly the transverse, which leads to a compensating elongation of the cephalic diameters in the other direction, the longitudinal. Excessive overlapping of the parietal bones endangers the longitudinal sinus and in particular its contributory veins on one side. Excessive overlapping in the lambda suture in a similar manner comprises the transverse sinus and its veins. The change in the configuration of the fetal skull by lateral compression in the process of molding stretches the falx. Exaggerated tension is most likely to impair its integrity at its weakest point, that is, where the falx fibers divide to form the upper blades of the tentorium on either side. Thus the sinus rectus itself, or large veins, may be torn.

This conception of the primarily mechanical causation of the intracranial birth traumatism satisfactorily accounts for the high incidence of serious lesions after breech extractions, and also after forceps extractions, especially if the forceps have been applied to overcome an existing disproportion between head and pelvis. This mechanical conception emphasizes the almost specific danger of the sudden compression of the head. However, this still leaves unexplained the undeniable fact, evidenced in every new study of the problem, that in from 20 to 25 per cent. of the cases examined at necropsy even most extensive destructions are discovered in infants born spontaneously, after quick labors, normal in every respect. The literature contains many records of fatal intracranial hemorrhages after cesarean sections, or in the second born of twins. An acceptable interpretation also of such occurrences is now available in the assured fact that there are definite conditions which clearly *predispose* the infant to such traumatic lesions. Most important among them evidently is prematurity, apparently responsible for an abnormal fragility of the dura and of the vessel walls. Syphilis in this connection positively plays a rôle only so far as it is responsible for the premature termination of pregnancy.

We also know that outside such predisposing causes there are *contributory* factors involved in the etiology of intracranial birth lesions, and in particular of birth hemorrhages. Most momentous among these contributory factors undeniably is a hemorrhagic diathesis of the new-born. It seems obvious that the rupture even of the smallest vessel, of no significance under normal conditions, in the presence of delayed blood clotting will permit the gradual extravasation of enough blood to cause clinical symptoms to appear later, often several days after birth, or finally to cause death.

Another contributory factor of no mean importance has been found in improper manipulations of the new-born during resuscitation. To swing the seemingly asphyxiated baby after the method of Schultze or to manipulate it with the head hanging down, as is so often done, cannot fail to prove detrimental in the presence of an intracranial injury. The charge has been made, and undeniably with some justification, that the almost unavoidable lateral compression of the head during swinging, if unintentionally too brusque, in itself may become responsible for a tentorial tear. A few words must be said in this connection concerning the relation of asphyxia to intracranial hemorrhages. The commonly expressed opinion that the congested state

of the brain vessels in asphyxiated new-born infants is the most important direct cause of their rupture, at least in this form, is untenable. This claim is chiefly based on the frequent observation at necropsy of small hemorrhages in serous and mucous membranes, generally considered pathognomonic for asphyxiation. Reference has been made to the rôle played by hemorrhagic diathesis as a contributory cause, and this newer knowledge throws a different light on the significance of these coexisting petechial hemorrhages. The conclusion seems fully justified that in a definite percentage of these cases the intracranial hemorrhage in the main is only a local expression of the underlying hemorrhagic diathesis. Very enlightening in this respect and almost conclusive as scientific proof must be regarded an observation made in the case of the death of a second born twin. His blood showed a distinct delay in clotting time. In the surviving first born twin the blood clotting time was found to be normal. Undoubtedly, not a few infants are in an asphyxiated condition at birth because an intracranial, probably an infratentorial, hemorrhage is embarrassing the respiratory center in the medulla. In them, attempts at resuscitation necessarily will fail. It is most likely that the clinical diagnosis of the cause of death will be asphyxia. Practically none even of the elaborate recent statistical classifications of the causes of stillbirth and early deaths tabulate specifically the cases of intracranial lesions. In view of their high frequency, as established by routine postmortem examinations, it seems fair to assume that practically all of them are included in that always large figure representing asphyxiation as the cause of death.

Summarizing the various facts mentioned in the foregoing paragraphs I can say in regard to intracranial birth injuries that (1) they are produced by the mechanical exaggeration of the physiologic process of molding, resulting in excessive or sudden compression of the fetal skull; (2) they are prone to occur in the course even of a normal labor if prematurity predisposes the infant to traumatic lesions; and (3) they are necessarily aggravated by a hemorrhagic diathesis or by inappropriate manipulations during resuscitation.

From this point of view it seems feasible to offer definite suggestions to the obstetrician, observance of which will tend to lessen his own responsibility in the causation of such injuries.

FORCEPS

Any marked disproportion between head and pelvis renders especially rapid forceps extraction extremely dangerous to the child. The least possible amount of compression will be secured if the blades are applied as closely as possible, corresponding to the transverse diameters of the head. If the handles of the forceps are not lying in close approximation, they must be steadied in their position to avoid their compression during extraction. During the progress of the extraction the normal sequence of changes of position of the head in relation to the various planes of the pelvic canal must be strictly followed. The extraction should be made slowly to permit the gradual molding of the head. It is definitely established that sudden compression of the skull is infinitely more dangerous than long continued compression.

BREECH PRESENTATIONS

In breech extractions the aftercoming head must be kept in extreme flexion and its passage through the

pelvic canal must be managed exactly in conformity with the normal mechanism of the second stage. It is important, near the end of the extraction, to avoid strong pressure of the squama of the occiput against the symphysis in the attempt to save the perineum. The commonly prevailing opinion that haste is required to preclude unduly prolonged compression of the cord is in need of modification. In the special technic of podalic version, as advocated by Potter, his urgent advice to extract slowly, seems one of the outstanding features.

PREMATURE LABOR

The evident vulnerability of the premature infant makes it necessary to avoid any severe or abrupt compression of the skull. In these cases, pituitary extract, forcing even a small head through an incompletely dilated cervix or through a rigid vulvar ring, may prove disastrous to the child. Large doses of pituitary extract endanger the child even in birth at term, especially when employed to overcome mechanical difficulties.

PROTECTION OF PERINEUM

It seems plausible that extreme efforts to protect the perineum against rupture may play a rôle in the causation of intracranial lesions, and especially of tentorial tears. Most harmful in this respect proves the attempt to push the head through the vulvar ring between uterine contractions by strong pressure made against the forehead of the child either over the perineum or with a finger introduced into the rectum. This maneuver pushes the occiput forcibly against the subpubic arch. Injurious probably also is an asymmetrical pressure against the perineum, if exerted more strongly over one parietal bone than over the other, thus straining the falx in an oblique direction. Passage of the head through the vulvar ring is best retarded by pressure with the palm of the hand over the entire exposed surface of the fetal head. Any one familiar with the etiology of traumatic intracranial lesions will resort most readily to an episiotomy.

RESUSCITATION

All brusque maneuvers must be avoided during the resuscitation of asphyxiated new-born infants. If the asphyxiation is not due to an intracranial injury, clearing of the pharynx, skin stimulation and artificial respiration, carefully done, in most cases will be sufficient to establish respiration.

COMMENT

This modern conception of the causation of intracranial traumatism during birth, in my belief, places on the attending obstetrician further obligations. Strict observance of the various suggestions made in the preceding paragraphs might materially reduce the occurrence of such injuries, but it evidently now has become the obvious duty of the obstetrician also to recognize their existence at the earliest possible moment. It is impossible to enter here even into the briefest discussion of the symptomatology of these lesions. In the effort to improve their prognosis, which at the present time is very unsatisfactory, the essential task for the practitioner consists in familiarizing himself thoroughly with the early symptomatology so that proper therapy can be instituted without delay. There are, however, at least two procedures of significant value which he can immediately apply.

In every case of suspected brain lesion, which in practice almost means in every new-born infant that

obviously does not behave normally, he should at once attempt to determine at least roughly whether the infant's blood appears strikingly slow in clotting. He will do no harm, but he is likely to do much good, if he will promptly inject human or horse serum whenever in his opinion there is unusual delay. The second procedure, less simple, but still almost free of danger if carefully and skilfully done, consists in a spinal puncture. The presence of blood in the spinal fluid in many, though not in all, instances will prove the existence of a hemorrhage. Puncture with withdrawal of blood not only enables the obstetrician to secure competent counsel promptly, but represents the first step in a most advantageous and useful therapeutic procedure in relieving harmful pressure on certain brain centers.

CONCLUSIONS

The information at present available concerning the causation of traumatic intracranial birth injuries makes it incumbent upon every physician attending women in labor, to accept these principles: During forceps and breech extractions all excessive and brusque compression of the head must be avoided. Special caution must be applied in managing premature labors. All violent manipulations must be eliminated in the resuscitation of asphyxiated new-born infants. The diagnosis of an existing intracranial injury should be made at the earliest moment. Whenever such an injury is even only suspected, the clotting time of the infant's blood must be ascertained and a spinal puncture performed, both as a diagnostic and as an early therapeutic measure.

Metropolitan Building.

ABSTRACT OF DISCUSSION

DR. ISAAC A. ABT, Chicago: While we all agree that forceps operations, and the various obstetric devices may contribute to the occurrence of intracranial hemorrhage, nevertheless, there are patients who tend to bleed and bleed spontaneously, irrespective of any instrumental interference or any force. And those are the babies Dr. Ehrenfest spoke of as having general hemorrhagic diathesis and as tending to bleed spontaneously. I agree with him. The number of cases is large, and they are of the greatest importance. Rodda showed that many babies are born with a markedly increased coagulation time; that instead of coagulating in from two to nine minutes, the coagulation time is increased to thirty minutes, or even hours; and these babies tend to bleed not only in the cranial cavity, but also in the various viscera and organs. In other words, they are potential bleeders, and even the slightest trauma may produce hemorrhage in these infants. Indeed, they may bleed without much of any trauma. So far as the diagnosis of meningeal hemorrhage is concerned, it is not always easy. One usually relies on the protuberant fontanel. Nervous symptoms, some paralysis, a baby that is not hungry, does not nurse, who has some nystagmus, who cries or jerks in a peculiar manner—all these things tend to corroborate, or at least to influence our minds toward, the diagnosis of meningeal hemorrhage. But sometimes with these symptoms more or less present, meningeal hemorrhage may be doubtful. The baby may be toxic or sick, or it may have hemorrhage in some other part of the body. I have seen babies with hemorrhage in the suprarenal who presented all the symptoms. In another instance, the necropsy disclosed an infantile form of encephalitis. And in yet another case no meningeal hemorrhage was found. Lumbar puncture has some slight therapeutic value. In a tiny baby it is difficult to perform. Only the most expert can do it. Blood may be obtained without any reference to its presence in the cranial cavity. Therefore I am very doubtful about the diagnostic value, or even the therapeutic value, of such puncture. Some of the foreign clinics show that from 30 to 40 per cent, of all

babies that die from meningeal hemorrhage. As to treatment: When there is any doubt, blood serum or horse serum should be given, or one of the hemostatic agents. The hemorrhage is light at first. If you wait, the damage that is done to the cerebral cortex and cells is in exact proportion to the amount of hemorrhage that takes place. Consequently, if there is any sign of meningeal hemorrhage, inject at once, and often, if necessary. On account of the severity of these lesions and the tragic lives these poor infants have to live, operation should be considered. That operation should be, if possible, a craniotomy. The mortality is high; nevertheless, the operation is justifiable.

DR. HERMAN SCHWARZ, New York: Handling the child may cause these hemorrhages. We must prevent prematurity if we want to prevent these hemorrhages. The premature child has no hemorrhagic diathesis, but the prematurity causes the bleeding of these children. Perhaps we can recognize these cases earlier, and be able to do something. Every child when born should be tested for its hypotonicity. Hemorrhages that occur in the posterior fossae are more likely to cause tonic spasms. Whether the child takes the breast well is a very important differential factor in convulsions of the new-born. If the child takes the breast well I am not so worried that it might be a hemorrhage in the brain. If the child does not take the breast well, one should look for symptoms outside as well as in the brain that may cause convulsions. I agree with Dr. Abt in the difficulty of lumbar puncture. This idea of getting blood and making a diagnosis of hemorrhage is extremely far-fetched. Although 40 per cent. of the necropsies show intracranial hemorrhage, the diagnosis is very often made when such a hemorrhage is not present; and many of the diagnoses of intracranial hemorrhage and death would be cleared up if we could perform a necropsy. I do not think that there is a definite hemorrhagic diathesis in an appreciable number of these cases. These are not necessarily premature infants that have a hemorrhage of the brain. What we want to do is to prevent prematurity, and then we will prevent that type of hemorrhage.

DR. W. W. BROWN, Rochester, N. Y.: It has been stated that one of the principal causes of this hemorrhage is prematurity. I believe that to be true, but the cause of prematurity is probably going to be found to be the cause of the hemorrhagic diathesis, so-called, in the baby. In our wards every baby has the coagulation time taken within from six to twelve hours after it is born. Every baby that shows a prolonged coagulation time is given human serum. I do not believe in laboratory hemostatics or in horse serum. I get 30 or 40 c.c. of blood serum from the mother or any one else, and 10 c.c. is injected intramuscularly every three or four hours for four or five doses. Not knowing what the cause may be, I have also learned to associate prolonged jaundice, that does not clear up on clearing out the intestinal tract, with these hemorrhagic conditions.

DR. JOSEPH B. DE LEE, Chicago: The time has come to sound a warning against the too active trend in modern obstetrics. This might sound a little bit antagonistic to some of my own pronouncements, but they were intended for the maternity hospital men, who have all the help and facilities for doing advanced work. There is a striking difference between the work of the man under circumstances that do not permit the highest kind of technic, and the work of the man situated where he can give the patient all the benefits of his art. Hemorrhages in the new-born are on the increase. The advent of pituitary extract has been one of the most unfortunate things for new-born babies. Hardly a week goes by that some doctor does not tell me about a death in his practice directly due to the use of pituitary extract before the delivery of the baby. I have even felt that it would not be undesirable to pass a law forbidding the use of pituitary extract before the child is born. Another factor which is causing hemorrhage in the new-born is the use of forceps, the overcoming of resistance by brute force. Forceps are used too much—and not enough. Discrimination is wanting. A bizarre practice, recently exploited, is the routine delivery by version and extraction. It is threatening to have a dangerous spread, in spite of the published fact that it has a fetal mortality, in the hands of its exponent, of nearly 8 per

cent. Evidently, such interference in natural labor is perilous to the child, and it explains the large number of hemorrhagic diatheses which caused the excessive mortality reported. Rodda did not explain the cause of the hemorrhagic diathesis. We did not always have so many cases of hemorrhagic diathesis. Among the known causes are prematurity, syphilis, hemophilia in the mother, influenza and malaria. Asphyxia and traumatism are two potent causes of hemorrhage. To prevent death from this hemorrhagic diathesis in the baby, we must prevent asphyxia and traumatism. One of the forms of traumatism is a hard resisting perineum, with a prolonged second stage of labor. Dr. Ehrenfest has well recommended the use of episiotomy to relieve this. I think every man ought to be qualified to perform the operation of episiotomy well, to save the baby from the effects of compression of the brain. As to the idea of labor being abnormal: Everybody considers labor normal. It is a natural function. It is natural for women to have babies. No one would say that it is a disease to have babies. But does not so-called normal labor produce damage? That natural labor causes injury to both mothers and babies, nobody can deny. If a normal labor hurts the baby, we say that was a pathogenic action of normal labor. If a baby has his head crushed in the door we say that the crushing was pathogenic, and the state of the baby's head we say is pathologic. If the baby's head is crushed against a hard perineum by natural labor the crushing is pathogenic. Anything pathogenic is pathologic, and labor is pathologic, but that does not mean it is a disease. It is disease producing. Why do I insist on that view of labor? To elevate the practice of obstetrics in the minds of physicians so that the best men will engage in it, and to elevate the practice of obstetrics in the minds of the laity, so that when laws are made by our legislators, proper dignity may be accorded the function of childbearing.

DR. GORDON G. COPELAND, Toronto, Canada: What is your view as to the relationship between hematoma and intracranial hemorrhage? Is intracranial hemorrhage due to changes in the blood that would warrant opening the skull to relieve possible tension? I have found it practical to give whole blood from the mother or father in these hemorrhagic cases in the new-born, injecting it into the intrasagittal space of the child. I have had some very good results from that procedure.

DR. HUGO EHRENFEST, St. Louis: As to spinal puncture, I am fully aware of its difficulties and possible danger. Nevertheless, any one who follows the literature cannot fail to be impressed by the results that have been obtained. I am far from recommending that procedure for all the men doing obstetric work. As to the responsibility of the obstetrician for a correct diagnosis, I had to avoid the problem of diagnosis in this paper; it would by itself make an interesting paper. I want to point out to you just the one thing. If the surgeon or pediatrician is called to see the child that has had several convulsions, that is unconscious or comatose, he is at a great disadvantage if the man attending the case has not observed a certain symptomatology that has manifested itself previously, e. g., a lack of ability of the child to nurse, twitching which began in this extremity or that gradually went to another. A facial paresis, present when the consultant appears, means a great deal if the attending physician can assure the surgeon that this facial paralysis was not there when the child was born, and developed only later. If these early symptoms are watched carefully by the attending physician, there is often observed a sequence of symptoms that correspond almost exactly to the further distribution of extravasated blood from the primary focus. As to the hemorrhagic diathesis: I am not surprised to see it form the main point of discussion. Hemorrhage is the essential factor in the clinical symptomatology; but I tried to point out that the hemorrhage does not give the real clue to the causation of the injury. The frequency of tentorial tears without any hemorrhage emphasizes the mechanical factors as the underlying primary causes of intracranial birth lesions. The hemorrhagic diathesis, then, represents only a very important contributing factor, resulting in a large hematoma, even if the primary mechanical lesion is only slight. The obstetrician unfortunately has been persuaded by the neurologist that

it is the long compression of the head that proves so dangerous to the child in after life. There cannot be any doubt that the sudden forcible compression is the more dangerous factor. There is a relation between cephalohematoma and intracranial hemorrhages. Small hemorrhages under the periosteum are found, but they are of no particular significance. They represent accidental necropsy findings, but never cause the death of the child. I purposely eliminated the entire subject of perforating injuries from my paper.

BLOOD PRESSURE CHANGES DURING
ABDOMINAL OPERATIONS*

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Operation in the early stage of disease, when the pathologic process is limited to an accessible primary focus, is simple for the surgeon and safe for the patient. As the disease process invades additional areas and organs, or when the condition involves inaccessible structures, the operation becomes more difficult and the safety of the patient correspondingly less secure. To safeguard the patient through one of these difficult operations, many procedures have been devised.

TABLE 1.—HERNIA OPERATION

Anesthetic Cases		Primary Effect			Excision of Sac			Closure		
		Rise	Fall	No Change	Rise	Fall	No Change	Rise	Fall	No Change
Nitrous oxid and procain	10	10	0	0	1	4	5	3	0	7
Ether.....	12	3	4	5	0	9	3	6	2	4
Procaïn.....	18	2	4	12	1	7	10	7	2	9

Preliminary treatment may offset a known handicap. Psychic control will relieve the patient of fear and anxiety. Special forms of anesthesia and particular methods of operating will diminish the shock of the procedure. The recognition of the advent of shock will enable the surgeon to arrange for its prompt treatment and to modify his procedure so as to limit its development. The performance of multiple stage operations has added greatly to the safety of the patient in carrying out extensive manipulations. There is a constant relation between falling blood pressure and the condition of shock. A knowledge of variations in the blood pressure of the patient during

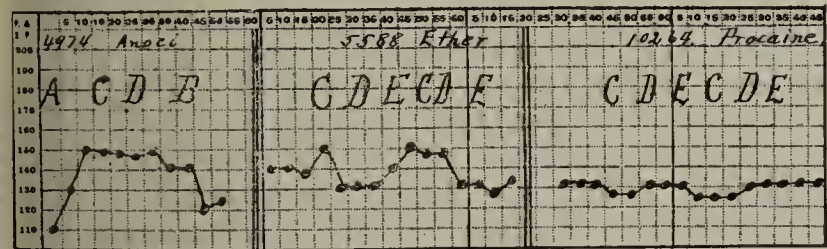


Chart 1.—Blood pressure changes during operations for hernia: A, gas started; B, gas stopped; C, sac opened; D, sac closed; E, muscle suture.

operation will enable the surgeon to decide on the safety of continuing his manipulations, or the necessity for limiting them. Many factors developing in the course of an operation contribute to alterations in the blood pressure, either increasing or diminishing it. Studying the changes which occur in relatively simple operations, we obtain knowledge which becomes most valuable when

we are called on to safeguard a handicapped patient through a severe operation. Practically all of the changes in blood pressure noted in our records have been predicted or actually observed by investigators studying shock through animal experimentation. Furthermore, this similarity has allowed us to make accurate use of the various means for the prevention and cure of shock which have been the result of these animal experiments.

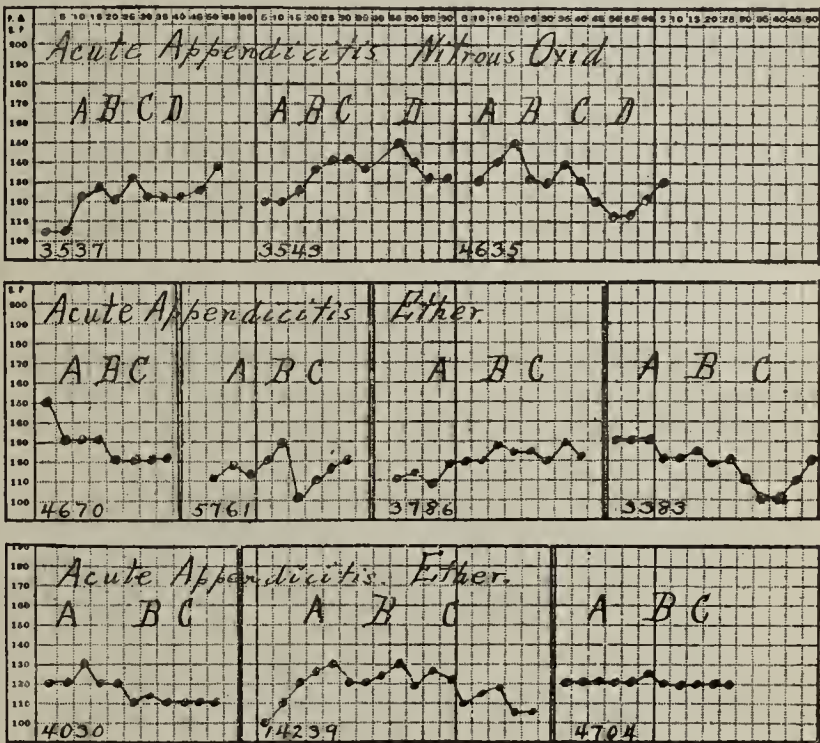


Chart 2.—Blood pressure changes during operations for acute appendicitis: A, peritoneum open; B (Cases 3537, 3543, 4635), manipulation; B (other cases), appendix delivered; C (Cases 3537, 3543, 4635), appendix out; C (other cases), peritoneum closed; D, peritoneum closed.

This paper is based on a study of the blood pressure records kept during the course of 394 abdominal operations performed by the members of the Staff of St. Agnes' Hospital, Baltimore. The systematic recording of the blood pressure during operation was intro-

TABLE 2.—ACUTE APPENDICITIS

Anesthetic Cases	Opening Peritoneum			Manipulation			Closure			Compensation With Closure	
	Rise	Fall	No Change	Rise	Fall	No Change	Rise	Fall	No Change	Rise	Fall
Nitrous oxid and procain.....	22	8	8	6	11	8	3	5	8	9	5
Ether.....	28	5	14	9	6	10	12	8	10	10	5

duced in the clinic several years ago by Dr. J. C. Bloodgood, and such a record is kept as a routine procedure in all our operations. The systolic pressure is measured by means of a spring instrument.

A simple hernia occurring in an otherwise healthy young adult gives us an opportunity for studying the effects of surgical operation on the blood pressure without complicating factors. Forty such cases were studied (Table 1 and Chart 1).

THE EFFECT OF ANESTHETICS

Nitrous oxid and oxygen with procain infiltration usually caused a rise of from 10 to 30 points in pressure. As a rule, this higher pressure continued throughout the operation. Ether, on the other hand, seldom caused a rise, and about as often caused a fall in pressure. In about one half of the ether cases there

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

was no primary change; and the primary rise, when it did occur, was never sustained throughout the operation. When the operation was performed under local anesthesia, the pressure in the majority of cases remained unchanged.

EFFECT OF MANIPULATIONS

Changes in the blood pressure which occur during the excision of the sac are the result of traumatizing the parietal peritoneum, that is, the effect of irritation of sensory nerves on the vasomotor system. In 60 per cent. of the cases in which general anesthesia was used, the manipulation was accompanied by a fall in pressure. In one case, however, there was a short rise. The fall in pressure was most often noticed in patients anesthetized with ether. Operation under procain or procain-nitrous oxid (anociassociation) was without change of pressure in 50 per cent. of cases.

ACUTE APPENDICITIS

In fifty cases of uncomplicated acute appendicitis, there were twenty-two ether anesthetics and twenty-eight gas and procain (Table 2 and Chart 2). After

TABLE 3.—APPENDICITIS WITH PERITONITIS

Anesthetic	Cases	Opening Peritoneum			Manipulation*			Closure			Compensation With Closure	
		Rise	Fall	No Change	Rise	Fall	No Change	Rise	Fall	No Change	Rise	Fall
Nitrous oxid and procain.....	17	8	2	7	2	3	7	0	6	6	0	2
Ether.....	19	5	6	8	8	13	3	2	10	12	2	2

* In five cases the anesthetic was changed to ether at this stage.

the operation had begun, the anesthetic was changed from gas to ether in six cases. As a rule, the change was made in order to obtain better relaxation of the abdominal wall for exploration. Opening the peritoneal cavity caused some change in the blood pressure in

previous fall, while there were eight cases in which a fall brought the pressure back to the preoperative level. With ether, in five of the ten cases, the fall at this stage of the operation balanced a previous rise, but in the other five cases the fall continued an already existing drop in pressure. In five of the ether cases the earlier drop was followed by a rise during the closure of the wound.

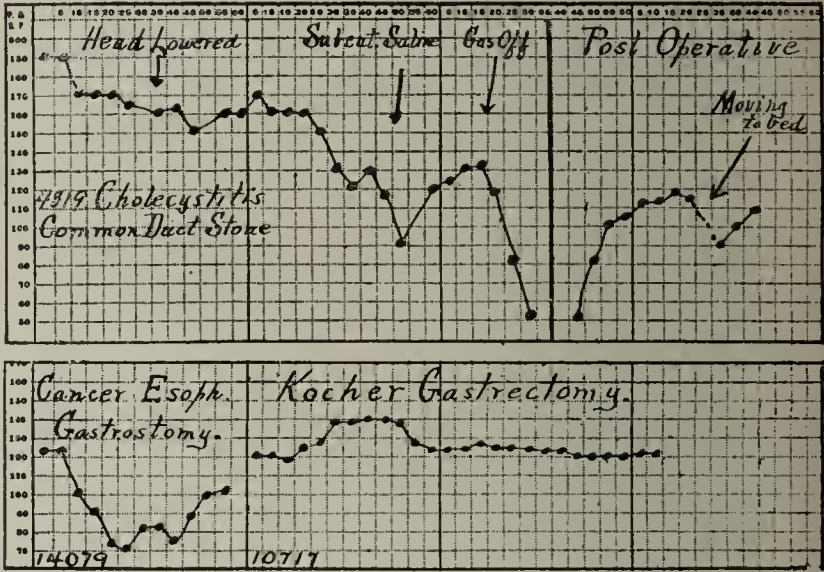


Chart 4.—Blood pressure changes in choledocostomy with shock, in gastrectomy and in pylorotomy.

When appendicitis was complicated by peritonitis (Table 3 and Chart 3) the sensitiveness to anesthetics as well as to peritoneal manipulations was increased 50 per cent.; that is, in the peritonitis series the number of patients showing a blood pressure response to these stimuli was increased in this proportion over the number showing a response in the uncomplicated series.

The reaction to opening the peritoneum was very slightly altered in character, but the manipulations pro-

TABLE 4.—RELATIVE FREQUENCY OF BLOOD PRESSURE RESPONSE AND FALL DURING OPERATIONS ON THE APPENDIX AND GALLBLADDER

Operation	Cases	Response, per Cent.	Fall in Pressure, per Cent.	Compensation With Closure, per Cent.
Appendectomy.....	50	70	36	46
Cholecystostomy.....	30	60	45	23
Cholecystectomy.....	15	65	60	14

duced marked lowering of the pressure in most cases. This fall was more marked under ether than in the cases in which gas was used for anesthesia. The recovery incident to suspension of manipulations and occurring during closure of the wound was materially diminished. A rally was noted in a proportion of but one to five cases as compared with the uncomplicated series.

OPERATIONS ON THE GALLBLADDER

In general, the blood pressure changes during gallbladder operations resembled those occurring during the operations on the appendix (Table 4).

The manipulations in the upper quadrant produced a more frequent fall in pressure than those made in the lower portion of the abdomen. For example, in uncomplicated appendicitis, the manipulations incident to removal of the appendix brought out a blood pressure change in 70 per cent. of the cases, with a fall in the pressure in 36 per cent. With cholecystostomy the response occurred in 60 per cent., with a fall in 45 per cent. of the cases. Cholecystectomy was associated with

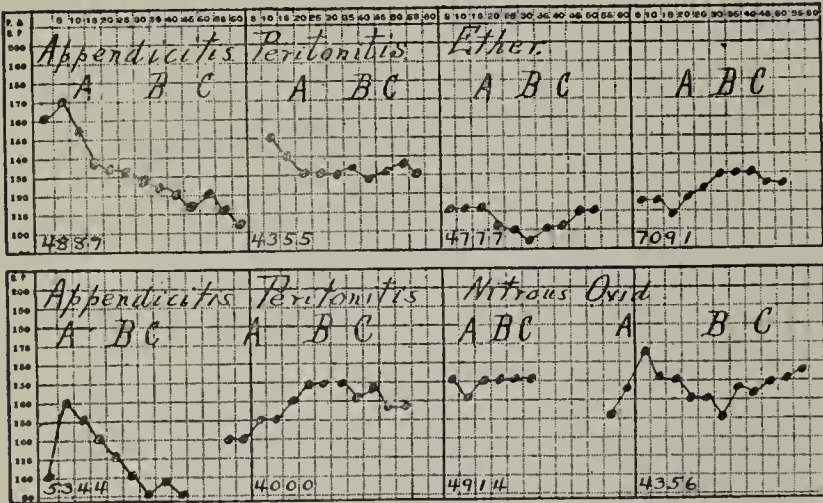


Chart 3.—Blood pressure changes during operations for appendicitis and peritonitis: A, peritoneum open; B, appendix out; C, drains in place; closure begun.

thirty-five of the fifty cases. There was a rise in eight of the gas and in five of the ether group, and a fall in eight gas and in fourteen ether cases.

Similarly, there was a pronounced effect from manipulations incident to the delivery of the appendix (packing, traction, etc.). During the closure of the wound, a change in pressure occurred in thirteen gas and eighteen ether cases. In five gas cases there was a rise in pressure at this time, which compensated for a

a response in 65 per cent of the cases, and in 60 per cent. this change was a fall in pressure. In two cases in which an impacted stone was removed from the common duct, the pressure was greatly affected by the manipulations.

The combination of oozing, difficult manipulations and long standing infection led to shock in the case of a jaundiced woman with a common duct stone covered in by adhesions between the omentum, gallbladder and neighboring viscera (Chart 4).

OPERATIONS ON THE STOMACH

Gastrostomy.—In two cases the Ssabanajew-Franck operation was performed on account of malignant obstruction. The blood pressure fell rapidly as the peritoneal cavity was opened (Chart 4). The fall may be explained in part by the escape of fluid from the peritoneal cavity, but the great change shows the sensitiveness of the starved and cachectic patient. Gastrostomy should be done under infiltration anesthesia before the patient has become exhausted by his disease.

Transfusion preliminary to operation no doubt would increase the patient's resistance to the effect of the manipulations.

Pylorotomy for benign or malignant stenosis was done four times. In three the Kocher method was used, and in the fourth the Polya.

TABLE 5.—COMPARISON OF BLOOD PRESSURE CHANGES DURING APPENDECTOMY AND HYSTERECTOMY

Operation	Cases	Opening Peritoneum		Manipulations		Compensation With Closure, per Cent.
		Response, per Cent.	Fall, per Cent.	Response, per Cent.	Fall, per Cent.	
Appendectomy.....	50	70	44	70	36	46
Hysterectomy.....	32	60	47	70	35	7

Pyloroplasty.—In four cases the Finney operation was performed. There was little or no change in the blood pressure, during this operation.

Gastro-Enterostomy.—The posterior operation was done eight times, and the anterior once in the series. There was some reaction as the stomach and jejunum were isolated and brought up for suture. In the ulcer cases this was slight, but in a cancer case the fall was considerable.

HYSTERECTOMY

In spite of the fact that the operation requires a longer time for its completion and that the organ removed is so much larger, hysterectomy gave rise to blood pressure changes almost the same as those noted in appendectomy. The hysterectomy patients showed a more frequent fall in pressure as the peritoneal cavity was opened, but practically no difference in the response to manipulations. On the other hand, after hysterectomy, there was very little tendency for a compensatory change in the blood pressure to take place during closure (Table 5).

When the operation was performed for the cure of inflammatory disease, the relations were more marked than in the cases of tumor. The varying effects of operation for myoma, for inflammatory disease and for early cancer are shown in Chart 5. In one case, cholecystostomy was done after the uterus had been removed. There had been a fall in pressure during the ligation of the vessels and covering in of the raw area of peritoneum, from which the patient had rallied. The uterus was removed in thirty-five minutes; the ligations

and the peritoneal suture required twenty minutes. When the second incision to expose the gallbladder was made, at sixty minutes, the pressure fell and continued to fall during the fifty minutes required to complete the operation. The effect of the additional trauma of the upper quadrant manipulation shows the cumulative increase in sensitiveness of the vasomotor system during a severe operation (Chart 5).

During operation for salpingitis and for the removal of ovarian cysts, the blood pressure followed closely the series of changes noted during hysterectomy. Acute inflammatory disease increased the sensitiveness of the patient to all manipulations.

When vaginal and abdominal operations were combined, as, for example, repair of a lacerated perineum with uterine suspension, there was a frequent fall in

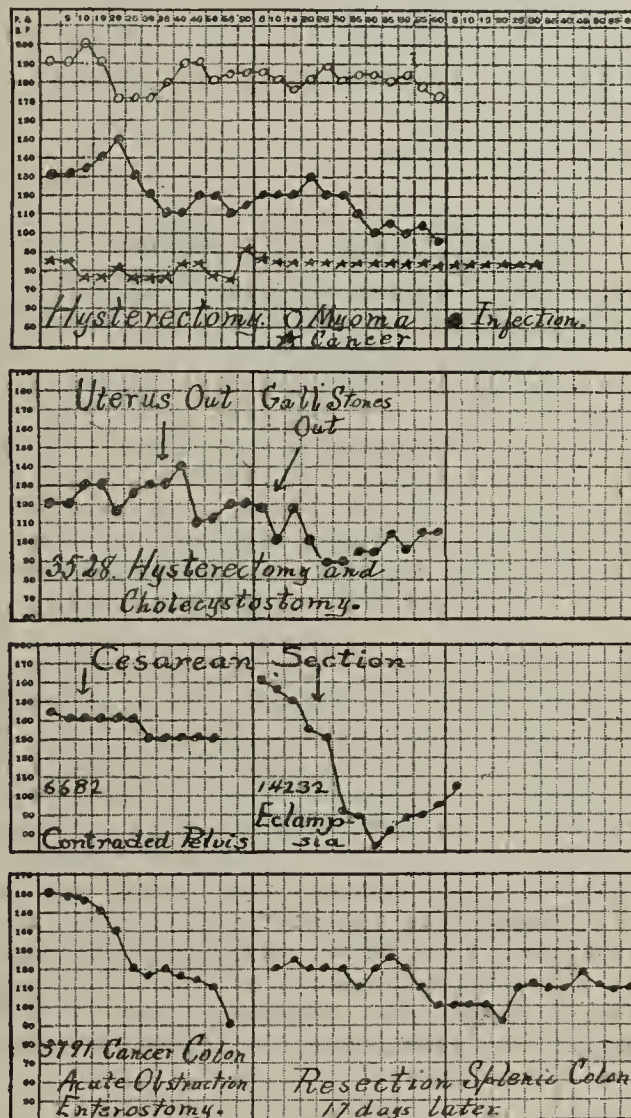


Chart 5.—Blood pressure changes in hysterectomy, in hysterectomy with cholecystostomy, in cesarean section and in cancer of the colon.

pressure after the patient was changed from the lithotomy to the Trendelenburg position.

Cesarean section performed because of contracted pelvis was done without any great change in the pressure; but when the operation was required because of eclampsia, the fall in pressure as the uterus was emptied was a great one (Chart 5).

RESECTION OF THE COLON

When this operation is performed for the removal of carcinoma of the colon, the value of the two stage procedure is generally admitted. Under any circumstances the excision of so important an organ with the necessary manipulation of vessels and nerves is associated with considerable change in the blood pressure. When the patient comes to the surgeon already debilitated by a malignant tumor, added to in many cases by

intestinal obstruction of varying degrees of completeness, the reaction to operation, as shown by the blood pressure, is greatly intensified.

Many of the cancers of the colon belong to a group of tumors in which the local growth is extensive, but in which metastasis occurs late. These secondary growths are arrested for a considerable time in the adjacent lymphatic glands. For this reason a wide local excision, if it can be done successfully, offers an unusually good chance for cure of the patient. In this group of cases an acute intestinal obstruction is often the first symptom. At the operation required by the obstruction the tumor can be explored, but its removal should never be attempted. Enterostomy well above the seat of obstruction and on the opposite side of the abdomen should be done as a preliminary step. Almost always the blood pressure falls as the tension is relieved by the enterostomy (Chart 5). The fall persists for several hours and is a warning against prolongation of the operation.

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ABSTRACT OF DISCUSSION

DR. BERTRAM M. BERNHEIM, Baltimore: This paper illustrates once more the extreme advisability of surgeons taking advantage of clinical aids of known worth. Physicians, generally, have long emphasized the value of blood pressure readings, but surgeons have neglected their opportunities. They pay too much attention to new operations. It must be apparent to even the most skeptical that blood pressure readings, properly made, during the course of an operation, offer a factor of safety second to none and only too often sorely needed. Dr. McGlannan has only scratched the surface. However, his charts illustrate the practical observations of the anesthetist during the course of operation. Would it not, perhaps, be possible by means of blood pressure studies to determine the psychologic time for operation in certain states, such as, for example, exophthalmic goiter, much in the way that basal metabolism studies are supposed to do now? Would it not be possible, by intensive blood pressure studies, to differentiate between certain states of shock, such as, for example, an intra-abdominal hemorrhage and a peritonitis of unknown origin? I have devoted myself to studies of this character for many years and have always used the blood pressure apparatus. I realize now that I have not reaped the benefit from this diagnostic means that I should have, merely because there was little or no correlation between blood pressure findings in hemorrhage and blood pressure findings in surgical conditions in general.

Roentgen-Ray Treatment of Detachment of Retina and Trauma of the Eye.—E. Vigano, chief of the radiotherapy department of the public hospital at Milan, published in the *Journal de radiologie*, May, 1920, p. 213, an account of his favorable experiences in fifty-nine cases of this kind. He never noted any untoward objective local reaction, and the patients all said they had been relieved by the applications of the roentgen rays. They favor the resolution of cicatricial adhesions and resorption of hemorrhagic effusions and inflammatory exudates and infiltration, and they act on detachment of the retina. In a case of the latter in a man of 69, the retina was almost totally detached and the radiotherapy was begun the eleventh day. By the sixth application vision was much improved, allowing reading, and this improvement has persisted over a year to date. This treatment was supplemented by a periodic course of iodine. Vigano found that the roentgen rays were always borne without harm by the tissues of the eyeball and of the orbit when applied in proper doses, outside of periods of acute inflammation and in the absence of foreign bodies in the eye. He adds that this treatment was not applied until after the failure of the usual measures.

TROPICAL BRONCHOPULMONARY MYCOSIS

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Under the heading bronchopulmonary mycosis may be grouped a host of respiratory affections due to a great variety of fungi and found with great frequency

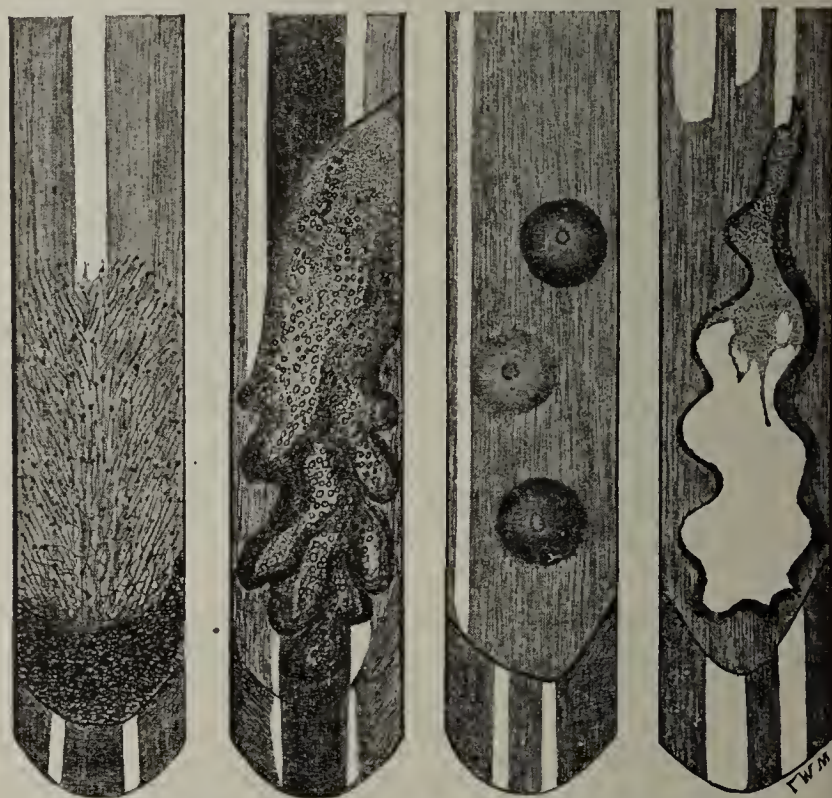


Fig. 1.—Tropical fungi recovered from lung and sputum, and grown on glucose agar.

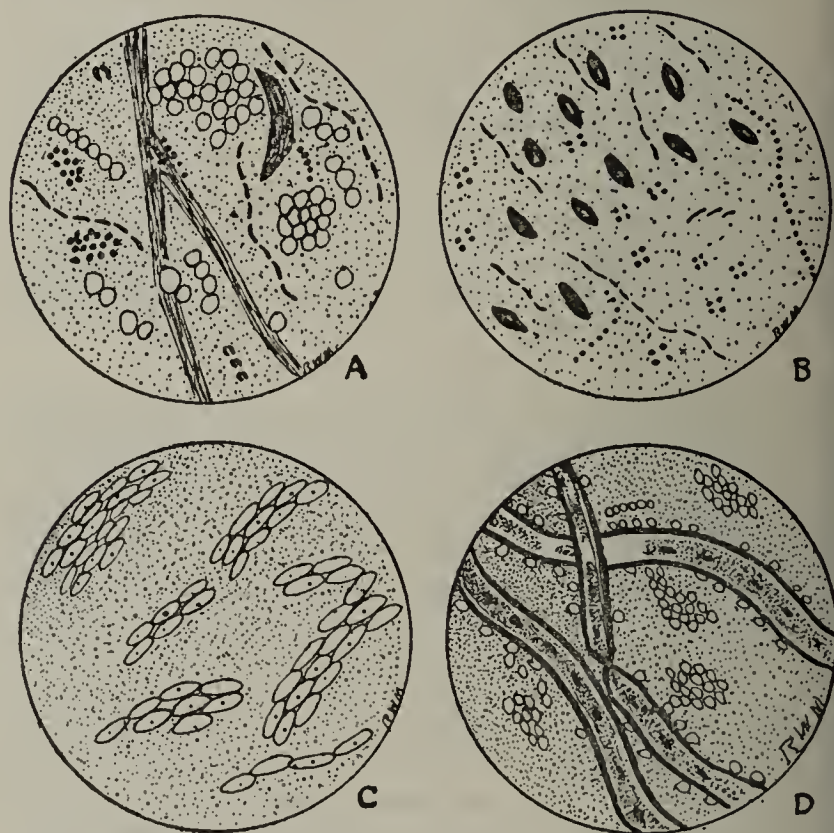


Fig. 2.—A, B, sputums in cases of bronchopulmonary mycosis; C, pure culture 3 days old grown on glucose agar (conidia only); D, glucose agar culture 10 days old (mycelia and conidia).

in the tropics, especially in those parts where the humidity, as well as the temperature, is high. Pioneer work in this line has been done by Castellani, and his detailed classification according to the many different sugar reactions stands as a monument to years of

research and scientific observation. The following group arrangement is the latest, but no doubt will be modified as the question of mycotic respiratory diseases is further studied and reported on.

GROUP 1.—*Monilia* persoon, 1797. *Oidium* Link, 1809. *Saccharomyces* Meyen, 1833. *Willia* Hansen, 1904. *Cryptococcus* Gilchrist and Stoker, 1896. *Coccidioides* Rixford and Gilchrist, 1898.

GROUP 2.—*Hemispora* Vuillemin, 1906.

GROUP 3.—*Nocardia* Toni and Trevison, 1899. *Cohnistrepthrix* Pinoy, 1911.

GROUP 4.—*Aspergillus*, 1729. *Sterigmatocystis* Cramer, 1869. *Penicillium* Link, 1908. *Mucor* Micheli, 1729. *Rhizormucor* Lucet and Costantin, 1900. *Lichthiemia* Vuillemin, 1904.

GROUP 5.—*Sporotrichum* Link, 1809.

In the city of Bangkok, where the weekly deaths reported as due to tuberculosis average from 15 to 33 per cent. of the total deaths reported, it is interesting to note that of a series of cases numbering one hundred in all, presenting themselves at one of the local hospitals for treatment for tuberculosis of the lungs, 5 per cent. proved to be mycotic, 23 per cent. spirochete infections, and the remainder classified as tuberculosis, although in only 10 per cent. could the tubercle bacillus be demonstrated.

The pathology of the disease has not to my knowledge been fully reported on, and the data given here,

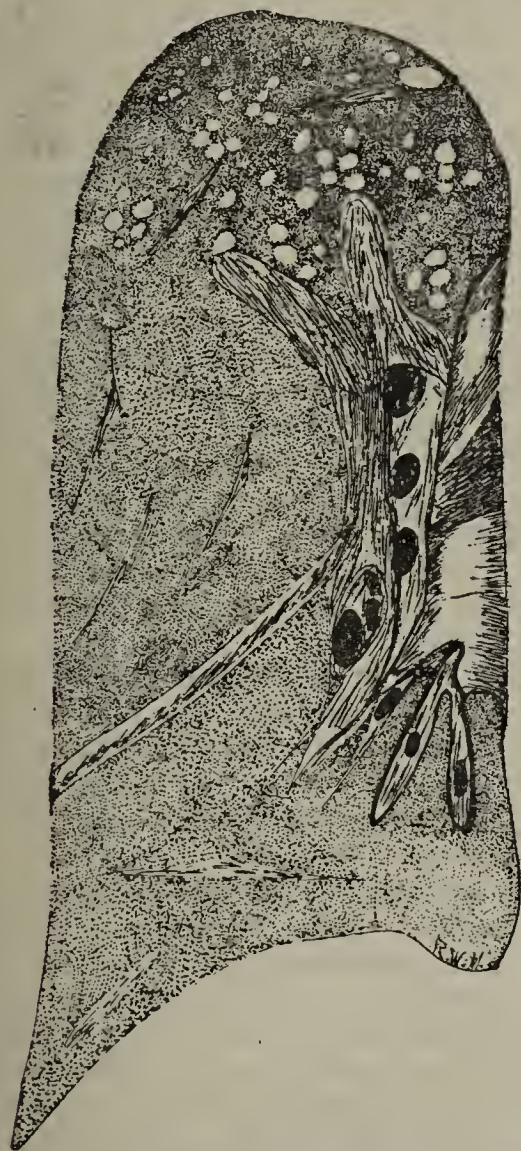


Fig. 3.—Pulmonary moniliasis: small "tubercles" in upper lobe from which pure culture monilia were obtained; no tubercle bacilli were found.

although by no means complete, are the result of personal observation in the postmortem room. The cases observed have come to necropsy as the result of some intercurrent medical or other accident. Cultures of many lungs have been taken in order to obtain a pathologic picture the result of a pure mycotic infection. From

the illustrations it will be seen that on cut sections the lungs resemble very much a tubercle infection. The lung from which a pure culture was obtained could with difficulty be cut; the small "tubercles," which in reality are mycotic tumors, stand out as very prominent white masses. Although the blood supply is completely cut

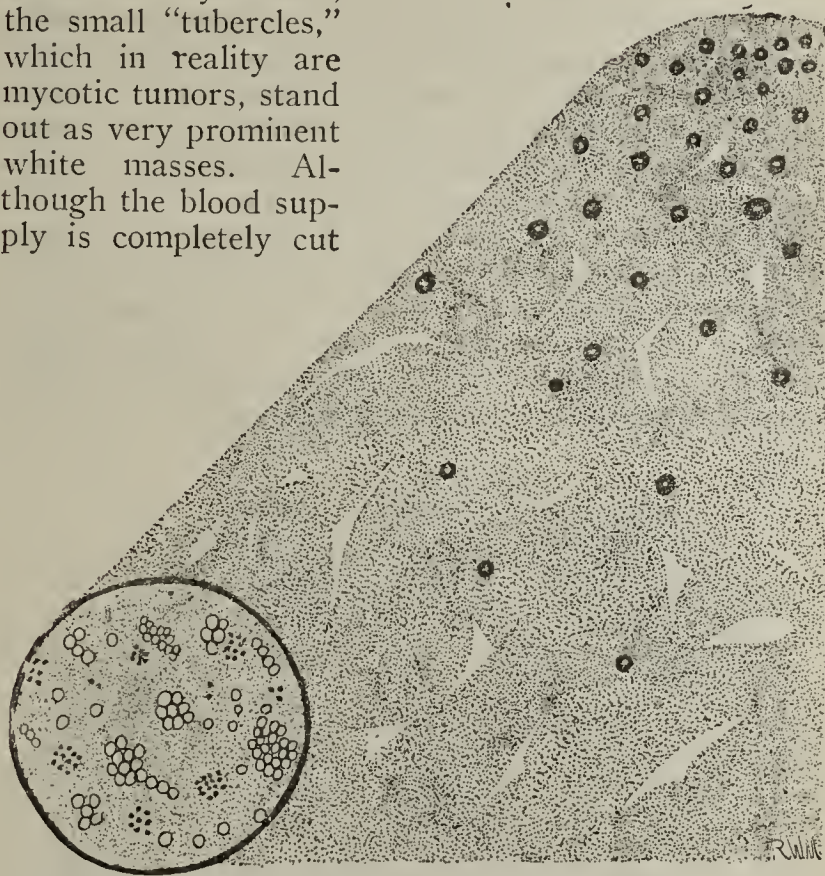


Fig. 4.—*Monilia* tumor masses in upper lobe from which a monilia in symbiosis with a staphylococcus was obtained.

off from these filbert-like growths, yet there seems to be no necrosis, and it is possible that the surrounding tissues indirectly supply nourishment. The small growths can be teased apart and seem to be made up of old connective tissue. As many different specimens have been examined without finding any lungs in which necrosis has taken place; it would seem that the fungi, at least those found in Siam, have in the beginning a stimulating effect on the tissue cells. Whether or not there is later on a degeneration with the production of local abscess with its other manifestations I am unable to say; but in view of the fact that mixed infections of old standing present on postmortem examination the same firm connective tissue tumors, it is doubtful whether these growths, except under the most adverse conditions, break down.

A specific determination of the different fungi recovered cannot be arrived at unless the various sugars are at hand to carry out the necessary reactions; our laboratory at present is not so extensively stocked, and for this purpose cultures are being sent to London. From a clinical point of view it would seem to make not a great deal of difference, if any at all, as to the species of the symptom producing monilia; and, for practical purposes, cases may be divided into acute and chronic.

The acute cases as well as the chronic may be mild or severe, but the average case presents signs and symptoms not at all unlike those of an acute bronchitis. There is some fever, irritating cough, expectoration of large amounts of mucous or mucopurulent sputum and a general sensation of illness. The chronic cases, on the other hand, are to be differentiated from tuberculosis and spirochetosis. The symptomatology of an average chronic mycotic lung infection produces all of the signs and symptoms of a tubercle infection even to true hemoptysis, which would tend to show that these mycotic tumors do, under favorable conditions, break

down and degenerate. But in these cases the infection is as a rule mixed and not uncommonly associated with a true tuberculosis, so that it is impossible to come to a definite conclusion on this point.

A diagnosis can be made only after laboratory examinations; and, as stated above, the chronic cases must be differentiated from tuberculosis. This should be done by animal inoculation if sputum examination is negative. From bronchopulmonary spirochetosis, direct sputum examination will decide at once.

The prognosis and treatment of the chronic cases is not unlike that in tuberculosis. There is no specific, although potassium iodid is advised. It is possible that the good results reported are due to the "dissolving" effect of the iodid on the mycotic tumors, hastening their disorganization and final absorption.

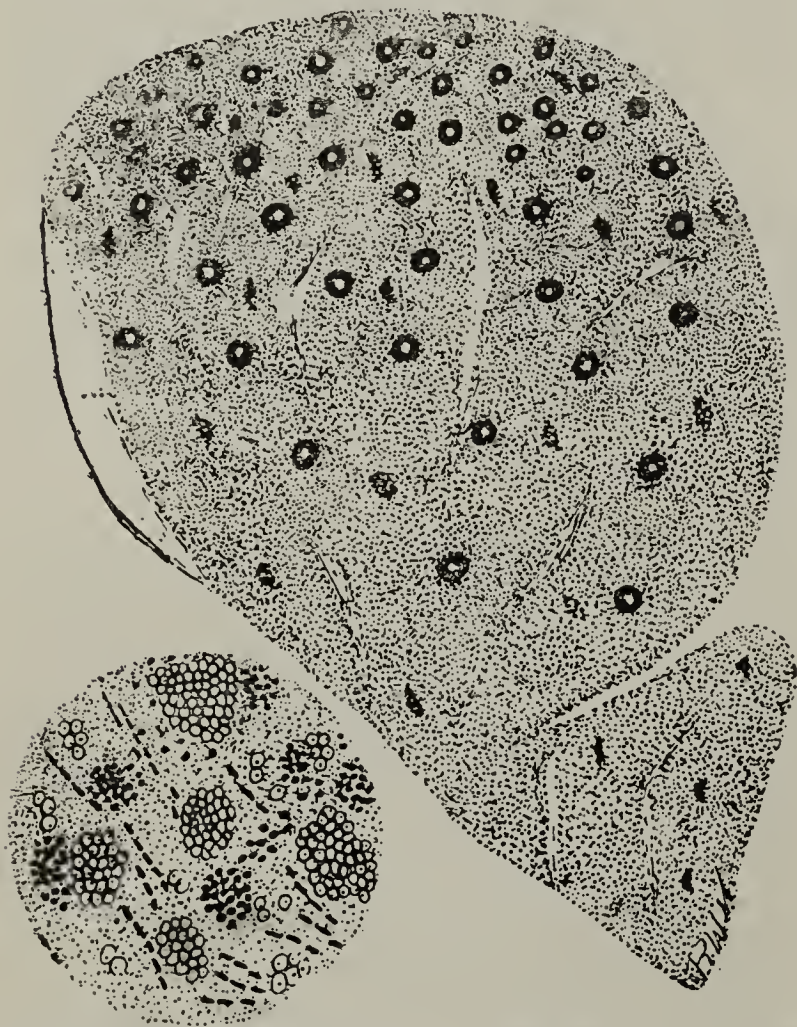


Fig. 5.—Monilia tumor masses in case of bronchopulmonary mycosis; culture shows mixed infection.

From a public health point of view the only difference between tuberculosis of the lungs and bronchopulmonary mycosis is one of degree. They are both contracted in the same way. Milk-borne tuberculosis is practically unknown here, as very little milk is used and that not raw. They are both incapacitating, and are both preventable.

It is not improbable that many cases of supposed tuberculosis of the lungs, especially in some of the Southern states of the United States, would on careful bacterial examination prove to be cases of bronchopulmonary mycosis.

Tuberculosis Schemes.—I do not mean to infer that elaborate and costly schemes for the treatment of tuberculosis are not necessary, but I certainly do wish to imply that they will not meet with a full measure of success unless they are put into really competent hands. The present tendency appears to be to spend money lavishly on tuberculosis schemes, but to do little to ensure that their conduct is entrusted to highly skilled workers.—H. Gauvain, *Brit. J. Tuberc.* 15:3, 1921.

WASKIA INTESTINALIS: ITS CULTIVATION AND CYST FORMATION*

MARY JANE HOGUE, PH.D.

BALTIMORE

The small flagellate *Waskia intestinalis* was first described by Wenyon and O'Connor¹ in 1917. They found it in the stools of two patients in an army hospital in Alexandria, Egypt. They believed that the second patient became infected from the first patient, as the beds of the two patients were close together in the same ward. Both patients were admitted as carriers of *Endameba histolytica*. *Waskia* appeared in the first case a week after admission to the hospital, and withstood the injection of 12 grains of emetin. As the *Waskia* infection was disappearing, the patient developed a chilomastix infection. The second patient was being treated for *Endameba histolytica*, which was fast disappearing, when *Waskia* suddenly appeared in the stools three weeks after the patient had been admitted to the hospital. Both patients showed tendencies toward constipation and were treated with repeated doses of salts. Wenyon and O'Connor conclude that there is no evidence that the flagellate is pathogenic.

Kofoed, Kornhauser, and Plate² in 1919 reported *Waskia intestinalis* as occurring in seven patients in Debarkation Hospital No. 3 in New York City. Here it appeared in liquid diarrhetic stools of patients under treatment. Three of the infections were from overseas men, and four from men in home service. Five of these cases were from the Southern states and two from New England. All were accompanied by multiple infections of from three to six other parasitic species.

Castellani and Chalmers³ classify *Waskia intestinalis* under the order Cercomonadidae, family Tetramitidae, subfamily Embadomonadinae, genus Embadomonas.

Since these papers, *Waskia* has not been further reported. Public health officers have been much concerned with the possible spread of diseases brought over by returned soldiers. The following case of *Waskia intestinalis* infestation indicates that new protozoan diseases may be spreading here among the civilian population.

April 7, Dr. Milton Linthicum sent to this laboratory the stool of a patient who had a history of many years of diarrhea. She was known to have a trichomonas infection. She had never been out of the United States and had spent most of her time in Pennsylvania and Maryland.

From this specimen I inoculated several tubes of different kinds of mediums by means of a sterile platinum loop. The tubes were incubated at 35 C. In a few days, *Waskia intestinalis* and its cysts appeared in large numbers. In one tube I had a pure culture of *Waskia*, i. e., no other protozoa were growing with it, though there were numerous bacteria present from the intestine. This culture has been kept under continuous observation for over eight weeks. Transplants into new culture tubes are made every other day. The

* From the Department of Medical Zoology, School of Hygiene and Public Health, Johns Hopkins University.

1. Wenyon, C. M., and O'Connor, F. W.: Human Intestinal Protozoa in the Near East, London, Wellcome Bureau of Scientific Research, 1917.

2. Kofoed, C. A.; Kornhauser, S. I., and Plate, J. T.: Intestinal Parasites in Overseas and Home Service Troops of the U. S. Army, J. A. M. A. 72: 1721-1724 (June 14) 1919.

3. Castellani and Chalmers; Manual of Tropical Medicine, 1919.

flagellates are still (June 6) in a normal, active condition.

This species seems to correspond with *Waskia intestinalis* as described by Wenyon and O'Connor. It is a small, active flagellate (Fig. 1), measuring in stained preparations from 5.6 to 7.2 microns in length and from 4 to 4.8 microns in width. There is a rather large cytostome and two anterior flagella. The one coming from the anterior end of the animal is long and slender, and is used for locomotion. The second flagellum comes from the cytostome and is shorter and much thicker. It seems to be used in

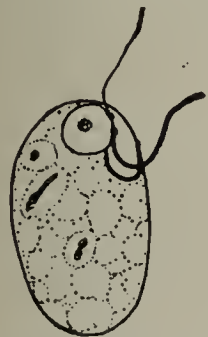


Fig. 1.—*Waskia intestinalis*, showing anterior nucleus and two anterior flagella, one much thicker than the other and coming out through the cytostome. Camera lucida drawing 1.9 mm. objective, 12.5 ocular.



Fig. 2.—A cyst of *Waskia intestinalis*. Camera lucida drawing, 1.9 mm. objective, 12.5 ocular.

getting food. The cytoplasm is mostly much vacuolated and contains many bacteria in food vacuoles.

In stained preparations the nucleus is seen in the extreme anterior region. It has a distinct membrane, with usually a small central karyosome. There are two blepharoplasts from which arise two flagella.

The cysts are pear shaped (Fig. 2), measuring from 4.8 to 7.2 microns in length and from 4 to 4.8 microns in width. They appear as small, light yellow, refractive bodies in the culture medium. Wenyon and O'Connor assumed that these cysts belong to *Waskia* because they found them only in the feces where *Waskia* was present. The appearance of these cysts in cultures where *Waskia* is the only organism growing, except the bacteria, is proof of their identity. As additional proof, some days there would be large numbers of *Waskia* in the cultures and on the following day the number would be greatly reduced and the number of cysts greatly increased. This seems to be the first time that cysts have been obtained from intestinal flagellates in culture, and proves beyond doubt that these cysts do belong to the flagellate *Waskia intestinalis*.

CULTURE MEDIUMS

Waskia intestinalis has been cultivated on three different liquid mediums: ovomucoid, Locke-egg, and an ox bile salt medium, and also on Boeck's medium of Locke with a few drops of sheep or human serum.

Ovomucoid medium is thus made: The white of one hen's egg is thoroughly shaken up with glass beads. To this 100 c.c. of 0.7 per cent. sodium chlorid solution is added. This is cooked for half an hour over a hot water bath; all the time the medium in the flask must be kept in constant motion by shaking. It is then filtered through cotton with a suction pump and about 6 c.c. of the filtrate put into small test tubes. To these sometimes are added a loop full of the yolk of the egg. The tubes are then autoclaved for twenty minutes under 15 pounds of pressure.

Locke-egg medium is made with one hen's egg thoroughly shaken up with glass beads. To this 200

c.c. of Locke solution is added. The Locke is made of sodium chlorid, 0.9 gm.; calcium chlorid, 0.024 gm.; potassium chlorid, 0.042 gm.; sodium bicarbonate, 0.02 gm., and sometimes 0.25 gm. of dextrose was added. This later did not seem to affect the growth of the organisms. The Locke and egg are cooked for fifteen minutes over a hot water bath and then filtered, tubed and autoclaved as the ovomucoid medium.

The ox bile salt medium contained 1 gm. of ox bile salts; 0.4 gm. of peptone, and 100 c.c. of 0.7 per cent. sodium chlorid solution. This was warmed to facilitate the solution of the salts and peptone. It was then tubed and autoclaved as the other mediums. Before using this medium, three or four drops of sheep or human serum⁴ were usually added. On this medium *Waskia* divided most rapidly, but it did not live as long as on the other two mediums. On this ox bile salt medium there would be large numbers of flagellates on the second day, and these would usually disappear on the third day. A few cysts would be found, but there were not as many of these as there were organisms on the previous day, showing that many of the animals had disintegrated instead of encysting.

On the Locke-egg ovomucoid, *Waskia* lived much longer. One culture lived for seventeen days on ovomucoid. On the Locke-egg medium they lived from three to ten days. To both these mediums I sometimes added three or four drops of sheep serum or human serum. This often seemed to increase the rate of division and also to shorten the life of the culture, owing no doubt to the increased accumulation of waste products. In both the ovomucoid and in the Locke egg cysts were found. These would begin appearing about the fourth day after inoculation. Only a few cysts were found in the ox bile medium, as already stated. The Locke-egg is especially to be recommended, as the protozoa multiply rapidly and seem normal on it without the addition of serum, which is often difficult to obtain.

NERVOUS SYMPTOMS IN EX-SOLDIERS

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Of the disabled soldiers who have been the storm center in Washington in regard to general policies as to their treatment and management, a very important group consists of the ex-service men suffering from nervous symptoms, which, occurring alone, constitute a psychoneurosis. However, these nervous symptoms are not strictly confined to psychoneurotic cases. Nervous symptoms occur frequently in men otherwise disabled. They are occasionally found, as superimposed symptoms, in those cases which were grouped in the army under the neuropsychiatric service; namely, the epilepsies, the feeble-mindedness, frank or incipient insanity, the organic nervous disorders, psychopathic states and certain other types. Nervous symptoms also occur in medical cases, and at times it is difficult to determine the true nature of the conditions found. A medical officer of the Public Health Service recently stated that, of the patients sent to the hospital for observation for tuberculosis, many

4. Mrs. Hogan of the Public Health Laboratories kindly gave me the serum from the Wassermann tests.

were not tuberculous but were suffering from various neurasthenic symptoms.

In nervous symptoms in ex-soldiers, therefore, either when these symptoms are expressed as a frank psychoneurosis, or when they are coexistent with some other disability, we have a problem of considerable importance. Such cases are coming under observation in hospitals, in clinics, and as private patients, all over the country. They are being cared for by physicians in the government service, and also by physicians in private practice. It is difficult to estimate their exact number, but for various reasons they constitute one of the most important problems concerning ex-service men with which the government has to deal.

While the general responsibility for the care of these ex-soldiers rests with various government agencies, the greatest responsibility for their treatment rests with the medical profession. Is it possible for physicians to formulate a general policy regarding them which will be useful not only for their actual treatment, but also for their general welfare in the community? Will the facts which we have learned about them during the war be of value to us now in the general policy regarding their management? They are applying to physicians not only for treatment, but also in respect to vocational training and compensation.

Much that we learned about these patients during the war was not entirely new, but many of the theories which we had entertained before, as to causes and treatment, had ample opportunity for trial. As a result we came out of the war with a definite policy regarding psychoneurotic cases.

The treatment of these patients was under a separate section of the Medical Department of the Army—the Neuropsychiatric Section. The policies which were established by this section deserve serious attention. The officers in charge of it had the advantage of being able to profit by the experiences of the mistakes of our allies, before we entered the war.

If the lessons learned in the war about these cases are to help us in civil life, what are the main points to be kept in mind? Doubtless many of the readers of *THE JOURNAL* are already familiar with these facts, but they may be briefly reviewed.

LESSONS LEARNED IN THE WAR

In the early part of the war, the Allies had to deal with many nervous men. These patients complained of neurasthenic symptoms, hysterical conditions, such as palsies, tremors, functional hemiplegias, functional deafness, blindness and stammering. They suffered from anxiety states, fears, amnesias, in short, all those conditions which constitute psychoneurotic types. The hysterical cases were especially frequent.

It was thought at first that all these men must be returned at once to the rear; they must get away from the scene of battle and be given rest, to be rehabilitated. This was something which took many weeks. The results of the treatment were often uncertain, and there were many relapses and failures. The civil life agencies that tried to help from sympathetic motives were not more successful. In fact, their efforts, in some instances, seemed actually harmful.

It was fully demonstrated that this general policy was good neither for the army nor for the soldier, so far as his recovery went. It was learned by the

Allies, before we entered the war, that the worst thing that could be done for a man beginning to break nervously was to evacuate him to the rear to a base hospital. By these measures his symptoms became fixed. Suggestion played an extremely important rôle.

It was found that if these men were given early treatment with their organization, a short rest, reassurance that their nervous state was not serious, and possibly treatment which utilized suggestion as a remedy, they stayed with their organizations, and their nervous symptoms subsided. So, the problem of the nervous soldier which at one time was a serious one, not only from the standpoint of morale and hospital beds but also from the standpoint of actual fighting men, was satisfactorily met.

Full advantage of this fact was taken by the medical department of the American army. It is true that before the system could be fully put into effect, many psychoneurotics did get back to base hospitals, and the same thing happened to them as had happened with the Allies—their condition became chronic. This was during the Chateau Thierry drive. From that time on, special medical officers treated these cases at once in field hospitals and in small adjunct hospitals near the front. The results were excellent. The nervous men were kept with their organization, and as a general rule, instead of developing chronic symptoms, they recovered.

It was found necessary to have medical officers especially assigned to look after these cases, and to have those who either had had experience in civil life in this specialty, or who had been given instructions since entering the service. Because of their special training they recognized these cases promptly, and exhaustive examinations were not necessary. Discussions as to interpretation of symptoms were avoided. This was distinctly to the patients' advantage, because discussions and delay suggested to them that their malady was serious.

Of course, there were a certain number of failures. Certain cases had to be hospitalized; but the general policy was in the right direction, and solved a difficult problem.

APPLICATION TO PRESENT CONDITION

Cannot we utilize this knowledge in the present civil life situation in respect to the psychoneurotics? The conditions are not the same, but there are many parallel features.

These ex-soldiers, now in civil life, are in somewhat the same condition as they were in the army. In the army they had to start life afresh, and now that they are out in civil life, many have to take up a new occupation, and they have to start from the beginning a second time. The same type of men—in many instances the same men—that developed nervousness in the army are developing nervous symptoms now, during this readjustment time, in civil life. These symptoms are not necessarily more serious than they were in the army. The men need assistance and intelligent medical advice. Can the general principles which were successful in the army be put into effect now?

One thing seems to be clear. These nervous men should not be separated from their homes and sent to hospitals for observation unless the indications for it are definite. They do not generally require observation in hospitals. If sent to hospitals the same thing is likely to happen as happened to the men who were

ent from their organizations to base hospitals during the war.

In the army, to meet this need, as has been said, advance stations were instituted in the field hospitals. What is there comparable to this in civil life? Out-patient clinics are an agency to be considered. Can special clinics be established for these men, where they can receive treatment, where they need not leave their work unless their symptoms necessitate it, and where they need not disorganize their home to go to a hospital?

To establish such clinics is perhaps a difficult undertaking in some communities. Of course, some already exist in connection with government agencies doing this work. Such clinics have long existed in many cities, such as the Neurological Institute and Vanderbilt Clinic in New York, the Johns Hopkins Hospital Neurological Clinic in Baltimore and the Psychopathic Hospital in Boston. But in the remote country districts and in other communities these clinics are not available. Perhaps arrangements could be made by which the patient, even by traveling some distance, could visit a clinic twice a week. This would not be entirely satisfactory, but it would be better than hospitalization.

If it is advisable to establish such clinics, they should be under the control of the government agencies caring for ex-service men. Probably in many communities the services of physicians on a part time basis could be obtained. Such physicians should have special knowledge of the problems of these cases, and would have to have ample time for each patient. Needless to say, a uniform policy as to treatment, records and recommendations should be decided on by a central bureau.

By some such arrangements as this it seems reasonable to believe that a very considerable number of these men with beginning nervous symptoms, perplexed as to what to do, could receive early diagnosis, treatment and advice. Many of them could probably remain at their work, at least working part of the time. They do not require prolonged rehabilitation or training, and the development of protracted symptoms might often be avoided. Of course, such clinics should have accessories, such as hydrotherapy, as are beneficial for these cases.

The question of vocational training of psychoneurotics is another factor. What advice should physicians give in regard to vocational training for ex-service men with neurotic symptoms? These cases, of course, must be decided individually, but some general facts may be kept in mind. We know that vocational training in most cases means certain changes in a man's living arrangements. It means regular and systematic study, and application to some task, something which should be continued for a number of weeks or months, if benefit is to result. Now, this continuous application is where psychoneurotics with acute symptoms have difficulty. They fail in sustained effort, and are fatigable. This is one reason why they experienced difficulty in the army. The same difficulties, therefore, are encountered again in organized training. It should also be remembered that they are primarily patients; they are not in the same class with the man who lost an arm or a leg, and who needs some special education before he can go back to his work. It is not intended to suggest that vocational training is not advisable for psychoneurotic

cases. In many instances, such training may be the solution of the problem and may be the means of the man's getting on in life in a way which he has not been able to do before. But every case should be considered individually. With some cases it may be possible to work out a program of part-time training, and for cases that need it, a special training center where a modified schedule can be put into effect might be of great advantage.

The question of compensation is still another consideration. What should be the policy about compensation for psychoneurotic patients? The disability is a temporary one. Those who have studied this subject in England and Canada feel that permanent compensation, implying a permanent disability, should not be given. The method of reexamination and readjustment of compensation according to the condition of the patient has been suggested and put into practice.

Again, disabled men going to a hospital are entitled to full compensation. If by such a ruling psychoneurotic patients are encouraged to go to a hospital for treatment, the undesirable effects are evident.

With some patients the question of compensation seems to complicate treatment. If this could be settled in one way or another and dismissed from the patient's mind, treatment could then be undertaken without complicating factors. In such cases permanent compensation—a minimum which need not be further reduced—might be of advantage, in order to have the question settled.

These are questions which arise in determining compensation. They are mentioned here to illustrate an additional factor which the medical man must take into consideration in the management of these patients.

What clinical types of neuropsychiatric cases are being encountered by physicians throughout the country? Not all the cases are psychoneurotic although these probably constitute the majority.

A recent survey that I undertook on the request of the Hospitalization Committee appointed by the Secretary of the Treasury, possibly offers a fair basis for estimate. This survey took place in the U. S. Public Health Hospital, Perryville, Md., a hospital primarily for psychoneurotic cases, but one where other neuropsychiatric types are found, since patients are sent there for observation and diagnosis as well as for treatment.

Of fifty-one patients examined in detail at Perryville, six were found to be epileptics of different types, thirty were suffering from psychoneuroses, eight from mild psychoses, two from organic disease of the nervous system, two were medical cases, two were defective mentally, and there was but one who could be designated as a constitutional psychopath.

TYPICAL CASES

These cases were interesting from a number of standpoints:

EPILEPSIES

CASE 1.—A young man was apparently suffering from typical epileptic seizures. He gave an account of how this developed in the service. He has also had a gunshot wound, and as a result one leg had been amputated. His attacks were such that he required hospital treatment.

CASE 2.—A fine appearing young man of 22, was sent to the hospital for diagnosis. He had no idea, apparently, of what his condition was, but he described symptoms characteristic of epilepsy and had been seen to have frank seizures in the hospital. He said that he had been perfectly well before entering the service.

CASE 3.—A somewhat older man described attacks closely resembling epilepsy, which he said came on after the vessel he was on had been torpedoed, and he was exposed in the water for several hours. He apparently had seizures suggestive of epilepsy, but the longer one talked to him about his symptoms, the less clear this became. He had suffered from stuttering and loss of speech for a long period. This came and went. Besides these seizures he was extremely nervous, his hands and legs shook, and he felt very badly treated because his compensation was not as great as he thought it should be. In other words, this case is complicated. If the man has epilepsy at all, which is open to question, he certainly in addition has many neurotic symptoms. Many such cases were seen during the war.

PSYCHONEUROSES

CASE 4.—A man, aged about 30, was sent to the hospital for diagnosis because he was nervous, could not sleep and was irritable. He got along very well in the hospital for a time, but after he went to Washington in regard to his compensation he became much upset, began to stutter and stammer (as he had once previously many months ago) and showed an aggravation of symptoms. He felt that he was not being treated with proper consideration. In other words, he showed a marked emotional change, and in addition hysterical symptoms. He did not require hospital treatment, and if the matter of his compensation could have been settled one way or another, his symptoms probably would have subsided.

CASE 5.—A fine appearing man, aged 23, said that he was nervous, had bad dreams, was physically exhausted and could not keep on with his work. He was quite distressed about himself. He had had these symptoms overseas and had improved greatly, but his symptoms had returned. He was genuinely perplexed. He was willing to be advised in every respect, and probably in his case hospital treatment for a short time was of advantage, especially in reestablishing his reassurance.

CASE 6.—An Italian complained of trembling and weakness of his right arm and leg, and numbness up to the elbow and the knee. Physical examination detected no evidence of organic nervous disease. This condition had come on after he had done some lifting at the camp. He had not been overseas. He was better when discharged from the service, but had felt his symptoms returning and applied for treatment. His was obviously an hysterical state for which he required treatment, but not hospitalization.

CASE 7.—A man who worked as a clerk in civil life—a man nearly 40—had very acute symptoms of stuttering and stammering, especially when interviewed. He also trembled violently. He came to the hospital for diagnosis. His symptoms were worse when he interviewed physicians, a fact which he recognized himself. He did not require hospital treatment, and with proper reassurance he probably could start some work which did not require too great responsibility at first.

CASE 8.—A Pole had gone through the entire service very well and had not been nervous while in action. A year after his discharge from the army he had grown sleepless, worried, nervous and felt that he could not do his work. The cause of his trouble started after the death of his mother some months previously, and the death of his brother more recently. He required treatment and reassurance, but not in a hospital.

CASE 9.—A man had gone through the service very well and evidently had done good work. He had had no nervous symptoms while in the army. Recently he developed a compulsion neurosis in which he pressed his neck, resulting in unconsciousness occasionally. He required hospital treatment.

PSYCHOSES

CASE 10.—One young man was mildly depressed. He said he became confused and could not do his work. He blamed himself for numerous mistakes in his past life. He said he certainly was not worthy of treatment at the hands of the government, nor should he receive any compensation. He did not wish to come to the hospital, although he was quite amenable to advice. He was a mild manic-depressive case with depression, and required hospital treatment.

CASE 11.—A man about 40 years of age, of mild manner and pleasing appearance, was quite concerned because the gov-

ernment officials had not taken into consideration the numerous inventions which he had placed in their hands. He had a great deal of correspondence from government officials. He was paranoid, and required hospital care.

CASE 12.—A boy who apparently had done very well in the service was full of plans as to what he was going to do in the future: his trainings, trips to Washington, correspondence, and the question of marriage. Sometimes he was quite annoyed at his stay in the hospital; at other times pleased with it. This boy showed the overactivity elation and the flight of ideas of mild hypomanic cases. He required hospital care.

ORGANIC DISEASE OF NERVOUS SYSTEM

CASE 13.—One man complained of fatigability and exhaustion, and said that he was "weak from the waist down." He had remained in bed for some time before coming to the hospital. He had improved before admission and seemed quite well again. His physical signs were those of multiple sclerosis.

CASE 14.—A man complained of sleeplessness, headaches and drowsiness during the day, although he could not sleep at night. He gave a history of influenza many months previously, and later eye palsies and slight fever. He probably had lethargic encephalitis.

SIGNIFICANCE OF NERVOUS SYMPTOMS IN EX-SOLDIERS

It is interesting that, of the foregoing patients, practically all felt that they had been entirely well before entering the service. These men had been at the hospital for varying periods; some of them for several weeks, some for several months, and some had been but recently admitted. Some were receiving compensation, and with some compensation was pending.

The preceding remarks are not advanced for the purpose of advocating any one form of management of these cases, to the exclusion of others. They are made chiefly to call to the attention of the profession the importance and character of nervous symptoms in ex-soldiers. It would probably be well to keep such facts in mind in the examination of all ex-service men, irrespective of symptoms complained of. During the war a certain number of soldiers were admitted to general medical wards or special wards, complaining of symptoms suggesting cardiac disease, gastric disturbances, orthopedic disorders or nose and throat disease, when the true condition was found to be a psychoneurosis. Every hospital facility for the man who needs hospital treatment should be furnished; but it should also be kept in mind, as demonstrated during the war, that hospitalization is not the proper treatment for all patients.

This prevalence of nervous symptoms is not confined to this country. The same condition prevails in Europe; and it is probable that if complete data were available, psychoneurotic conditions would be found to have been an accompaniment and an aftermath of all wars.

The solution of these problems rests to a great extent with physicians. Interest in these cases, however, is not confined to the profession. Interest has been rightly manifested by the public, as shown through the public press for many months. But just as during the war relief organizations required that advice and guidance which can be given only as the result of medical experience, likewise at this time medical advice is necessary. A policy of treatment and management of these cases, decided on by the profession, will be shared alike by the medical and civilian relief agencies which have the responsibility for the care of ex-service men.

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SUTURING BLOOD VESSELS

WITH REPORT OF A SUTURED BRACHIAL ARTERY *

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In its early development, the suturing of blood vessels was a very spectacular branch of surgery. It seemed to give hope of many things. In the lower animals, kidneys were transplanted, or a leg of one dog could be attached to another dog, and the tissues would live. Transfusion of blood was done by the suture method. It was thought at one time that veins could be made to serve as conductors of the arterial current, and patients with impending gangrene of the extremities, due to arterial disease, anticipated complete relief by reversing the circulation. Obviously, the operation was applicable to mending an injured artery.

It was eventually found, however, that organs transplanted from one animal to another gradually ceased to function. The fine biologic differences between the host and the donor caused an atrophy of the parenchyma of the transplanted kidney, even though the technical result of suturing the blood vessels was perfect. Transfusion of blood is popularly done by mixing it with sodium citrate solution, or by collecting it in some receptacle and then quickly transfusing it. The citrate method is often followed by reactions and possesses no advantage over the direct method except that it is an easier technic. Transfusion by arterial suture is technically difficult; but direct transfusion can be readily done by a cannula, such as the Bernheim cannula, which exposes a much smaller portion of the artery and vein than would be necessary in suturing. It has been proved quite definitely that the vascular circulation of the extremities cannot be reversed in any real sense.¹

In the excision of tumors that are attached to a large artery in the axilla or in the groin, ligation of the artery is usually safe, because the tumor often has slowly occluded the vessel and in so doing has developed collateral circulation. There may be cases in which a tumor surrounds the artery without actually compressing it. Here arterial suturing would be indicated. As a result of the experience of the World War, many surgeons believe that in young men who have not lost much blood and whose blood pressure is normal, ligation of an injured artery will give satisfactory results.

So the field for suturing blood vessels has greatly contracted. There are, however, instances in which it is indicated as the preferable operation, or even as the only treatment that should be employed.

Collateral circulation develops much less readily in adults after the age of 35 than in the young. An arterial lesion that can be satisfactorily treated by simple ligation in a youth of 20, may result disastrously if ligation is performed in a patient of 40. There are certain locations in which injury to a large artery is particularly likely to be followed by gangrene. Ligation of the popliteal artery, for instance, will more probably cause gangrene than tying the femoral higher up. This, of course, is because of the arrangement of

the collateral vessels. The same condition appears to be true about the lower part of the brachial artery.

In some way there has been an impression that arterial suturing can only be done by a few operators of peculiar skill and that it should not be employed by the average "practical" surgeon. This is unfortunate because a technic that can only be used by the exceptional surgeon is not of much real value, and the art of suturing blood vessels may be acquired by any competent operator who is willing to spend some time in experimental work on the lower animals.

A technic for suturing blood vessels in which broad surfaces of vascular endothelium are approximated and held by a double mattress suture applied under uniform tension has been described elsewhere.² Since the description published in 1915, there has been no material change in this technic except the substitution of olive oil for petrolatum. Cubbins and Abt³ have pointed out that petrolatum, liquid petrolatum and lanolin are all irritating to the peritoneal endothelium, but that olive oil is apparently nonirritating. Unfortunately, olive oil has poor lubricating qualities, and it is necessary to boil the arterial needle and thread in petrolatum and to apply a small amount of petrolatum on the buttons of the suture staff in order to make the thread run smoothly and hold to the suture staff. The small amount of petrolatum on the thread is practically hidden from the lumen of the blood vessel by the method of applying a double mattress suture. The vascular endothelium of the artery is anointed with olive oil, which is nonirritating and is readily absorbed. Some experimental work on the use of olive oil in blood vessel suturing has been reported elsewhere.⁴

In the case herewith reported arterial suturing seemed to be indicated.

REPORT OF CASE

History.—J. F. S., man, aged 37, sustained a complete division of the brachial artery and a partial division of the median nerve just in front of the right elbow when the edge of a metal sheet, which fell from the top of a truck, struck him squarely in front of the elbow. Fortunately, his fellow-workmen applied prompt first aid treatment. The patient was brought to St. Elizabeth's Hospital April 6, 1920, about an hour after the accident and was immediately operated on.

Examination.—The tourniquet was very tight. There was a transverse wound just in front of the elbow joint. An incision was made at right angles to this wound and was carried above and below, thoroughly exposing the ends of the divided brachial artery. About one third of the median nerve had been cut. A serrefine was placed on the upper end of the brachial artery and the tourniquet was removed. The ends had retracted until they were an inch apart. The lower end bled very slightly. The division of the brachial artery was about 1½ inches above the origin of the ulnar and the radial arteries. The brachial vein was also severed. It could not be determined definitely whether the recurrent branches of the ulnar and the radial were injured; but from the very slight amount of bleeding from the distal end of the divided brachial artery, it seemed that collateral circulation was exceedingly feeble. This, with the fact that the patient was 37 years of age, indicated suturing the artery instead of ligation.

Operation.—The ends of the severed vein were tied. The lower end of the brachial artery was dissected and clamped with a serrefine. The injured portion of both ends was trimmed away with sharp scissors and the adventitia was

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

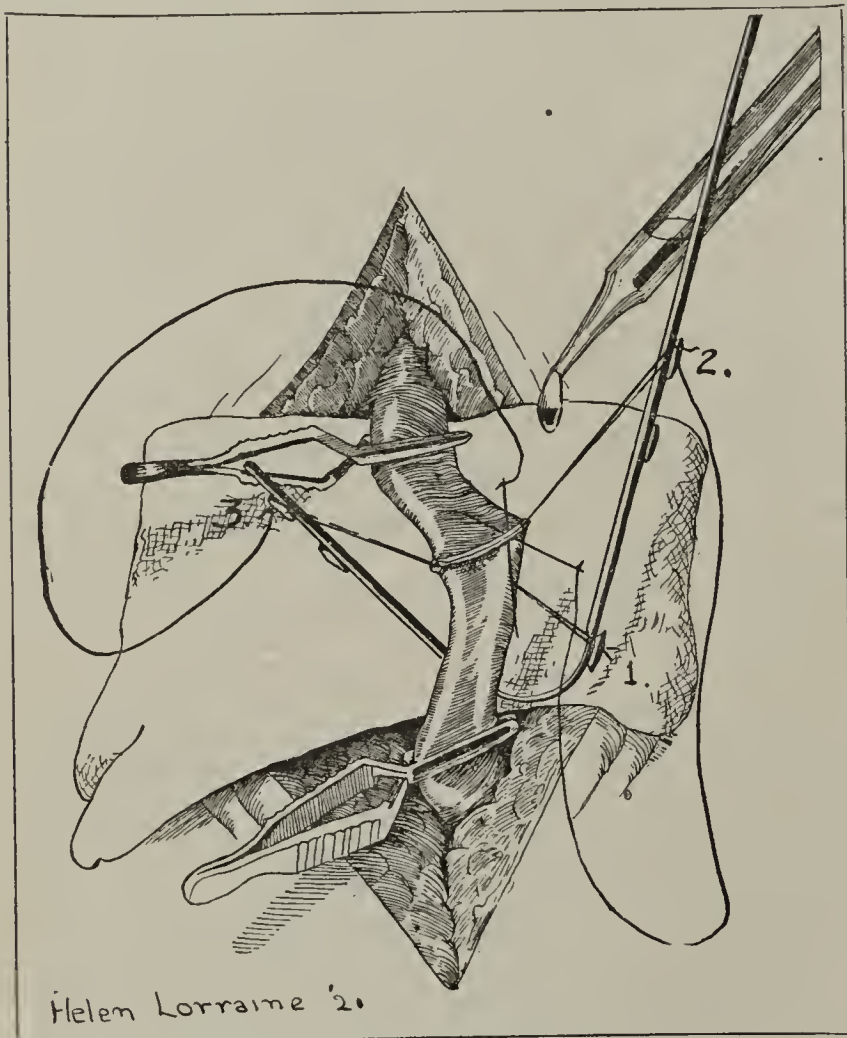
1. Horsley, J. S., and Whitehead, R. H.: A Study of Reversal of Circulation in the Lower Extremity, *J. A. M. A.* **64**: 873-877 (March 13) 1915. Horsley, J. S.: *Ann. Surg.* **63**: 277 (March) 1916.

2. Horsley, J. S.: *Surgery of Blood Vessels*, St. Louis, C. V. Mosby Company, 1915, pp. 46-77; *Operative Surgery*, St. Louis, C. V. Mosby Company, 1921, pp. 69-90.

3. Cubbins and Abt: *Surg., Gynec. & Obst.* **22**: 571-579 (May) 1916.

4. Horsley, J. S.: *Ann. Surg.* **67**: 468 (April) 1918.

pulled down and cut off. Each end was washed out with a few drops of Locke's solution. In order to approximate the ends without too much tension during the suturing, the elbow was flexed. The divided artery was then united with the technic referred to, which consists of inserting three tractor sutures, fastening them around the buttons of an arterial suture staff, and uniting the artery with a double mattress stitch of 00000 silk in such a manner that broad endothelial surfaces are opposed and the margins of the arterial wound are averted (as in the accompanying illustration). When the blood current was turned on, only a few drops of blood leaked from the line of sutures. The sutured artery was compressed with dry gauze and in a few minutes it was dry. The median nerve, which was partly divided, was repaired with a single suture of arterial silk. This brought the fibers together very accurately. After turning on the blood current in the brachial artery, the pulse immediately appeared at the wrist. A mattress suture of tanned catgut united the partially divided tendon of the biceps. A small flap of severed muscle was sutured over the artery and the fascia was closed



Tractor sutures have been placed, fastened to the buttons on the suture staff, and the suturing of the first third of the artery has begun. A double mattress suture is used. Olive oil is dropped on the suture line.

with a continuous suture of tanned catgut. The patient left the table with a pulse of 90 of good volume.

Results.—The wound healed primarily and the patient made an uninterrupted recovery. There was anesthesia over a portion of the index and middle fingers and over part of the palmar surface of the thumb, and there was some motor paralysis, all of which was due to the injury to the median nerve. These symptoms gradually improved and the patient, when examined about a year after the operation (April 15, 1921), had almost completely recovered from the effect of the injury to the nerve. Pressure made over the artery at the site of the arterial suturing completely obliterated the radial pulse, which returned again when the pressure was removed. Pulsation at the site of the sutured artery was distinct.

COMMENT

Ligation of the lower brachial artery in a patient, aged 37, with an injury of such a character that some of the anastomotic vessels were probably affected, would

doubtless have been followed by either gangrene or ischemic pains on exertion, which would have impaired the function of the right forearm. As he was a laborer this would have greatly interfered with his livelihood. Suturing the artery doubtless also promoted the recovery of the injured nerve, because the portion of the nerve distal to the injury had a normal blood supply when the brachial artery was sutured, whereas ligation would have very materially interfered with the nutrition of the forearm.

617 West Grace Street.

TREATMENT OF ARTERIOVENOUS ANEURYSM

REPORT OF TEN CASES *

JOHN F. CONNORS, M.D.

NEW YORK

The great war has broadened and influenced surgical technic in many conditions which hitherto in civil life have not been sufficiently often encountered to arouse interest or individual initiative. My object, therefore in presenting this paper is to stimulate a greater interest in the treatment of arteriovenous aneurysm, and to show that this operation is not as difficult as the surgical textbooks would indicate. While it is true that my observations cover only ten cases, nevertheless, the simplicity of this operation, while it is not new, urges me to present it for your consideration. It is not my purpose in this presentation to take up the etiology, pathogenesis or symptomatology of arteriovenous aneurysm. The reader is referred to the work of Dr. Rudolph Matas, to whom we are indebted to a great extent for his efforts in this branch of surgery, and to Keen's Surgery for a painstaking and exhaustive survey of the subject.

The use of the machine guns with their sharp-pointed bullets and high explosives with their small shell fragments was responsible for the great number of vascular injuries during the war. The frequency of these injuries might be gathered from the report of Bowlby,² in which he cites 277 wounds of blood vessels treated at a single British casualty clearing station in the early days of the Somme. Salomon estimated that up to 1918 1,400 traumatic aneurysms had been operated on in Germany. He also reports that 81 per cent. of the aneurysms seen by him at the Frankfurt hospital were caused by through and through bullet wounds. My observation was in keeping with this report, for eight of my ten cases gave a similar history. Sir Georg Makin's reports tend to show that arteriovenous was the commonest type of aneurysm with which we had to deal. He observed 272 cases of aneurysm, 152 of which were arteriovenous.

The question of treatment by ligation or suture will have to be left open, for I am sure we have all seen cases in which no other method but ligation could have been practiced, particularly those cases in which the wound was caused by high explosives. In these wounds the coats of the artery and veins are usually so badly damaged that no other treatment could be adopted. The method of treatment by ligation has

* Read before the Section on Surgery, General and Abdominal, the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Matas, Rudolph: *Ann. Surg.* 71: 403 (April) 1920.

2. Bowlby, A.: *Brit. M. J.* 1: 705 (June 2) 1917.

gained some advocates, owing to a better understanding of the collateral circulation, which is a most important factor and one that must be well considered and understood before attempting any operation on the vascular system. The great fear we once had of peripheral gangrene following the ligation of a main artery has to some extent been dispelled by the work of men who have devoted a great deal of time to this investigation. Their work would indicate that it is not so much the loss of the artery, as we have always believed, but that the underlying conditions play a large part in its formation. In this instance I might refer to a case of ligation of the external iliac artery and vein following a gunshot wound³ in which the patient made a complete recovery.

This operation was first performed on a patient on whom I was making a repair of the median nerve. I had had no thought of interfering with the aneurysm, but when the nerve repair was completed, the ease with which I was able to free the aneurysm *en masse* from the surrounding tissues led me to attempt its repair. It was my intention to repair the artery and the vein, but it soon became obvious that I would not be successful, so I decided to repair the opening in the artery which was about half an inch in length and use the vein as an additional covering for the suture line, using it as two flaps. This was accomplished with so little difficulty and the result obtained was so gratifying that I was encouraged, and it led me to try this operation in the other cases which came under my observation.

METHOD OF PROCEDURE

The aneurysm is exposed and freed as far as possible from the surrounding tissues. A clamp is then placed on the artery at some distance from the connection with the vein, care being taken not to injure the intima, sufficient pressure being used to stop the arterial flow (Fig. 1). The vein is then ligated above and below the point of connection. If there are any small branches leading into the venous sac, these are tied off. The vein is then split longitudinally, making a narrow and a wider flap (Fig. 2). The opening is then exposed and closed by suture, care being taken to avoid the infolding of its coats. The suture material used is fine, paraffined silk threaded on a flat needle. The knots are tied on the venous side, guarding against any narrowing of the lumen. When the suturing is completed, the clamp is gradually released and the amount of bleeding observed. In the beginning, bleeding may appear alarming; but gentle pressure with a hot pad will control it, as a rule, though it may be necessary to add one or more sutures. When the bleeding is controlled, the narrower flap (Fig. 3A) is folded over the suture line. Flap B is then folded over flap A. No sutures are used to hold these flaps in position. The field is then covered with fascia, thereby

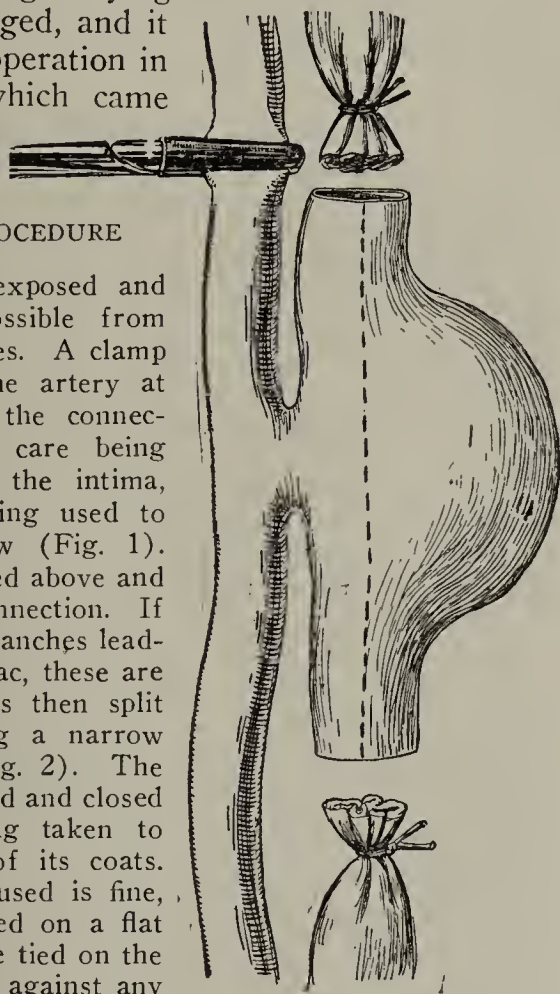


Fig. 1.—Clamp applied to artery, and the vein ligated above and below the connection; dotted line, longitudinal division of vein.

causing the suture line to be covered by flaps A and B and a layer of fascia.

REPORT OF CASES

CASE 1.—J. D., aged 23, twelve weeks before admission received a through and through gunshot wound of the left arm, at the junction of the middle and lower thirds. He had a paralysis of the superficial flexors of the hand. At the site of the injury a small pulsating mass could be felt. With the stethoscope, a decided bruit was heard. He suffered no pain or discomfort, except the inability to use his hand and arm. It was with the idea that he had an injury to the median nerve that the operation was undertaken. At operation it was found that the median nerve had been injured, but not completely severed. It was surrounded by scar tissue which was evidently the track of the bullet. The nerve was freed and sutured. The aneurysm was then exposed and freed from the surrounding tissue with very little difficulty. There was no dilation of the artery, but the vein was dilated to about the size of a marble. A clamp was then placed on the artery and the vein ligated above and below the communication, and the operation completed as before described. This patient made an uneventful recovery and was returned to the United States. Some months after my return I received a letter from him, saying that he had regained the function of his hand and arm.

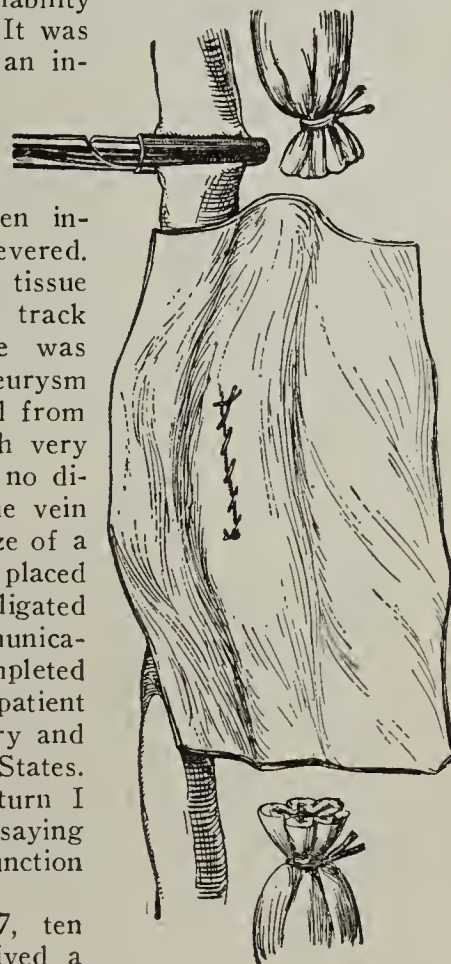


Fig. 2.—Vein opened, exposing the arterial connection which has been sutured.

CASE 2.—J. C., aged 27, ten weeks previously had received a gunshot wound of the right axilla. On admission it was found that he had a mass protruding from the outer border of the pectoralis major muscle. He said that this swelling interfered with the function of his arm. At times, particularly at night, he experienced a loss of sensation in his hand. There was a marked difference in the radial pulse on this side. The volume of the radial pulse on the injured side was markedly decreased. Operation revealed an arteriovenous aneurysm with slight dilatation of the artery at the site of the connection with the vein. The vein itself was dilated to about the size of an English walnut, presenting a picture similar to an hour-glass. It was very apparent that the vein could not withstand for any great length of time the pressure of the blood coming from the axillary artery. I was a little fearful in this case of ligating the axillary vein, but it was obvious that this was all there was left for me to do. The same method of procedure was followed in this case. Following the operation the arm was kept abducted and slightly elevated, and continuous external heat was applied. For three days the patient had a slight swelling of the entire arm, which was numb and which the patient described as always being "asleep." The day following the operation his radial pulse did not seem to have as much volume as before, and at times it was imperceptible. On the fourth day gentle massage was begun, after which time he gradually improved. At the end of six weeks he was returned to the United States, at which time he had almost entirely recovered the use of his arm; and the radial pulse on the injured side, although not so good as on the opposite side, had greatly improved.

CASE 3.—H. F. three months previously had received a high explosive wound of the neck. He presented a pulsating tumor at about the middle of the sternomastoid muscle. His chief complaint was a buzzing in his left ear which interfered with his hearing on that side. Operation revealed an aneurysm connecting the common carotid with the internal jugular vein.

3. LaRoque, G. P.: Ann. Surg. 73: 265 (March) 1921.

During manipulation I felt what I thought was a foreign body on the inner side of the artery, about a half inch from the arteriovenous connection. By gentle pressure from the opposite side of the artery I was able to extract a small fragment of shell, about an eighth of an inch in length and folded upon itself. I was amazed to find that there was no bleeding when this extraction was completed, although up to this time no clamp had been placed on the artery. The same method of procedure was followed in this case, but the operation was not completed with the same ease as in the two preceding cases, owing to the location. This patient had a rather stormy convalescence; for three days he was just about on the border line, and complained a great deal of dizziness and headaches, but eventually he cleared up and was returned to the United States.

CASE 4.—M. J., aged 28, had received a high explosive wound of the thigh. Nine weeks after injury he had a severe secondary hemorrhage. At operation it was found that he had an arteriovenous aneurysm of the femoral below the origin of the profunda. A large clot almost completely filled the lower end of Scarpa's triangle. On removal of this clot, active bleeding began from a hole in the vein. The artery was clamped and the same method of procedure employed as in the preceding cases. In spite of the fact that this operation was done in an unclean field, the patient made a good recovery.

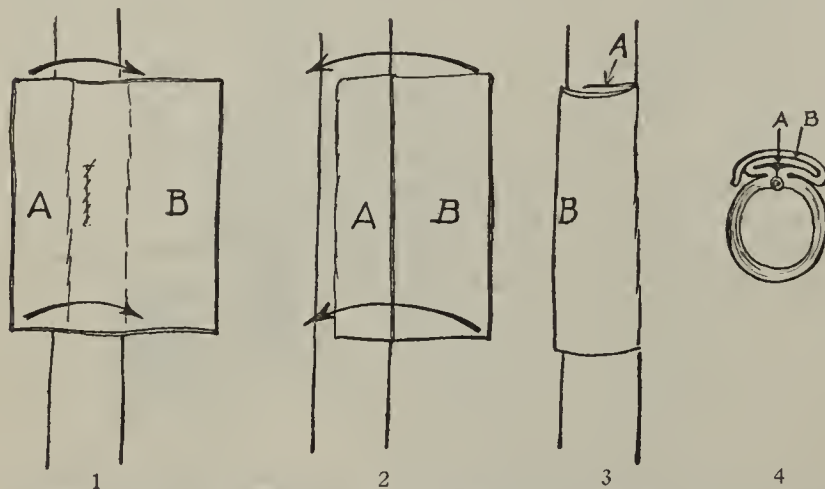


Fig. 3.—1, Suture completed; 2, narrow flap A placed over the suture line; 3, wider flap folded over narrower flap; 4, cross-section of operation completed.

CASE 5.—N. B., aged 26, had received a gunshot wound of the left arm. At the time of admission he had a paralysis of his left arm involving all the flexors. He also had a pulsating mass between the internal condyle and the tuberosity. There was very little, if any, difference in the radial pulses. This mass caused him no pain or discomfort. At operation it was found that the ulnar and median nerves were severed. A distinct bruit could be heard with the stethoscope. The severed nerves were sutured and the aneurysm treated as in the other cases. When the patient returned to the United States there was no improvement in his arm.

CASE 6.—H. D., aged 25, had received a gunshot wound of the left arm, involving the axillary artery and vein with no nerve injury. He had a small swelling, about the size of a marble, which could be felt inside the inner border of the pectoralis major muscle, and with the stethoscope a bruit was heard. This swelling gave the patient no discomfort or pain. On palpation I experienced a purring thrill. I requested this patient to have the operation because of my experience with the other axillary case. He made a good recovery and was returned to the United States.

CASE 7.—M. M., aged 33, had received a gunshot wound of the thigh close to the apex of Scarpa's triangle. He presented a small swelling which gave him no discomfort, and at my request submitted to the operation. He made an uneventful recovery.

CASE 8.—H. M., aged 30, had received a gunshot wound of the arm involving the brachial artery and vein. There was no nerve affection in this case. The patient made an uneventful recovery.

CASE 9.—W. M., aged 28, had received a gunshot wound of the arm involving the brachial artery and vein, presenting a

small pulsating mass at the junction of the lower and middle third on the inner side of the humerus. He had no loss of function, but at my request submitted to the operation and made an uneventful recovery.

CASE 10.—J. M., aged 21, had received a through and through gunshot wound of the left knee. This was the only fatal case in the series. A large pulsating mass almost filled the popliteal space. The patient had a great deal of pain, was unable to extend his leg, and had a marked interference with the circulation below the knee. No pulsations could be felt in the dorsalis pedis. On palpation this mass, though hard, was compressible, and the blood passing through it could be readily felt. At operation this swelling was found to be a large dissecting venous sac, with many small tributary veins. After a great deal of difficulty the mass was freed from the surrounding tissue, the operation completed as in the other cases, and the wound closed without drainage. The patient did very well for three days, having no discomfort, but there was no improvement in the condition of the leg. The leg was flexed to an angle of about 45 degrees, and external heat was applied. On the fourth day he had a hemorrhage, and on the following day I opened the wound and found a general oozing but no definite point of bleeding. The wound was gently packed, and on the following day he had another hemorrhage. Examination revealed that the wound had become infected, the pus showing a streptococcus. Transfusion was performed four times, each transfusion being followed by a short period of improvement; but the patient died on the tenth day after operation.

At necropsy, I dissected out the popliteal artery in its entirety. At the site of repair there were no signs of healing.

I attribute the failure in this case to the infection, favored by the manipulation necessary to free the sac, and the lowered resistance of the patient.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HORSLEY AND CONNORS

DR. RUDOLPH MATAS, New Orleans: Dr. Connors' paper shows the great value of transvenous approach in arteriovenous fistula. The number of cases on record is comparatively small. I compiled about twenty-five cases. I have operated in fifteen cases by the transvenous route. Most European investigators assumed they were the originators of the method, but it is deplorable that they did not utilize it before, when all the details were published ten years ago. The method is particularly applicable to cases of long standing in which there is a large varicose ampulla in case of direct fistulous communication, in which the vessels lie in apposition. The ideal is to preserve both vessels if you can. When you cannot save both vein and artery, save the artery. It is usually done perfectly by this means.

DR. HENRY O. MARCY, Boston: In reference to suture material and its method of application fifty years or more ago: I first applied it in a general way to the cure of hernia. With a fine needle with an eye near the point, I use it as a shuttle, making the shoemaker stitch, but daintily as a lady makes her lace, and with it I have accomplished results I failed to obtain with the ordinary suture. The material that I have found best is the kangaroo tendon suture, rather than silk. Silk is a foreign body at best and has given me trouble in aseptic wounds, and, therefore, I feel it is a contribution of the largest possible value to suture the vessels in the dainty way the seamstress does her work.

DR. WILLY MEYER, New York: Once I came near to suturing the lowest end of the abdominal aorta. A man in the sixties, with advanced myocarditis and endocarditis, suddenly developed a most acute, intensely painful anemia of both lower extremities. The diagnosis was embolic closure of the lower aorta. I operated, but made the mistake of putting the man in a high Trendelenburg posture in order to reach the beginning of both common iliac arteries. After division of the posterior peritoneum, just as I was ready to incise the vessel, the anesthetist reported "no more pulse." What had occurred? It was evidently a case of acute dilatation of the right heart in the presence of a weak myocardium. If I had

left that patient on his back and everted the intestines, I would probably have been able to avoid the accident. Vessel suture is most important. Many of us have done it on the internal jugular vein. As a young man, I once assisted Dr. Robert F. Weir in suturing the inferior vena cava in excision of a tuberculous kidney including its thickened capsule. The patient recovered. In reference to the so-called "reversal of the circulation"—a bad misnomer—in thrombo-angiitis obliterans, I had under my care a young fellow with thrombo-angiitis obliterans and gangrene. I proposed operation on the femoral artery and vein. I had no special training in blood vessel surgery, but had repeatedly watched Dr. Carrel work. I anastomosed the femoral artery with the vein in Scarpa's triangle, making a typical end-to-end arteriovenous anastomosis. The patient made a good recovery; today, after eight years, he represents the best result I have ever seen of all the various treatments of thrombo-angiitis obliterans. That man is able to walk for miles. While other patients of this type after about fifteen or sixteen duodenal flushings with 10 quarts of Ringer's solution daily lose their pain, they hardly ever lose the claudication. I believe one should do the blood vessel operation for this disease much more frequently, in selected cases.

DR. HARRY G. SLOAN, Cleveland: In the course of an excision of a recurrent carcinoma of the jaw, necessitating dissection in the deep planes of the neck, I accidentally nicked the internal carotid artery low down in the neck where it was involved in a mass of scar tissue from a previous operation. Before we had stopped the bleeding the vessel was caught by hemostats which immediately cut through the sclerosed walls. The possibilities were ligation or repair by suture. We determined to excise the damaged portion of the artery and close by end-to-end suture. The systolic blood pressure was 185. The vessel was very much sclerosed, so that in preparing the ends of the vessel for the suture little bits of the vessel wall pulled off like pieces of an uncurled spring, but we finally succeeded in joining the vessel end to end by the original Carrel technic. The circulation was shut off for thirty minutes, but on the completion of the suture the temporal pulse was immediately felt. Convalescence was uneventful. The temporal pulse has persisted, and when I saw the patient a few days ago, a year after the operation, it was quite normal.

DR. JOHN F. CONNORS, New York: I agree with Dr. Matas as to the time these operations should be done. The suture method described by Dr. Horsley is practically the method I used.

DR. J. SHELTON HORSLEY, Richmond, Va.: I spent many years of my life in experimental work in arterial suturing, and naturally I am very much interested in it. I do not believe that we can promote anything unless we face the facts and the field of usefulness of arterial suturing has contracted. Several years ago I did some experiments in which I reversed the circulation, killing the dogs from half an hour to sixty-nine days after the operation. I injected the artery just above the reversal and made roentgenograms and dissections. In no single instance did the injected mass go much below the knees. What was the cause of the excellent results in Dr. Meyer's case? A certain number of these cases of "reversed circulation" do get better. In obliteration of the artery, the vein is usually but little affected. The tissues take up nutrition from the arterial blood in the capillaries. Say the normal time is three seconds. The arterial blood in the capillaries, instead of staying three seconds, is drained away by the unobstructed veins in two seconds. When the circulation is reversed (so-called) the venous side is obstructed and the arterial blood stays in the capillaries longer. This obstruction of the veins can be done more simply by cutting down on the femoral vein and putting a ligature around it. This can be done in ten minutes under local anesthesia. It obstructs venous circulation, dams back the venous blood in the capillaries and makes the arterial blood stay longer in the capillaries than if the venous circulation were unobstructed. Every possible benefit is obtained that could be gotten by so-called reversal of circulation.

EXPERIENCE WITH MORE THAN ONE HUNDRED CASES OF EPIDEMIC ENCEPHALITIS IN CHILDREN *

JOSEPHINE B. NEAL, M.D.

NEW YORK

The scope of this paper permits only the briefest reference to the extensive literature that has grown up during the last four years around epidemic encephalitis. The articles referring to the disease, especially in children, however, have been comparatively few. Batten and Still,¹ Netter,² Comby,³ Heiman,⁴ and others⁵ have contributed to this phase of the subject, reporting, however, comparatively few cases. Indeed, earlier, it was thought that adults were much more subject to the disease than children. In fifty-four early cases studied by Netter, 77 per cent. of the patients were more than 15 years of age, and in London 86 per cent. of patients in early cases were more than 10 years of age.⁶ In an earlier article from the meningitis division, it was pointed out that perhaps a number of cases in children were overlooked as approximately half our patients were 15 years of age or younger. Further epidemiologic study has confirmed this opinion. In a recent and very thorough study by Happ and Mason⁷ slightly more than half their eighty one cases were in this age category. Up to the middle of May, I had studied 274 cases in exactly half of which (137) the patients were 15 years of age or younger. The exact age distribution is shown in the accompanying table. One hundred and twelve, or 40 per cent., of the patients were 10 years of age or younger.

AGE DISTRIBUTION

Age	No of Cases
3 months.....	4
From 3 to 6 months.....	4
From 6 to 12 months.....	8
From 1 to 2 years.....	20
From 2 to 5 years.....	29
From 5 to 10 years.....	47
From 10 to 15 years.....	25
Total.....	137
From 15 to 20 years.....	15
From 20 to 30 years.....	56
From 30 to 40 years.....	33
From 40 to 50 years.....	24
Over 50 years.....	9
Total.....	274

In contrast to this, in about 65 per cent. of cases of epidemic meningitis and about 90 per cent of cases of poliomyelitis, the patients are under 10 years of age. As regards sex, about 50 per cent. more males than females are attacked by the disease, but this also holds true of epidemic meningitis and poliomyelitis. The seasonal distribution of our cases in New York City is indicated in the chart, and shows that the maximum number of cases occurs in the first quarter of the year.

* From the Research Laboratory, Department of Health, New York City.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Batten, F. E., and Still, G. F.: *Lancet* 1: 636 (May 4) 1918.

2. Netter, A.: *Bull. et mém. Soc. méd. d. hôp. de Paris*, March 22, 1918. *Bull. de l'Acad. de méd.* 79: 337 (May 7) 1918. *Bull. et mém. Soc. Méd. d. hôp. de Paris* 43: 300 (April 4) 1919. *Bull. Acad. de méd.* 83: 45 (Jan. 6) 1920.

3. Comby, J.: *Arch. de méd. d. enf.* 22: 259 (May) 1919.

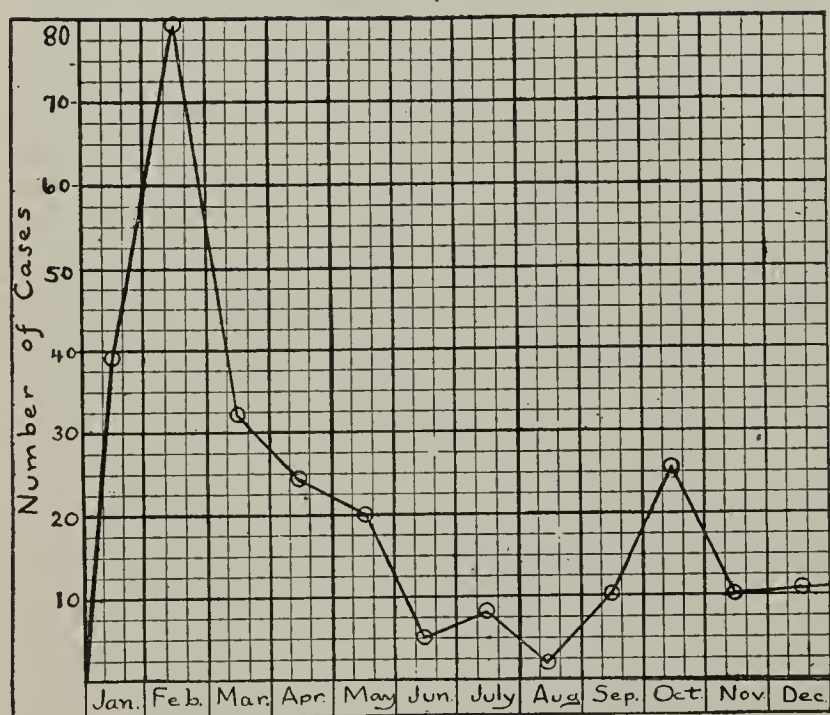
4. Heiman, H.: *Am. J. Dis. of Chil.* 18: 83 (Aug.) 1919.

5. Tilney, F., and Riley, H. A.: *Neurological Bull.* 2: 106 (March) 1919. *Neal: Arch. Pediat.* 37: 321 (June) 1920.

6. Local Government Board on Public Health and Medical Subjects, N. S. 121, England.

7. Happ and Mason: *Bull. Johns Hopkins Hosp.* 32: 137, 1921.

Our sporadic cases of epidemic meningitis during the last eleven years have shown the maximum number in April, May and June, while poliomyelitis is usually at its height during the summer months. While epidemic encephalitis is accepted as being an infectious disease, the percentage of those susceptible to it is certainly very low. In only one instance have we seen two cases in a family. The two patients became sick on the same day, and no outside source could be traced. The reports of instances of traceable contagion are very few. This difficulty in tracing disease is encountered also in epidemic meningitis and poliomyelitis, and may point to a high resistance to these diseases on the part of the majority of people. We have observed two or three points in connection with the study of our cases which may be of some interest. One patient while convalescing from encephalitis contracted epidemic meningitis, probably from a patient in an adjoining bed in the hospital. Instances of such direct contagion in hospitals, as we all know, are very rare. One patient gave



Seasonal distribution.

a history of epidemic meningitis a year before. Two patients were mentally defective. Four had suffered from attacks that were probably poliomyelitis. One patient after a year of good health died from a second attack of encephalitis, so far as the diagnosis could be made in both instances.

No attempt has been made to divide our cases into clinical types because we are evidently dealing with a virus that may attack any part of the central nervous system or any combination of parts. This obviously gives rise to a great variety of types. Moreover, a given case in its development often passes through several phases representing different types. For these reasons, an attempt at classification has seemed undesirable.

SYMPTOMATOLOGY

The symptoms in children do not differ greatly from those in adults. A rather larger percentage of children show a sudden onset, and the course of the disease is ordinarily shorter than in adults, although the mortality is approximately the same. The symptoms comprise both those of a generalized infection, such as fever, headache, vomiting, constipation and malaise, and those more directly referable to the central nervous system.

The latter show an almost endless variety. Lethargy was so prominent a symptom in many of the cases that the term "lethargic" was earlier used in describing the disease. This, however, is by no means a constant symptom. Indeed, insomnia is an equally striking phenomenon in many cases, and in some patients both conditions may be present at different times. Convulsions are common, especially in younger children. In many cases delirium is present, occurring either for a considerable time or for short intervals, lasting not more than ten or fifteen minutes and being repeated frequently.

Ocular disturbances are of very frequent occurrence and are of wide variety. They may take the form of diplopia, blurring of vision, blindness, ptosis, either unilateral or bilateral, strabismus, nystagmus, and occasionally peculiar motions of the eyes. In one instance there occasionally took place convulsive twitchings of the eyes which then snapped quickly to the left, and remained fixed for two or three minutes. These seizures occurred at frequent intervals during the height of the disease, but disappeared entirely as the patient recovered. In another case the eyeballs performed in succession a curious, nearly complete rotation with the pupils looking inward. While one eye was in motion the other eye remained quiet, but there was more or less twitching of the lips and of the face muscles on the same side.

Hippus has been observed in two or three cases in adults. I have not seen it in children.

Paralyses of wide distribution may occur. The cranial nerves are more often affected. Facial paralysis or paresis, either unilateral or bilateral, is often present and probably causes the masklike expression so often noted. In some instances the neck muscles have been affected; in one case this was unilateral. Inability or unwillingness to swallow may occur to such an extent as to make tube-feeding necessary. Disturbances of speech are not uncommon. The one I have observed most frequently is that in which the patient speaks in a slow, monotonous slurring voice, with considerable delay before answering questions. Some cases are extremely talkative. In a number of instances under my observation, patients have refused to speak for a varying length of time. Twitchings, either general or localized, are a very common phenomenon. They vary from a fine tremor to choreiform movements. Catatonia is not infrequent. The reflexes show all varieties of change. They may be increased, decreased, lost, equal or unequal. The Babinski sign and ankle clonus are not uncommon. Retention or incontinence of urine occasionally occurs. Constipation is often obstinate. Profuse sweating is fairly common. The more typical meningeal symptoms, such as stiffness of the neck and the Kernig sign, are not common, unless associated with some degree of general spasticity.

The course of the disease varies greatly, from two or three weeks to many months. The prolonged cases, lasting several months, are less common in children than in adults. The course of the disease is often marked by sudden rather transitory changes either for the better or the worse, and one must, therefore, be guarded in making a prognosis from a single inspection of the patient. A sharp and unexplained rise in temperature occasionally occurs. Pneumonia may develop during the course of the disease and is a dangerous complication. A rather common type of the disease in

children is that in which there are none of these more striking phenomena. There is a history of a gradual onset, a varying degree of drowsiness, headache, vomiting, constipation, low, irregular temperature, and some changes in the reflexes. The diagnosis of early tuberculous meningitis is suspected, but after one or two lumbar punctures, in which the spinal fluid does not corroborate this diagnosis, the case clears up.

LABORATORY FINDINGS

The blood count in epidemic encephalitis varies from normal to one showing a moderate degree of leukocytosis, perhaps up to 15,000 or 20,000. Blood cultures are sterile. The urine is negative or shows a mild degree of nephritis common in acute infectious conditions. The examination of the spinal fluid throws more light on the subject than any other laboratory procedure. The spinal fluid shows practically the same picture as in poliomyelitis. It is clear and usually increased in amount. A web rarely forms. The cell count may sometimes be normal. It is usually moderately increased, ordinarily to no more than 100 or 150, though in one case it ran as high as 1500. The mononuclears usually predominate, but as in poliomyelitis there may occasionally occur a preponderance of polymorphonuclears. As in poliomyelitis, the fluid may in rare instances be slightly blood tinged, probably indicating a more than usually severe hemorrhagic process. The albumin and globulin are increased, usually slightly to moderately. The glucose, as measured by the qualitative reduction of Fehling's solution, is normal. Quantitative studies by various workers, among them Foster,⁸ have shown that it is sometimes slightly increased above normal. I do not feel that this knowledge is of great diagnostic value. Different workers vary in their estimation of the glucose in normal fluid. In quantitative work done in the meningitis division⁹ in 1916, it was found by Kahn that the glucose in poliomyelitis fluids frequently ran from 0.08 to 0.10 per cent., also an increase above the normal.

The Wassermann reaction is negative. The colloidal gold curve is not characteristic. When the disease first made its appearance, many of the English writers and some in France and America reported normal spinal fluid findings, but most of the recent writers have reported findings similar to those described above. It will be seen from this description that these findings are not diagnostic of epidemic encephalitis, as similar findings may occur in poliomyelitis, in brain abscess, brain tumor, and except for the Wassermann test and colloidal gold test, in syphilitic conditions of the central nervous system, all being conditions in which the brain substance is primarily involved, with the meninges being secondarily affected. Such findings also occur early in tuberculous meningitis. They do show, however, that there is an inflammatory reaction in the central nervous system, and they are of value in ruling out other conditions in which meningism occurs with symptoms referable to the central nervous system but without an actual inflammation being present.

While much work has been done to determine the specific etiologic factor of epidemic encephalitis, the results obtained by different workers have been by no means in agreement. The work of Loewe, Strauss and

Hirshfeld,¹⁰ has been in part duplicated by Levaditi and Harvier.¹¹ Other workers have reported negative results in their attempts to corroborate this work. In view of these facts we must feel that the exact etiologic factor has not been fully established. Loewe, Strauss and Hirshfeld, and Levaditi and Harvier believe that they have established that the disease can be transmitted to rabbits and monkeys, and that it is due to a filterable virus in many respects similar to that considered to be the cause of poliomyelitis.

DIFFERENTIAL DIAGNOSIS

Since this disease is so protean in its clinical manifestations and since there are no laboratory findings that are absolutely specific, the diagnosis must be made largely by exclusion. In the case of children, tuberculous meningitis is the disease from which it must be most often differentiated, and this differentiation is by no means easy. The onset, while usually gradual in both, is more often abrupt in encephalitis, and in this type of case death may occur within seven to ten days, a shorter duration than tuberculous meningitis usually has. On the other hand, patients suffering from encephalitis sometimes die after a course of two or three months, a longer period than cases of tuberculous meningitis show. Diplopia is occasionally present in tuberculous meningitis, and transient paralyses especially of the cranial nerves are common. So also is loss of reflexes. Other neurologic manifestations that have been described in epidemic encephalitis are rare. Evidences of tuberculous lesions elsewhere, positive tuberculin reaction, tubercles in the choroid, and so forth, are also of help in making the diagnosis of tuberculous meningitis. The examination of the spinal fluid in the last analysis must often be the final factor. While the spinal fluids may not be dissimilar early, as a rule even fairly early the spinal fluid in tuberculous meningitis will have a higher cell count and a greater increase in albumin and globulin than is the rule in encephalitis, even though the reduction of Fehling's solution be normal. As the disease progresses, the reduction of Fehling's solution in cases of tuberculous meningitis will practically always become diminished or absent, and it is possible in a large percentage of cases to demonstrate the tubercle bacilli in the smear. If this cannot be done, the result of animal inoculation must be awaited. Films form almost invariably in fluids from tuberculous meningitis, and only occasionally in fluids from epidemic encephalitis.

The diagnosis from poliomyelitis, especially the encephalitic form, is practically impossible except by neutralization tests of the blood serum. These tests are difficult to perform and are not always conclusive. Amoss¹² has shown that the serum from recovering cases of encephalitis has no power in neutralizing poliomyelitis virus. Of course, the onset of poliomyelitis, even of the encephalitic type, is more frequently abrupt than is that of encephalitis. There is likely to be a higher temperature early, which soon subsides; there is more frequently diarrhea in poliomyelitis, while constipation is the rule in encephalitis. The pupils

10. Loewe, L., and Strauss, I.: Etiology of Epidemic (Lethargic) Encephalitis, *J. A. M. A.* **73**: 1056 (Oct. 4) 1919; id., Diagnosis of Epidemic Encephalitis, Values of Nasopharyngeal Washings and of Cerebrospinal Fluid, *J. A. M. A.* **74**: 1373 (May 5) 1920. *Jour. Infect. Dis.* **27**: 250 (Sept.) 1920. Loewe, L.; Hirshfeld, S., and Strauss, I.: *J. Infect. Dis.* **25**: 378 (Nov.) 1919. Strauss, I.; Hirshfeld, S., and Loewe, L.: *New York M. J.* **109**: 772 (May 3) 1919.

11. Levaditi, C., and Harvier, P.: *Ann. de l'Inst. Pasteur* **34**: 911, 1920.

12. Amoss: *J. Exper. Med.* **33**: 187, 1921.

8. Foster, H. E.: Hyperglycorachia in Epidemic Encephalitis, *J. A. M. A.* **76**: 1300 (May 7) 1921.

9. Neal, Josephine B.; Abrahamson, H. L., and Associates: A Study of Poliomyelitis, *Arch. Int. Med.* **20**: 341 (Sept.) 1917.

in poliomyelitis practically always react to light, while in encephalitis the reaction is often sluggish. Moreover, even in epidemics of poliomyelitis, the encephalitic form is rare. The age and season must also be considered. All these factors are helpful, although not final, in differentiating the two conditions. The spinal fluid findings are so similar that they are of little aid in making the diagnosis.

Brain tumor and abscess of the brain must also be differentiated; and these conditions have proved a stumbling-block to very able neurologists. Brain tumor is comparatively rare in children. It is usually afebrile, and a roentgen-ray examination should be of value. A choked disk is, of course, much more common in this condition than in encephalitis. The spinal fluid findings vary greatly in brain tumor, so that in this condition they will not be of so much diagnostic value. Abscess of the brain is rare and is usually accompanied by some demonstrable primary focus. In abscess of the brain, the blood culture is frequently positive.

Syphilitic conditions of the central nervous system must always be considered, and they may be ruled out with a fair degree of assurance by the result of the Wassermann test and the colloidal gold test of the spinal fluid. Cerebral hemorrhage, thrombosis or embolism are of less importance in children than in adults. Of course, a cerebral embolism with an endocarditis occasionally occurs in children, and must be differentiated from both poliomyelitis and encephalitis. Uremic conditions must also be considered, and must be ruled out by the urinary examination, and the test of the kidney function.

The diagnosis from various acute forms of purulent meningitis is usually easy clinically, and may be made absolutely by the examination of the spinal fluid.

Of course, the diagnosis must also be made from acute infections in children, in which convulsions develop, and sometimes stupor, such as typhoid, pneumonia, and severe gastro-enteritis; but these can usually be easily ruled out by finding the underlying cause and by various laboratory tests, as well as by a test of the spinal fluid, which, in these conditions, is usually normal.

REPORT OF CASES

CASE 1.—F. A., a girl, aged 5 years, with no history of previous illness, had a gradual onset about Oct. 1, 1920. The child was listless and apathetic, slept a great deal, vomited once; had no headache; the bowels were constipated, and there was loss of sphincter control of both bowel and bladder about October 12. When examined, October 20, she was apathetic, the temperature was normal, respirations were regular, and the pulse varied in rate from time to time; the pupils were equal, and reacted to light; there was no stiffness of the neck nor Kernig sign, the reflexes were present and equal, and there was no paralysis. Lumbar puncture gave about 35 c.c. of clear fluid under pressure. This showed a slight increase in mononuclear cells, and also in albumen and globulin. The reduction of Fehling's solution was normal. Soon after this the child refused to speak. This lasted for about two weeks. Then speech returned, and the incontinence finally cleared up about the middle of November. At last reports she showed complete recovery physically, but was still nervous and irritable.

CASE 2.—G. L., a girl, aged 5½ years, gave a history of poliomyelitis in 1916, with paralysis of right arm and leg. The paralysis of the leg had nearly cleared up but that of the arm remained. The onset of the disease occurred the latter part of January, 1921, with headache, vomiting, convulsions, and a temperature up to 103 F. When seen February 14, she was crying out constantly and apparently could not see. The temperature was still around 103 F., and 20 c.c.

of clear fluid was withdrawn. This fluid showed 460 cells—90 per cent. mononuclears, albumin and globulin ++, and Fehling's solution normal. After the puncture, the temperature subsided. The child screamed almost constantly for several days, and then began crying real tears. She paid no attention to questions, indeed, did not speak at all. These symptoms lasted about ten days, then the condition improved. The child began to speak but was at first slow in remembering and in speaking. The sight returned. The condition was very satisfactory until March 13, when the child was taken for an automobile ride. In the afternoon, she had a convulsion and became unconscious, Cheyne-Stokes respirations developed, with feeble, rapid pulse, and marked cyanosis. Lumbar puncture was done in the afternoon, showing clear fluid, greatly increased pressure, 35 cells, albumin and globulin ++, and Fehling's solution normal. Next day the patient seemed practically well, but continued to have a slight rise of temperature for several weeks. She is now reported as entirely recovered.

The next case has been previously reported,⁵ but is included now on account of the sequelae.

CASE 3.—E. M., a girl, aged 14, gave a history of measles, and paralysis of the left arm and leg, probably poliomyelitis, which developed some years before and had practically cleared up. The present illness developed rather slowly, beginning about January 12, with apathy, tremors and subnormal temperature (96 F.) the chief symptoms. She had grown progressively worse, and when examined, January 16, had the appearance of being in a very serious condition. Her temperature was still 96 F., she was sweating profusely, catatonia had developed, and there were marked tremors. She was extremely apathetic and apparently in a semistuporous condition, but she answered questions correctly, though very slowly and in a monotonous voice. The neck was moderately stiff and there was a question as to the Kernig sign, since there was generally spasticity of the muscles. The knee jerks were equal and exaggerated. The pupils were equal and responded to light. There were no disturbances of vision. Lumbar puncture revealed clear fluid under increased pressure, a moderate increase in cells, 90 per cent. mononuclear, albumin and globulin ++, and Fehling's solution normal. For about a week following, the temperature was slightly elevated; the neck was rigid and the patient was troubled with insomnia. Thereafter she slept for about seventeen hours, and then began to improve rapidly. She returned to school and seemed perfectly well until late in June, 1920. During the summer of 1920 she became very indifferent, disliked doing anything about the house, or taking care of her person, and was extraordinarily slow in accomplishing any task, even a very simple one. When seen in October, memory was good, but she spoke in a monotonous voice, and very slowly, and the face was expressionless except for frequent silly giggles. The muscles were spastic and reflexes exaggerated, but she was able to walk about, though very slowly and with a spastic gait. This condition became progressively worse, and when seen in May, 1921, she was unable to walk without being practically carried. She could not sit down or rise from a chair without a great deal of assistance; there was a constant tremor of the hands and feet; the muscles of the whole body were extremely spastic; she had difficulty in swallowing, and the voice was monotonous and slow; but memory was still good, and she seemed to have considerable insight into her condition. She still had a rather silly laugh, but it seemed to come from difficulty in muscle control rather than from lack of intelligence. She had obstinate constipation and there was frequency of micturition. Such a development after four or five months of apparent recovery is a striking commentary on the sequelae which so often follow this disease. The final outcome of this case will be a matter of great interest.

SEQUELAE

That the effects of the disease may be prolonged for many months and that symptoms may develop after a period of apparent return to health has been pointed

out by Abrahamson,¹³ Happ and Blackfan;¹⁴ Leahy and Sands;¹⁵ Happ and Mason,⁷ and others. I have tried as far as possible to follow up our recovered cases at varying intervals.

On account of the great interest centering around the sequelae, I have included those in adults as well as in children. They seem to develop more frequently in adults than in children. Up to the end of March, sixty-three cases, or 39.3 per cent. of the recovered cases, showed sequelae for varying lengths of time after the subsidence of the acute symptoms. In these cases, twenty-one patients were less than 15 years old, and forty-two were adults. A part of this difference may be due to the greater ease in eliciting in adults certain conditions, such as headache, mild grades of mental deterioration, or lack of power to concentrate. It is, of course, too early to decide as to the permanence of the sequelae. However, three out of ten recovered patients, in 1918 are still showing some results of the disease. And it is possible that some of the more recent cases that now seem to be complete recoveries may develop sequelae in the next few months.

Like the symptoms, the sequelae are also varied, and it is difficult to group them in any very satisfactory way. Moreover, one patient often shows several sequelae.

In a general way they may be loosely classified as:

Weakness or paralysis: Adults, 8; children, 4.

Tremor, choreiform movements, spasm: Adults, 6; children, 3.

Pains in body or limbs: Adults, 2.

Headache: Adults, 8.

Dizziness: Adults, 3.

Nervousness: Adults, 5; children, 6.

Change in disposition: Adults, 1; children, 3.

Insomnia: Adults, 3; children, 2.

Drowsiness: Adults, 1; children, 3.

Speech defects: Adults, 6; children, 3.

Defect of Eyes: Adults, 9; children, 4.

Change in mentality: Adults, 14; children, 10.

The changes in mentality are of great interest. In children there are usually indications of mental deterioration—the child is demoted in school, when previously it had made good progress. In adults there is loss of memory and of ability to concentrate, in the milder cases, and sometimes mental depression. In one instance a young woman committed suicide during convalescence. One man was at a hospital for the insane for some months, but was finally paroled. A woman has been at such an institution for over a year.

It is interesting to compare these frequent, diverse and serious sequelae with those of poliomyelitis and epidemic meningitis. In the former, the sequelae are certainly sufficiently grave, but they are confined almost entirely to flaccid paralyses. In meningitis only a very small percentage of sequelae occurs. The most serious is deafness, and this occurs in only 3 or 4 per cent. of cases. Blindness, due practically always to a panophthalmitis, is still more rare. While a popular opinion exists that mental defects are often due to meningitis, a careful study of recovery cases of meningitis fails to corroborate this opinion.

Relapses after comparatively short periods of improvement occasionally occur. In one instance,

already referred to, there was a second attack, at the expiration of a year of good health, which proved fatal.

MORTALITY

The mortality reported by various writers has varied greatly. In France it has been around 25 to 30 per cent. and in England as high as 50 per cent. In this country, Abrahamson¹⁶ reports a mortality of only 10 per cent., and Happ and Mason⁷ a mortality of only 7.4 per cent., while others have reported a mortality as high as 40 per cent. Smith¹⁷ gives a mortality of 29 per cent. In our series of cases, it has been about 28 per cent.

TREATMENT

The general treatment is of great importance and consists, in brief, in general hygienic measures, keeping the patient comfortable, quiet, and well nourished. Feeding by gavage may be necessary. There must be careful attention to the elimination, as constipation is often persistent and obstinate, and retention may occur. While numerous drugs and intraspinal injections have been used, the degree of success attending any of these measures has been small. Lumbar punctures for the relief of pressure have seemed of value to me and are recommended by many writers. The patient should be carefully watched during convalescence, and one should not be too hopeful of a complete cure until some months have passed.

426 East Twenty-Sixth Street.

ABSTRACT OF DISCUSSION

DR. FRANK C. NEFF, Kansas City, Mo.: Recently, in the same week, two children died who had a similar symptomatology; in the first case, a child, apparently in good health, went into a convulsive state. The physician wondered whether smallpox existed, as an eruption appeared resembling smallpox, especially on the palms and soles. This child died after forty-eight hours, without regaining consciousness. Sections of the brain are typical of the description of encephalitis. The second child was seen in a convulsive state from which it did not recover. The child died in about thirty-six hours. We were at a loss to explain the case, unless it was one of epidemic encephalitis. The necropsy showed a normal brain, but the thymus was enlarged, weighing about 30 gm., and there was a general lymphatic hyperplasia; there was no other pathologic condition to explain the death.

DR. GEORGE W. HALL, Chicago: Our experience in Chicago has been limited more to adults. One test is of value in the differential diagnosis between encephalitis and tuberculous meningitis, namely, the sugar content in the spinal fluid. Invariably it is below normal in tuberculous meningitis, while it is normal or increased in amount in cases of epidemic encephalitis.

DR. JOSEPHINE B. NEAL, New York: I agree with Dr. Hall in regard to the value of a diminished content of sugar in the spinal fluid in making a diagnosis between tuberculous meningitis and epidemic encephalitis. We rely on it very much in those cases in which we are not able to demonstrate the tubercle bacilli in the smear. An increase of sugar in the spinal fluid of epidemic encephalitis, when present, is not of much diagnostic value, as a similar increase is found in the spinal fluid in poliomyelitis. We are not often called to see patients until they have been sick several days, so that those that die within thirty-six or forty-eight hours are not likely to come under our observation. General lymphatic hyperplasia, with sudden death from a slight cause, should undoubtedly be considered in the differential diagnosis of fatal cases.

13. Abrahamson, I.: *Arch. Neurol. & Psychiat.* 4: 42 (Oct.) 1920.

14. Happ, A. M., and Blackfan, K. D.: *Insomnia Following Epidemic (Lethargic) Encephalitis in Children*, *J. A. M. A.* 75: 1337 (Nov. 13) 1920.

15. Leahy, S. R., and Sands, I. J.: *Mental Disorders in Children Following Epidemic Encephalitis*, *J. A. M. A.* 76: 373 (Feb. 5) 1921.

16. Abrahamson, I.: *New York M. J.* 110: 17 (July 5) 1919.

17. Smith: *Pub. Health Rep.* 34: 207, 1921.

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SATURDAY, JULY 9, 1921

DO BACTERIA SUFFER FROM INFECTIOUS DISEASES?

As is well known, for every pathogenic micro-organism discovered many nonpathogenic varieties of the same type have been found in nature, and it seems highly probable that the same rule will be found to hold good in the case of ultramicroscopic viruses. It is difficult, however, to obtain proof of their existence, as pathogenicity is the only evidence we now have of the presence of an ultramicroscopic virus. On the other hand, it seems probable that if nonpathogenic varieties exist in nature, these should be more easily cultivated than the pathogenic varieties. In 1915, Twort¹ reported from London some unexpected results obtained while seeking evidence as to the existence of such nonpathogenic ultramicroscopic organisms. Many materials were investigated in the search, and finally an intensely interesting observation was made with glycerinated calf vaccine. Cultures from this vaccine yielded colonies of micrococci, subcultures of which could not be made, and after a time these colonies became transparent because of disintegration of the cocci. Further study disclosed that if material from such a dissolved colony was brought in contact with an ordinary colony, the process of solution would soon spread into the latter and often completely kill all the cocci in it. If the material from a dissolved colony was diluted and filtered through the finest porcelain filters, the clear filtrate had the power to dissolve cocci, and to make culture mediums unsuitable for growth of the cocci. A streak culture treated with such a filtrate soon shows spreading transparent areas of digested cocci, and colonies are eaten away from the periphery until sometimes no living cocci remain. This coccus-destroying virus can be kept alive through many generations of transfers, cannot be grown independent of the cocci found in the vaccine, has some but much less action on staphylococci from human infections, and shows no pathogenicity for many species of animals on which it was tried. Similar phenomena were discovered with an organism of the coli-typhoid group from the intestine of a dog,

and with a bacillus from the intestinal contents in infantile diarrhea.

These observations suggest at once the existence of ultravisible viruses pathogenic for bacteria, a possibility of enormous significance for the problems of infection and immunity. They would undoubtedly have attracted much more attention if they had not been first presented when all eyes were turned to the problems of the war. They raise the question whether bacteria themselves may not suffer from infectious diseases. If so, there at once appears the possibility that a method of defense hitherto unrecognized may exist in nature, and perhaps be capable of artificial development to assist in combating disease. What could be more brilliant than to cure bacterial infections by inoculating the victim with a virus deadly to the parasite and harmless to the host, a process which has already been successful in combating plant parasites, to say nothing of the use of rat typhoid virus to exterminate plague-bearing rodents?

Fortunately, Twort's observations have received confirmation. In 1917, d'Herelle of the Pasteur Institute observed a similar phenomenon in dysentery bacilli. The stools from convalescing subjects with dysentery, he found, may contain something which passes through porcelain filters, and which has the power of dissolving dysentery bacilli in cultures.² This virus can be cultivated through repeated generations, and gives the impression of being a true ultramicroscopic organism, capable of multiplication, specifically pathogenic for the Shiga dysentery bacillus. Nevertheless, this attractive hypothesis has not been accepted without contest, and other explanations have been advanced. As Twort says, in the first place we do not know for certain the nature of an ultramicroscopic virus. It may be a minute bacterium that will grow only on living material, or it may be a tiny ameba which, like ordinary amebas, thrives on living micro-organisms. On the other hand, it must be remembered that if the living organic world has been slowly built up in accordance with the theories of evolution, then an ameba and a bacterium must be recognized as highly developed organisms in comparison with much more primitive forms which once existed, and probably still exist. It is quite possible that an ultramicroscopic virus belongs somewhere in this vast field of life more lowly organized than the bacterium or ameba. It may be living protoplasm that forms no definite individuals, or an enzyme with power of growth.

Kabeshima,³ especially, has contended that the bacteriolytic agent is an enzyme, presumably an autolytic enzyme produced by the bacteria themselves. Thus, a minute quantity of active material will cause very rapid lysis of large quantities of bacteria, it remains potent at least four years at ordinary tempera-

1. Twort, F. W.: *Lancet* 2: 124 (Dec. 4) 1915.

2. D'Herelle's observations are published in a series of short articles in the *Comptes rendus des séances et mémoires de la Société de biologie, Paris*, 1917 to 1920. They are reviewed by Puntoni (*Ann. d'lg.* 30: 643, 1920); by Gjörup (*Hospitalstidende, Copenhagen* 64: 214, 1921), and by Ameuille (*Ann. de méd.* 9: 196, 1921).

3. Kabeshima: *Compt. rend. Soc. de biol.* 83: 471, 1920.

tures, and it resists the action of such antiseptics as alcohol, chloroform, toluene, ether and phenol; furthermore, the active agent may be precipitated from solution with acetone or alcohol without destruction, and it may be dissolved and preserved in glycerin; it resists temperatures that kill ordinary bacteria, and is not thrown out of solution by centrifugation, as bacteria or spores would be. Kabeshima believes that the agent is in the nature of a catalyst which activates the autolytic enzymes of the bacteria. Others have suggested that the autolyzing bacteria merely represent selected strains of organisms with exalted autolytic activity. Twort himself believed that the destructive agent must be something formed by the bacteria themselves, for he says: "There is this, however, against the idea of a separate form of life: if the white micrococcus is repeatedly plated out and a pure culture obtained, this may give a good, white growth for months when subcultivated at intervals on fresh tubes; eventually, however, most pure strains show a transparent spot, and from this the transparent material can be obtained once again."

D'Herelle is strongly convinced that the active agent is a true living organism which exists in the bowel normally, a bacteriophagum intestinale, which in normal conditions acts on the colon bacillus, but which may be an important defense in dysentery and other intestinal infections. In typhoid, he reports that the clinical amelioration always coincides with the appearance in the feces of a strong bacteriophagic activity against typhoid bacilli.⁴ He says that he has cultivated a single strain through more than a thousand generations without loss of bactericidal property. Gjørup also accepts the view that this is a true filterable, ultramicroscopic virus pathogenic for bacteria, and he himself has observed the bacteriophagic action in diarrheas and typhoid. Since the war, numerous investigators have turned their attention to this subject, and we may soon look for an active discussion of what possibly will develop into one of the most important fields of medical research.

EXPERIMENTAL PRODUCTION OF TAR CANCER

Recently we reviewed some of the recent work on the experimental production of cancer.⁵ Another important contribution on the same subject is that by Professor Fibiger⁶ of Copenhagen, who, it may be recalled, discovered that it was possible to produce carcinoma of the stomach and tongue of a rat by infecting it with a parasite (*Spiroptera neoplastica*) which has its natural habitat in certain species of cockroaches. The difficulty with this form of experimental cancer is that it is not possible to remove the parasite, and so the

fundamental proof of malignancy—namely, that the growth continue after the exciting cause is removed—cannot be obtained.

Professor Fibiger has systematically repeated the work of the Japanese experimenters Yamagiwa, Ichikawa and Tsutsui, who produced carcinomas in rabbits and in mice by painting the skin with tar for long periods of time. He has been able to corroborate this important observation in all details, having, in fact, much greater success than had the previous observers. Thus, of thirty mice painted with tar for 103 days or longer, no less than twenty-four developed carcinomatous growths. That these are true malignant neoplasms is shown by the fact that in several of them secondary growths were observed in the lungs or in the lymph glands, and in others the tumors were successfully inoculated into other mice for repeated generations. Furthermore, the carcinoma continued to grow in many of these animals after the painting with tar was stopped. These observations seem to answer any objections that may have existed as to the validity of the work of the Japanese scientists, and establish positively that the continued irritation of tissues by a chemical agent characterized by stimulating the cells to proliferation can of itself lead to the production of true malignant neoplasms.

We have now experimental evidence that many different things may lead to the production of cancer. These exciting agents have in common merely their capacity to stimulate tissue growth. Presumably cancer cannot be due to one single identical cause such as a specific cancer parasite, but several or numerous factors of different origin and different nature may be active in exciting the epithelial cells to unlimited carcinomatous proliferation.

AN EXPLANATION OF ORTHOSTATIC ALBUMINURIA

Among the types of so-called physiologic albuminuria, one of the most important has been designated variously as postural, orthostatic, lordotic or cyclic albuminuria. It is characterized by the appearance of albumin in the urine, not continually but under conditions in which the patient assumes a vertical position. The albumin output does not depend on muscular work or diet, for it is not regularly observed when the subject exercises or eats while lying down.¹ The manifestation is most frequently observed in the earlier years during and following the age of puberty. One observer has estimated its frequency as high as 19 per cent. among adolescents; but this figure seems decidedly exaggerated, in the case of Americans, at least.

It is well established that a large number of the patients lose their tendency toward postural albuminuria as they grow older. This is one of the reasons that has been urged against the assertion that the symptom is

4. D'Herelle: Compt. rend. Acad. d. sc. **168**: 631, 1919.

5. The Experimental Production of Cancer, editorial, J. A. M. A. **76**: 1404 (May 21) 1921.

6. Fibiger, Johannes, and Bang, Fridtjot: Experimental Production of Tar Cancer in White Mice, Det. Kgl. Danske Videnskabernes Selskab., Biologiske Meddelelser **3**: 4, 1921.

1. Hooker, D. R.: Postural or Orthostatic Albuminuria, Arch. Int. Med. **5**: 491 (May) 1910.

really referable in the first instance to a mild type of true nephritis.² In the search for some other explanation, it has been suggested that cyclic or periodic albuminuria may be due to changes in the permeability of the cells lining the urinary passages and particularly to alterations in the glomeruli, so that proteins are not held back by the renal filter as they normally should be. Hewlett³ has commented that this does not seem to be susceptible of proof; hence, in common with others, he inclines to the hypothesis that orthostatic albuminuria depends on changes in the renal circulation.

Interrelations between the appearance of albumin in the urine and pulse pressure but not arterial pressure per se have been described by American physiologists.⁴ Jehle⁵ has placed emphasis on the marked lordosis commonly shown by persons exhibiting postural albuminuria. There is an unusual anterior curvature of the spine in the region of the twelfth dorsal to the second lumbar vertebra. This he believes to occasion a mechanical interference with the kidney circulation which disappears, as does the attending albuminuria, when the posture is corrected.

If one assumes that this interference consists in a compression of the renal vein, it may be recalled that the anatomic relations are somewhat unlike with respect to the two kidneys. They are not located at the same level. Consequently, Sonne⁶ of Copenhagen has suggested that the two kidneys should not be equally involved if compression of the renal vein by an anterior curvature is the etiologic factor. An examination of six typical patients in the lordotic position by catheterization of each ureter separately has verified the assumption. Typical orthostatic albuminuria was in each case associated with the left kidney only, in harmony with the belief that the postulated compression by the vertebrae involves the left renal vein to which they are approximated in the upright posture.

HEMOLYTIC FEVER

There can be no doubt that marked rise in temperature may occur in the body under conditions in which infection cannot have a part. The so-called aseptic fevers afford a characteristic illustration. Not only have they been produced by administration of a variety of chemical substances, among them some of the purin derivatives, but febrile reactions are occasionally observed, without coincident infection, in cases of tissue destruction due to injury. Fever has also been attributed to administration of substances of relatively simple chemical character. Thus, one may read of

"salt fever," alleged to be due to "unbalanced" saline solutions. Furthermore, the so-called "water fever" has attracted considerable attention in recent years because of the rapidly growing practice of intravenous injection in therapy.

The reactions produced in this way were attributed by Hort and Penfold¹ a few years ago to impurities in the water used. They maintained that the usual distilled water is contaminated by a pyrogenic substance of bacterial origin. It was asserted that if ordinary distilled water is freshly redistilled before injection, the so-called water fever never manifests itself. As a result of this and similar widely reported statements, the practice of employing extreme precautions as to purity in the use of distilled water came into vogue everywhere.

Contrary to the earlier reports, Yamakami² has observed at the Lister Institute in London that water, injected intravenously into animals, causes a fever of typical form even when it is redistilled immediately before the injection. The fever, therefore, is not due to the contamination of water with a pyrogenic substance of bacterial origin, but it is to be attributed to its hemolytic property. The explanation of the febrile response is sought by Yamakami in the products of the hemolysis brought about by water. The type of the fever, the appearance of hemoglobinuria and albuminuria, and all other symptoms were quite the same as was observed to follow the injection of hemolyzed erythrocytes, or in the case of paroxysmal hemoglobinuria. The transfusion of a perfectly unhemolyzed nonisolytic blood does not cause any appreciable temperature variation of the recipient, whereas the intravenous injection of the animal's own blood or nonisolytic blood of other animals, hemolyzed with water, causes a febrile reaction similar to that produced by foreign proteins. It appears, therefore, that the intact erythrocytes can, as Yamakami expresses it, be accepted by the organism as its own property. The liberated cell proteins, however, are by no means innocuous when they are discharged into the blood stream. Therefore, the precautions to be exercised in the use of solutions for injection should include due consideration of the possibilities of hemolysis. The damage which the organism may experience from the occurrence or introduction of specific hemolysins in the blood is already well known.

1. Hort and Penfold: *Proc. Royal Soc. London B* **85**:174, 1912.

2. Yamakami, K.: *Hemolytic Fever*, *J. Path. & Bacteriol.* **23**:388 (Dec.) 1920.

2. Strauss, H.: *Die Nephritiden*, Berlin, 1920, p. 5 et seq.

3. Hewlett, A. W.: *Pathological Physiology of Internal Diseases*, New York, D. Appleton & Co., 1917, p. 413.

4. Erlanger, J., and Hooker, D. R.: *An Experimental Study of Blood Pressure and of Pulse Pressure in Man*, *Johns Hopkins Hosp. Rep.* **12**:145, 1904. Gesell, R. A.: *On the Relation of Pulse Pressure to Renal Secretion*, *Am. J. Physiol.* **32**:70, 1913.

5. Jehle, L.: *Die Albuminurie*, *Ergebn. d. inn. Med. u. Kinderh.* **12**:808, 1913.

6. Sonne, C.: *Beitrag zur Aetiologie der lordotischen (orthostatischen) Albuminurie*, *Ztschr. f. klin. Med.* **90**:1, 1920.

Effects of Syphilis on Families of Syphilitics.—In many cases of syphilis, the patient has been well for such a long time that the families are overlooked. This is partially due to the fact that the patient suffering from a syphilitic complication may appear at a neurologic or heart clinic in which syphilis is naturally not the primary interest of the clinic. As the majority of these patients come to the clinic for treatment many years after the original infection, the tendency to neglect the family is marked. It is thus necessary from a practical, therapeutic standpoint to examine as a routine matter the family of the early and late syphilitic.—Solomon, *Social Hygiene* **6**:470 (Oct.) 1920.

Current Comment

PERMEABILITY OF THE URINARY BLADDER

The textbooks of physiology are singularly reticent regarding the possibility of absorption from the urinary bladder. Dependable knowledge on this point is especially desirable, however, in view of the fact that irrigation of the bladder with foreign fluids is not an uncommon procedure in present day therapeutic practice; therefore the possible fate of substances introduced into the large cavity lined with epithelium should be known. Latterly, and particularly because of the contentions of Cohnheim,¹ it has been believed widely that the bladder epithelium is not a diffusion membrane and is impermeable even to water. Studies which have been undertaken by Shōji² at the Institute of Physiology in University College, London, have clearly demonstrated that the epithelial layer of the bladder in the living subject is permeable to water and sodium chlorid under physiologic conditions, that is, when the concentrations are not extreme or unusual. The bladder thus behaves, even during life, like other comparable physiologic structures with respect to the transfer of at least some common substances through its walls.

WATER AND GASTRIC SECRETION

The contention of the Russian physiologist Pawlow that water is a stimulus to gastric secretion has been verified beyond question on man. This effective response has naturally provoked the inquiry: "Why does this happen?" The factors concerned are not merely psychic, as has sometimes been supposed, for Sutherland³ has shown at the University of Chicago that water introduced intravenously will stimulate gastric secretion. This investigator hesitates to use the word "stimulation" in this connection. There is a continuous activity of the gastric glands, Sutherland comments, and the increase in available fluid in the blood stream makes the extraction of water by the gland cells easier or, in other words, hastens the passage of water and other blood constituents from the blood stream into the secreting cells, and out into the lumen of the stomach, together with the specific elements of the gastric secretion. However, water introduced into the stomach may be particularly potent as a secretory stimulus, and this is true even when the introduction occurs by sound in such a way that the factor of taste is excluded. The presence of food in the alimentary canal has an important effect in increasing the secretory response of the stomach to water. Furthermore, and this is of practical significance, the gastric glands when in a state of relative activity respond more quickly and completely to a given stimulus than if relatively quiescent. Sutherland suggests that since an amount of water too small to stimulate secretion by itself will shorten the latent period for a subsequent digestion

secretion, it seems probable that, in the absence of appetite secretion in man, the drinking of a glass or two of water from half an hour to an hour before or at the beginning of a meal will facilitate the digestion secretion and thus partially compensate for the normal appetite secretion. A generation ago both the healthy and the sick were earnestly warned against the harm of drinking water with meals. The dilution of the gastric juice was believed to impair seriously its digestive potency. Today it must be admitted that dilution by no means always impairs digestion, particularly when it becomes fortified by more vigorous secretion.

THE LIVE WIRE MIND

When a mentality like Edison's sets questions, such as have been widely discussed and criticized, it behooves more commonplace minds to "stop, look and listen." Mr. Edison, quite unintentionally, has stirred the educational world and, as in all such stimulations of the gray matter, we find ourselves getting "back to the Greeks," the source of all philosophical thinking and initiative. The mind of an inventor is an inquiring one: he is not content to tread the old beaten paths around, but tackles, directly, the obstacles in front. To do this, observation of all sorts and conditions of things keeps the mind supple and alert. Some of these queer shaped and unimportant bits of knowledge may be found to fit into these other equally odd shapes and, little by little, his picture puzzle reveals a perfect whole. Who would have supposed that the study of the anatomy of the mosquito would reveal the true source of malarial fever; and that by this knowledge vast areas of the earth would be reclaimed for habitation? When Joseph Leidy noticed and questioned what might be the white specks in the ham served for his luncheon, his mind opened the way to the discovery of the parasite disease in pork, against the eating of which, as told in the Book of Leviticus, the Jews had blindly enacted laws centuries before. The large majority of us are of the cog and ball-bearing type of mind. Specialization today is begun so early that the foundations of knowledge and philosophical thinking are very narrow. The question of moment to American educators is whether our schools and colleges are developing the greatest number of observers possible, or whether the ordinary student is constrained to tread the beaten paths with never a look to right or left and never an impulse to inquire into the mysteries that lie near by. The man of the bush who first used ash or hickory for his ax handle was a greater observer than the college man who thought cork came from Ireland. A man with an inquiring mind is what Edison calls a "live wire," interesting and interested; and in no way does this interfere with his being a highly specialized technical expert in any line he may be engaged in. Is our system of education making for or against this mind development? It is not whether a man can answer correctly all these questions, but whether he is asking these and similar questions of himself when he meets them in his daily reading and conversation. It was mind exercise and not mere knowledge that enabled the

1. Cohnheim: *Ztschr. f. Biol.* 41: 331, 1901.

2. Shōji, R.: On the Permeability of Epithelial Layer of the Bladder to Water and Salt, *J. Physiol.* 44: 238 (Dec. 7) 1920.

3. Sutherland, G. F.: Contributions to the Physiology of the Stomach, LIII, On the Secretory Response of the Gastric Mucous Membrane to Water and Saline Solutions, *Am. J. Physiol.* 55: 258 (March) 1921.

Greeks to initiate, in physics, geometry, literature, art and on through a long list, the foundations on which we build today. So, "back to the Greeks," who taught us observation, general and specific, with philosophical deductions. Concentration has its advantages; but unless the object is held at sufficient distance, the observer looks cross-eyed and loses his sense of proportion.

THAT NUXATED VICTORY

It was inevitable! We knew, when we first learned that the gallant Frenchman was coming to this country to dispute the World's championship, that he was beaten before he began to fight. For he was going up against a nuxated champion. Our readers will remember that it was "Nuxated Iron" that enabled Mr. Jess Willard to wrest the championship from Mr. Jack Johnson, and the same marvel made it possible for Mr. William Harrison Dempsey, in turn, to administer the K. O. to Mr. Willard. The futility of the quest of Georges Carpentier thus becomes obvious. We were, therefore, not surprised to find quarter-page advertisements in the newspapers of July 5, describing in detail how "Nuxated Iron" helped "Jack" Dempsey to whip Carpentier. One wonders what would have happened had Dempsey taken the "Nuxated Iron" course previous to our entrance into the World War.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Public Health Conference.—The first annual meeting of the League for the Conservation of Public Health was held, June 24-25, at San Francisco, under the presidency of Dr. Dudley A. Smith.

Meeting of County Medical Society.—At a special meeting of the Los Angeles County Medical Association, held May 30, under the presidency of Dr. Walter V. Brem, Dr. George Tyron Harding, Columbus, Ohio, brother of the President, made an address on "The Nervous Ex-Soldier."

COLORADO

Personal.—Dr. Carl A. Hedblom, Rochester, Minn., was awarded the degree of doctor of science at the commencement exercises of Colorado College, June 15. Dr. Hedblom graduated from Colorado College in 1907.

Organization of Clinical Pathologists.—The clinical pathologists of Colorado have organized under the name of the Colorado Society of Clinical Pathologists, with Dr. Philip Hillkowitz, Denver, as president, and Dr. Ward T. Burdick, Denver, as secretary and treasurer. The membership will be strictly limited to those who confine practice to this branch.

ILLINOIS

Typhoid Fever Situation.—For the first six months of 1920 more than forty cases of typhoid fever were reported from Lake County. Most of these occurred in Waukegan, North Chicago and Zion City. While no unusual outbreak has appeared at these points, still the endemic nature of the situation indicates that sanitary conditions need to be materially improved. During June there were eighty-eight cases of typhoid reported to the state department of public health. Seven of these occurred in Joliet and Joliet township, seven

in Melrose Park, and the remainder scattered throughout the state.

State Department of Health to Make Exhibition at Pageant of Progress.—The state department of public health will have an elaborate exhibition at the Pageant of Progress to be held in Chicago, July 30-August 14. Included in the exhibits are a number of mechanical models, operated electrically, that depict in a graphic and realistic manner various angles of the public health problems. The department will occupy six 20-foot booths.

Poliomyelitis Incidence Shows Increase.—During the month of June, fifteen cases of poliomyelitis were reported to the state department of public health, which is an increase of three cases over that for the same month in 1920, when twelve cases were reported. It is important to note that most of the fifteen cases, half of which are in Lake County, have occurred during the last two weeks and that the incidence seems to be increasing with the sustained hot weather. Physicians are urged to be on the alert for signs of poliomyelitis, especially during the next two or three months, and to make prompt reports of any cases or suspected cases in order that proper control measures may be instituted.

Chicago

Personal.—At the annual meeting of the Medical Women's Club of Chicago, held June 1, Dr. Katherine B. Rich was elected president and Dr. Blanche A. Burgner, secretary.

Chicago Physicians Decorated for Service in China.—Dr. James Edward Skinner and Dr. Charles G. Trimble, associate physicians in charge of the Alden Spears Memorial Hospital at Yenping, China, maintained by the board of foreign missions of the Methodist Episcopal Church, have been decorated by the Peking government of North China for the distinguished professional services rendered to the government troops during the recent civil war in the province of Fukien.

INDIANA

Judgment Against St. Vincent Hospital.—A judgment of \$15,000 was awarded Robert Stine of Indianapolis against the St. Vincent Hospital of that city by a jury in the Hendricks circuit court at Danville. The jury was out twenty minutes and awarded the full amount sought in the suit. Mr. Stine was a patient in the hospital in March, 1917. According to the testimony, after an operation, while still unconscious, he was placed in a ward, where a nurse laid a hot water bottle on his foot and left him. The foot was so badly burned that an amputation was necessary a few weeks later.

Hospital News.—The city board of health, Indianapolis, authorized Dr. Herman Morgan, secretary, to arrange to negotiate a temporary loan of \$230,000 to continue operation of the City Hospital and health department. This loan is necessary because the indebtedness from former temporary loans must be met out of the present available taxes. The board expects to eliminate its total indebtedness within a year or eighteen months. The health board has taken under advisement a proposal by colored physicians of Indianapolis that colored nurses be substituted for white nurses in wards for colored patients, in order to relieve the shortage of nurses. The plan was considered favorably if arrangements can be made that will not interfere with the present operation of the hospital.—It has been announced that a new building to accommodate fifty neuropsychiatric patients with tuberculosis will be erected at the Marion National Sanatorium at Marion.

KENTUCKY

An Advertising Chiropodist Convicted at Louisville.—"Dr." Roy Newall of Chicago, an itinerant and widely advertised chiropodist, exhibiting appliances for use in the treatment of broken arches and other foot troubles, was arrested on the advice of the state board of health and, on trial before Hon. Alfred T. Burgevin, judge of the city court, was fined \$50.

An Itinerant Optometrist Fined in Livingston County.—At the request of the state board of health, and through the activity of the county board of health, "Dr." Simon M. Jacobstein, an itinerant optometrist hailing from Louisville, was prosecuted and fined \$50 in the early part of June. A certificate to practice optometry was issued to Jacobstein last year under the exemption clause of the new drugless practice law, and it is now expected that he will be cited to appear before the board at its coming meeting to show cause, if any he can, why his certificate should not be revoked for unprofessional conduct of a character likely to deceive and defraud the public.

MAINE

State Medical Meeting.—The sixty-ninth annual session of the Maine Medical Association was held in Bangor, June 27-29. The meeting was presided over by Dr. Theodore E. Hardy, Waterville, president, and Dr. George R. Campbell, Augusta, first vice president. The officers elected were: president, Dr. Addison S. Thayer, Portland; president-elect, Dr. Langdon T. Snipe, Bath, and secretary-treasurer, Dr. Bertram L. Bryant, Bangor.

MARYLAND

Personal.—Dr. Roy R. Reynolds, medical superintendent of the South Baltimore General Hospital, has resigned to specialize in diseases of the nose and throat. Dr. Robert W. Johnson, University of Maryland, 1912, will assume the duties of superintendent, July 1.—Dr. Kenneth B. Jones has assumed his duties as superintendent of University Hospital.

Medical Social Service Course at Johns Hopkins University.—A new course in medical social service will be introduced at the beginning of the next scholastic year, beginning October 4. This course will be given by the department of social economics in cooperation with the Johns Hopkins Medical School and is listed among the graduate courses, leading to the degree of master of arts. Instruction will cover a period of one academic year, but completion of the first year's study in the department of social economics, or its equivalent, is prerequisite. The work will include lectures in various phases of psychiatric and general medical social service by members of the teaching staff of the university and the medical school. Special field work will be required of students, and this will be done in the medical social service department of the Johns Hopkins Hospital.

MASSACHUSETTS

Honorary Degrees at Harvard University.—At the commencement of Harvard University, June 23, the degree of master of science was conferred on Carlos Chagas, Brazil, and the degree of doctor of science on Sir Robert Jones, London, England, and Herbert Charles Moffitt, professor of medicine, University of California.

NEW YORK

Philippine Government Studies New York Health Methods.—Dr. Juan Fernando of the Philippine Health Service has spent the last six months in making an intensive study of the methods in use in the New York State Department of Health.

Director of Tuberculosis Division Resigns.—Dr. Malcolm F. Lent, director of the Division of Tuberculosis of the New York State Department of Health, has tendered his resignation, effective July 1, in order to practice his specialty at Saranac Lake, N. Y. Dr. Lent was formerly superintendent of Stony Wold Tuberculosis Sanatorium, at Lake Kushaqua.

Medical School Plans Expansion.—It is reported that the Syracuse University College of Medicine has acquired three pieces of property adjoining its present medical site preparatory to a proposed enlargement of the medical school campus. A campaign for funds is being planned by Syracuse University, first to pay off an indebtedness, and later to provide for a general expansion of its various departments, including the medical school.

New President for Cornell University.—Dr. Livingston Farrand, chairman of the central committee of the American Red Cross, and formerly professor of the University of Colorado, has been elected president of Cornell University. Dr. Farrand succeeds Dr. Jacob Gould Schurman, who resigned a year ago, after being president of the university for twenty-eight years, and whose appointment as minister to China has recently been confirmed.

Personal.—Dr. Howard Lilienthal, Mount Sinai Hospital, New York, gave an illustrated lecture on surgery of the throat at the quarterly meeting of the Onondaga County Medical Society, held recently at Syracuse.—Dr. Willis E. Ford, chief of staff of St. Luke's Hospital, Utica, since 1913, has resigned to devote his time to private work. He was unanimously chosen chief of staff emeritus. Dr. Andrew Sloan has been elected to succeed Dr. Ford.

State Accused of Profiteering in Hospital.—The American Legion's special investigating committee on insane and other mentally afflicted ex-service men now confined in the Manhattan State Hospital on Wards Island has requested the United States Senate and the authorities of New York state to conduct an inquiry to end alleged profiteering by the state.

The investigating committee claims that it found 200 ex-service men on Wards Island mixed with permanently insane and hardened cases under conditions that make it practically impossible to give them any special treatment. The committee states that the state is paying only 90 cents a day, although the government is paying \$2 a day for each government inmate. The committee recommends the erection of the proposed Creedmoor Hospital on Long Island.

New York City

Physician's Office Building.—The Herter residence, at the southeast corner of Madison Avenue and Seventieth Street, valued at \$200,000, has been purchased as a site for a five-story office building to contain only offices for physicians and surgeons.

Personal.—Dr. and Mrs. Joseph A. Blake were booked to sail for Europe on the Cunarder *Berengaria* on July 4.—Health Commissioner Dr. Royal S. Copeland is convalescing from an operation for empyemas following an attack of pneumonia.

Gift for New York University.—The Rockefeller Foundation announced a gift of \$35,000 to New York University to increase facilities for teaching preventive medicine, hygiene and sanitation at the University and Bellevue Hospital Medical College.

Volunteer Hospital Prepares for Campaign.—Gen. Ballington Booth announces that plans have been matured for conducting a campaign to raise \$500,000 for the Volunteer Hospital. William McAdoo will act as advisory chairman of the drive, which will be conducted in September.

Drive for Zionist Medical College.—The American Jewish physicians have opened offices at 1225 Broadway to organize for the purpose of collecting funds to erect and equip a medical college in Palestine. This central committee will have charge of organizing subcommittees all over the country.

Sorgen Indicted.—It is reported that Morris Sorgen, who, a year or two ago, advertised in the New York papers to furnish certificates for admission to colleges of medicine, dentistry, engineering, etc., "without Regents," has been indicted on the charge that he had secured money from several students by promising them entrance to medical schools without the requisite premedical training. According to the testimony, he had even offered to get medical diplomas for \$1,500 each.

Promotions and Appointments in the Rockefeller Institute.—The board of scientific directors of the Rockefeller Institute for Medical Research announces the following promotions and appointments: Frederick L. Gates, hitherto an associate in pathology and bacteriology, has been made an associate member; Frederic S. Jones, hitherto an associate in the department of animal pathology, has been made an associate member; Goronwy O. Broun, hitherto a fellow in pathology and bacteriology, has been made an assistant.—The following new appointments are announced. E. V. Cowdry, associate member in pathology and bacteriology; Albert Fischer, assistant in experimental surgery; William A. Hagan, assistant in the department of animal pathology; Albert B. Hastings, assistant in chemistry; Hugh J. Morgan, assistant in medicine; David I. Hitchcock, fellow in general physiology; James M. Neill, fellow in medicine.—John Auer, hitherto an associate member in physiology and pharmacology, has accepted a position as professor of pharmacology at St. Louis University.—Francis G. Blake, hitherto an associate member in medicine, has accepted a position as professor of medicine in Yale University School of Medicine.—J. Harold Austin, hitherto an associate in medicine, has accepted a position as professor of research medicine at the University of Pennsylvania.—Glenn E. Cullen, hitherto an associate in chemistry, has accepted a position as associate professor of research medicine at the University of Pennsylvania.—William C. Stadie, hitherto an associate in medicine, has accepted a position as assistant professor in medicine at Yale University School of Medicine.—Martha Wollstein, hitherto an associate in pathology and bacteriology, has accepted a position as pathologist at the Babies' Hospital, New York.—Israel J. Kligler, hitherto an associate in bacteriology, has accepted an appointment with the Zionist Medical Unit in Palestine.

NORTH CAROLINA

Organization of Tuberculosis Association.—The organization of the Mecklenburg Tuberculosis Association was completed, June 14. The assistance of Charlotte physicians has been promised by the Mecklenburg Medical Society in promot-

ing the new association. One of the first undertakings will be the erection of a permanent fresh air camp for the treatment of tuberculosis patients under the supervision of a competent corps of physicians and nurses.

PENNSYLVANIA

Health Centers to Be Opened.—The state department of health has announced arrangements for the opening of health centers in the high school building at Kane and at Smethport. Standard forms have been provided for a child health station to be opened by the Montgomery County Red Cross at Hoopston.

Philadelphia

Personal.—Dr. Henry R. M. Landis, director of the clinical and sociological departments of Phipps Institute sailed, June 30, to attend the International Tuberculosis Union in London, July 25-28.

Public School Medical Inspectors' Meeting.—More than a hundred inspectors and nurses of the public schools of Philadelphia attended the organization's first annual dinner at the Hotel Walton, June 13. Dr. Walter S. Cornell, director of medical inspection of the Philadelphia public schools, was among the speakers. Dr. S. Weir Newmayer was toastmaster.

To Organize Chinese Society.—A conference of Chinese physicians in this country took place at the International Clubhouse of the University of Pennsylvania from June 27 to June 30, inclusive, for the purpose of organizing a Chinese Medical Society in America. Dr. Me-iung-Ting, a student and intern in the Woman's Medical College of Pennsylvania, was secretary of the conference.

Admiral Braisted Resigns.—Admiral William C. Braisted has offered his resignation, to take effect early in September, from the presidency of the Philadelphia College of Pharmacy to which he was elected last month. The intent of this move is to make possible his reelection at the state meeting in September, so that there can be no challenging the validity of his office. It was announced that the H. K. Mulford Company had given 200 acres of its land to the college for a botanic garden and research laboratory. Dr. Heber W. Young was elected director.

Hospitals' Nursing Council.—Hospitals with a daily average of approximately 4,400 patients have become allied with the Council for Nursing Education of Southeastern Pennsylvania. The Hahnemann Hospital and the Samaritan Hospital have been admitted to membership, bringing the number of hospitals represented to eleven. The others are the University Hospital, Jefferson Hospital, Jewish Hospital, Bryn Mawr Hospital, the Hospitals of the Graduate School of Medicine of the University of Pennsylvania, the Frankford Hospital, the Children's Hospital, the Pennsylvania Hospital and the Philadelphia General Hospital.

TEXAS

Malta Fever.—Two cases of Malta fever have developed near Sierra Blanca. The victims are goat herders. Dr. Manton M. Carrick, Austin, state health officer, will make a personal investigation.

Child Health Conference.—Under the direction of the University of Texas and indorsed by the Harris County Medical Association, a child welfare conference was held at Houston, June 6-11. The experiment of feeding a quart of milk daily for a period of thirty days to undernourished children was started on June 13.

Provision for Examination Fees for Food Handlers.—The board of health of Dallas passed the recommendation that the city commission appropriate a sufficient fund to provide for the examination at the city hall of all food handlers who do not prefer to go to a private physician. Physical examinations for the food handlers is required by the state law.

Personal.—Dr. Mark F. Boyd, who recently resigned as professor of bacteriology and preventive medicine in the state medical college, has entered the service of the International Health Board of the Rockefeller Foundation and will be sent to Brazil about the first of the year as international health representative. Dr. Boyd will specialize in malarial control.

CANADA

Hospital News.—A new infirmary has just been erected in connection with the Muskoka Cottage Sanitarium, Gravenhurst, Ont.

Dominion Council Results.—The examinations for the Dominion Medical Council were held in June in Toronto,

Winnipeg and Vancouver. There were fifty-seven successful candidates.

Smallpox Reduction.—Smallpox, which has been more or less prevalent in different sections of Ontario, has of late been considerably reduced. In June, 1920, there were 362 cases, while in June of the present year the number has been brought down to 176.

Course in Pediatrics.—The Faculty of Medicine of the University of Toronto is making strong efforts to cater to the needs of medical men who wish to pursue a special line of study. A four weeks' course in pediatrics begins July 4. To announce these courses bulletins are issued to practitioners four or five times a year.

GENERAL

Public Health Meeting.—The fiftieth annual meeting of the American Public Health Association is to be held in New York, Nov. 14-18, 1921. Several other activities are planned by the Association in connection with their semicentennial meeting.

Vote Soon on Sheppard-Towner Bill.—A vote on the Sheppard-Towner bill for the protection of maternity and infancy will be taken in the Senate sometime in the early part of July. Senator Kenyon of Iowa, chairman of the Senate Committee on Education and Labor, succeeded in obtaining the consent of the Senate for a vote in the near future.

Diploma Mill Still Active.—A news report indicates that diplomas in medicine and dentistry, issued by the Oriental University of Washington, D. C., are being offered for sale at varying prices by certain individuals in New York. Reports heretofore indicated that the institution named had been conducting its business mainly in foreign countries.

American Electrotherapeutic Association.—The thirty-first annual meeting of the association will be held, September 7-19 at Washington, D. C., under the presidency of Dr. Byron S. Price, New York. In addition to the scientific program, two hours daily will be given to the practical demonstration of how to use equipment to secure certain definite therapeutic results.

American Gynecological Society.—At the annual meeting of the society held at Swampscott, Mass., June 2-4, the following officers were elected for the ensuing year: president, George Gray Ward, Jr., New York; vice presidents, Barton Hirst Philadelphia, and Walter P. Manton, Detroit; secretary Arthur H. Curtis, Chicago, and treasurer, Brooke M. Anspach Philadelphia. The next meeting of the society will be held in Washington, D. C.

The International Journal of Gastro-Enterology.—The first number of this new periodical contains 120 pages. It includes original contributions and a review on the roentgen-ray diagnosis of gastric diseases together with abstracts from the literature. An innovation is the addition to each article of commentaries by other physicians to whom the editor submits the article previous to publication. The publisher has utilized India tint paper as being more restful to the eyes.

National Tuberculosis Association Conference.—The five outstanding features of the seventh annual meeting of the National Tuberculosis Association, held recently in New York were the reorganization to permit the expansion of the board of directors from 60 to 103, consisting of a representative director for each of the fifty-three state and affiliated associations and fifty directors at large; the stress laid on continued medical and social research; the emphasis on the problem of tuberculosis in children; the report of Mr. Lee K. Frankel, of the Metropolitan Life Insurance Company, showing a decline of 39 per cent. in deaths from tuberculosis in the registration area of the United States from 1900 to 1919, and the problem of the tuberculous ex-service man. A number of resolutions were adopted. One relating to medical education urged the establishment of special tuberculosis departments in medical schools. The association commended the efforts of the national officials of the American Legion to have corrected the defects in legislation pertaining to rehabilitation of ex-service men and recommended, "first, such changes in the compensation act as will result in the immediate and material reduction in compensation for those cases that refuse to make proper use of the facilities provided for their benefit, and second, by making the welfare of the men and of the country at large, and not the desires of the individual constituents, the basis of action both as regards appointments of those charged with the care of these men, and as regards the individual cases of the men themselves." Another resolution approved the principles involved in sheltered training and employment.

for the tuberculous. Recommendations regarding immigration and tuberculosis were given June 25 in THE JOURNAL and also the officers for the ensuing year. A pageant entitled "The Spirit of the Double Barred Cross," written by members of the staff, was effectively staged at an evening meeting. The association is making arrangements to print this pageant and make it available for presentation in large cities of the country.

LATIN AMERICA

Public Health Nurses in Brazil.—Brazilian journals are commenting very favorably on the introduction by Dr. Chagas of public health nurses. While their number is limited and their introduction comparatively recent, the results already shown from their work have impressed the public very favorably.

New Hospital for Criminal Insane.—A new hospital for insane criminals was inaugurated, April 28, at Rio de Janeiro. The minister of the interior and justice attended as well as members of several bureaus and representatives of medical societies. Prof. Juliano Moreira, general director of the insane board of Rio, made the inaugural speech. The new building is fireproof and is equipped with modern facilities.

Personal.—Dr. Lyra Castro has been elected member of the Brazil legislature from the district of Pará.—Dr. F. Domínguez has retired after twenty-five years as professor of anatomy and operative medicine at Havana. He was once dean of the School of Medicine which owes much to his activities. He also introduced roentgen rays in Cuba and the roentgen-ray department at the Mercedes Hospital bears his name. He is planning a temporary stay in France.—Major A. Gonçalves Moreira of the Brazilian army has been relieved as director of the military hospital of S. Gabriel and appointed chief of the public health service of the Military School of Realengo.—Major A. Ribeiro do Couto has been appointed director of the Military Hospital of Recife.

FOREIGN

Merger of Pavia and Milan Medical Schools.—The *Riforma Medica* announces that the clinical institutes of Milan are to be merged henceforth in the medical school of the University of Pavia. There are several postgraduate institutes in Milan, including the one for occupational diseases.

Nativity Congress.—The third French Congrès National de la Natalité is to convene at Bordeaux, September 22. The fee of 10 francs does not entitle to the published transactions of the meeting. This congress has been organized by the Bordeaux Chamber of Commerce. Address Champ de Mars 8, Bordeaux.

Prize for Research on Nervous System.—The Instituto Lombardo di Milano has awarded the Fossati prize to Professors Sala and Verga for their work, "Lesions of Peripheral Nerves from Gunshot Wounds." The subject appointed for competition was the importance of war wounds in the progress realized in our knowledge of the nervous system.

Memorial to Galeotti.—Subscriptions are being collected for a bust of the late Prof. G. Galeotti whose death was recorded recently. It is to be placed in the pathology institute at Naples, the scene of his long labors. Dr. F. Pentimalli, now chief of the institute for general pathology, S. Andrea della Dame 21, Naples, is in charge of the fund.

Advertising of Medicinal Articles in Yugoslavia.—The *Riforma Medica* quotes another Italian journal to the effect that according to a recent decree of the minister of public health in Yugoslavia, advertising of medicinal articles is restricted exclusively to medical journals. Infringements of this rule entail a fine of 300 dinars for the first offense and revocation of the license in case of repetition.

Personal.—The cable states that Dr. Alexis Carrel, of the Rockefeller Research Institute in New York, has been elected a national associate member of the French Académie de Médecine at Paris. Dr. Carrel is a native of France although residing in this country, but it is said to be the first time that any one residing outside of France has been admitted as a national associate. The number is limited by the century-old charter to twenty. The Académie can have only 150 members in all.

New Edition of Italian Pharmacopeia.—The *Riforma Medica* states that the fourth edition of the Italian official Pharmacopeia is now ready. It is accompanied by a separate appendix containing the list of proprietary medicinal articles the inscription of which was authorized up to Dec. 31, 1915. The price of the new edition is stated to be 20 liras, post free.

The appendix is sold separately for 3 liras. Apply with money order to the Direzione dello Stabilimento penale delle Mantellate, Rome, which has charge of the sale.

Health Insurance in Czechoslovakia.—The *Riforma Medica* of Naples states that the government of Czechoslovakia has organized a system of insurance against disease, obligatory for all with incomes less than 20,000 crowns and optional above this. The choice of the physician is unrestricted. The government public health department is called the health and physical education service, its chief a member of the cabinet. The five branches include medical and sanitary regulations; hospitals and mineral water health resorts; social pathology and child welfare; hygiene, and physical training.

Medical Bibliophiles.—The *Vie Médicale* of Paris announces the organization there of a society with this name, presided over by Professor Roger, dean of the medical faculty. The society purposes to publish some work each year, illustrated by a master, the edition numbered and limited to the members of the society. The annual fee of 200 francs entitles to possession of the volumes to be issued. The initiation fee will be 200 francs except for the first fifty members. These pay no initiation fee. Those interested can obtain further details from Dr. G. Boyé, 134 rue de Fontenay, Vincennes, Paris, France.

Proposed International Sanatorium for Tuberculous Professors and Students.—The *Nederlandsch Tijdschrift* relates that the students and faculties of the Swiss universities are soliciting funds for founding a sanatorium at Leysin for the benefit of tuberculous students and professors of any country. Dr. L. Vautier is the initiator of the movement, as he has been taking sanatorium treatment himself in the Swiss mountains, and wants others to be cured as he was. A fund of 1,000,000 francs is the aim sought; the Société de Banque Suisse at Lausanne and the presidents of the Geneva, Lausanne and Neuchâtel universities are receiving subscriptions for the purpose.

Graduate Courses in France.—Among the courses recently announced is one of twenty lessons to begin August 20, at the Hôpital Lariboisière, by Drs. Dufourmentel and Miègeville, chefs de clinique, and their assistants, the course to be both technical and clinical. This course is to be followed by one on surgery of the face and neck on the cadaver. The laboratory fee is 150 francs. Calot holds courses from time to time at the Orthopedic Institute at Berck. The next one is a seven-day course to begin August 1, "to train physicians in the orthopedics indispensable for the general practitioner, treatment of fractures, tuberculous bone and joint disease, etc." The announcement states that explanations are made in English and Spanish. The fee is 150 francs. Address M. Fouchet, Institut Calot, Berck-Plage, or the Clinique Calot, Quai d'Orsay 69, Paris.

French Congress of Neurologists and Alienists.—The twenty-fifth annual meeting of the organized neurologists and alienists of France and French-speaking countries is to be held at Luxembourg August 1 to 6. The presidents of the congress are Dr. Buffet and Dr. H. Meige, of Paris, and Prof. J. Lépine of Lyons is the vice president. The main addresses are to be on the consciousness of the morbid condition in psychopathies, by Logre of Paris; traumatic epilepsy, by Béhague of Paris, and simulation of insanity, this address by Porot. The official program lists a long number of excursions to points of medical interest, including the Institut Emile-Metz for professional orientation of workmen: the Amar system, besides numerous social events, the meeting concluding at Metz. The fee is 30 francs, and Dr. Lalannc is treasurer. His address is Asile d'Aliénés de Maréville, près Nancy.

Organization of Antisymphilis Dispensary in a Maternity.—The Maternité Baudelocque at Paris has for a year been conducting a consulting and treating dispensary for venereal diseases in connection with the obstetric work, and it has now been officially recognized and placed on the books of the Assistance Publique, with a specialist in charge. Couvelaire, chief of the maternity, in announcing this news says that previously only in about 5 per cent. of the syphilitic women was the syphilis suspected until after childbirth. The aim of the new dispensary is to detect the syphilis in time for effectual treatment of the pregnant and parturient as well as of the offspring, and seek for syphilis in the father as well. Women throng to this dispensary, he says, when they shrink from seeking treatment in a special antivenereal disease dispensary. At the last sitting, eighty women and nineteen infants applied.

Government Services

Antityphus Campaign

Surgeon-General Cumming of the U. S. Public Health Service has issued instructions for the extension of the campaign to prevent the importing of typhus from the infected areas of Central Europe. At all the British and Continental ports through which the tide of emigrants flow Public Health Service officers have arranged with shipping companies for an inspection of all passengers embarking for the United States.

Additions to Soldiers' Homes

An expenditure of \$3,100,000 out of the hospitalization fund of \$18,600,000 authorized by Congress at the last session is to be spent in the construction of additions to five national soldiers' homes for the treatment of veterans of the world war. The allotment was recommended by the Special Hospitalization Board, and has been approved by Secretary of the Treasury Mellon. This is the second recommendation made by the board of physicians. The projects include:

- (a) National Home for Disabled Soldiers, Milwaukee, erection of a new hospital to accommodate 500 tuberculosis patients.
- (b) National Home for Disabled Volunteer Soldiers, Dayton, Ohio, for a new hospital to accommodate 250 tuberculosis patients.
- (c) Battle Mountain Sanatorium, Hot Springs, S. D., for a new hospital to accommodate 100 tuberculosis patients.
- (d) Marion National Sanatorium, Marion, Ind., for additional buildings to accommodate fifty patients with psychoses who have a complication of tuberculosis.
- (e) National Home for Disabled Volunteer Soldiers, Leavenworth, Kan., for a new hospital to accommodate 200 tuberculosis patients.

The Secretary of the Treasury in an announcement declared that practically none of the \$18,600,000 appropriated would be used in the construction of new hospitals. Through the Hospitalization Board, composed of Dr. William C. White, Dr. Frank Billings, Dr. John C. Bowman and Dr. George H. Kirby, the information is evinced that by the adoption of a policy of enlarging existing institutions owned by the government instead of new construction, it is possible to provide 6,800 beds for the care and treatment of disabled war veterans which is an increase of 1,800 beds over the number anticipated when the appropriation was originally made by Congress. Announcement of the expenditure of the remainder of the fund is expected to be made in the near future.

Improving Quarantine Service at Staten Island

Officers of the U. S. Public Health Service recently examined the quarantine station at Rosebank, Staten Island, and conferred with the medical officer in charge and the construction officer in regard to the proposed plan of improving the plant. Congress appropriated \$500,000 for its enlargement to accommodate the increased duties connected with this quarantine station. It has been the property of the State of New York, but was recently taken over by the U. S. Public Health Service.

Increase in Scope of Public Health Service

The growth of the U. S. Public Health Service since March, 1919, to May, 1921, since the Health Service began to provide hospitalization for former disabled war veterans has been extraordinary. According to the official figures just issued, the number of hospitals have increased from twenty-two to sixty-two, and their capacity from 4,500 to 18,500. The number of patients grew much faster than the capacity of the government hospitals, jumping from 9,000 to 26,000 and the Health Service was forced to place about two-thirds of them in civilian hospitals under contract. The personnel of the service has kept pace with the demands except the nurses, who are still about 20 per cent. below quota. The service now has a total of 3,200 physicians, 150 dentists, 1,400 nurses, 400 reconstruction aids and 125 dietitians.

Hearings on Care of Veterans

The Senate committee appointed to investigate conditions in government hospitals caring for ex-service men is holding hearings at the Capitol. Much testimony had been heard regarding the alleged inability of government physicians to diagnose cases properly. Conditions at government hospitals in Perryville, Md., and the treatment of mental cases at an insane asylum in Phoenixville, Ariz., were attacked. Charges of bureaucracy in Washington have also been frequently

made at the hearings. At Perryville, it was alleged by witnesses that the hospital was located in a swamp, that sanitary conditions did not prevail, that medicine was supplied only on request of patients, and that the nervous and shell-shocked patients were thrown into hysterics by the firing of heavy guns at Aberdeen. At Fort Thomas, Ky., it was alleged that there was a force of seventy doctors, nurses and other government employees to take care of 104 patients. At Phoenix, Ariz., it was alleged that insane patients were not isolated but were brought into daily contact with insane criminals. Senator Sutherland of West Virginia is chairman of the Investigating Committee.

Training for Medical Officers

Orders to officers of the Medical Corps to take a course of instruction at the Medical Field Service School at Carlisle, Pa., have been issued by Surgeon-General Ireland of the Army. The course runs for about six weeks. The original plan was to include a number of the members of the Officer Medical Reserve Corps in the list, but this arrangement had to be abandoned because no appropriation was included in the Army appropriation bill for the last fiscal year. Among the officers transferred from the Walter Reed Hospital in Washington are Captains Albert Bowen, John F. Edwards, Sam Hardeman, William C. Pollock, William D. McLelland, Montreville A. St. Peter, William K. Turner and First Lieutenants Arthur D. Haverstock and Joseph A. Mendelson.

Improvements at National Leprosarium

The Department of the Treasury has awarded a contract for the construction of buildings and additions at the National Home of Lepers, Carville, La. The Leprosarium is owned and controlled by the government through the U. S. Public Health Service, having been given to the government by the State of Louisiana last year. The expenditure for improvement amounts to \$68,833 and calls for the erection of seven cottages and some minor construction work. It will be started at once.

Legislation for Walter Reed Hospital

Congressman Kahn, chairman of the House Military Affairs Committee, has introduced into the House a bill providing for an appropriation of \$136,000 to begin the work of developing the Walter Reed Hospital in Washington. Another bill has been drawn up by Congressman Keller of Minnesota providing for the construction of a new hospital to replace the Walter Reed institution in the capital. The proposed act plans for the sale of the present Walter Reed property and the purchase of a site in another part of the city. The new hospital would be equipped to handle about 5,000 patients and would be constructed in such a manner that extensions can be made to it at a small cost.

Navy to Enlarge San Diego Hospital

The construction of an enlarged hospital at San Diego, Calif., at a total cost of \$1,975,000, is planned by the Medical Department of the Navy. The temporary hospital now located there is caring for more than 400 patients. The medical authorities hope that their plans will be carried out for the construction of sufficient modern buildings to provide care for all the sick and injured operating in that vicinity with the destroyers, submarines, air stations and marine barracks, all a part of the naval establishment at San Diego. The city of San Diego has donated additional land for the proposed new hospital.

Reserve Officers Retained on Duty

Surgeon-General Ireland, of the Medical Department of the Army, has announced that of the forty-seven reserve officers of the Medical Corps now on active duty forty-three will remain in the service to take care of the war risk patients now being treated in army hospitals. The Army appropriation bill failed to make any appropriation for the retention of reserve officers in the service except that it gave the Surgeon-General the authority to use them to care for disabled soldiers. The forty-seven officers, therefore, on active duty would have been relieved but for this emergency clause on July 1, 1921. Four of them elected to withdraw from the service to engage in private practice. The other forty-three were retained on duty.

Foreign Letters

PARIS

(From Our Regular Correspondent)

June 10, 1921.

Transmission of Epidemic Encephalitis from the Mother to the Fetus

At one of the recent sessions of the Academy of Medicine, Dr. R. Mercier of Tours reported the interesting case of a primipara who was delivered at term of a living child twenty-two days after the onset of encephalitis, which had developed with myoclonia. Childbirth appears to have acted as a traumatic shock and to have immediately aggravated the condition of the mother, for the woman died eighteen days after delivery of the child. The second week after birth, the child presented a similar form of encephalitis but of a milder type, which ended with recovery in spite of a complete lack of treatment. According to Dr. A. Netter, encephalitis cases arising toward the end of pregnancy are not exceptional. They are generally grave and entail the death of both mother and child. It is to be noted, however, that clinical observation alone does not allow us to affirm in an absolute manner placental transmission of encephalitis. The immediate contact of an infant with its mother for a certain length of time is sufficient to permit contamination to take place through the bucconasal secretions or through the milk. The hypothesis of placental transmission thus loses some of its support. In this connection, it is interesting to note the researches carried out by Drs. C. Levaditi, P. Harvier and S. Nicolau, the results of which were recently submitted to the Société de biologie and which prove beyond all doubt that epidemic encephalitis in rabbits is transmitted from the mother to the offspring in utero by passing through the placenta which serves as a filter.

Inquiry Concerning the Birth Rate in the Department of the Nord

Dr. H. Surmont has published recently in the *Echo médical du Nord* the results of inquiries made of physicians of the department of the Nord. Judging from the 156 replies received, Surmont concludes that there is at present an appreciable improvement in the birth rate, but this observation does not permit us to draw any conclusions in regard to the future. The pathologic causes for the lowering of the birth rate (syphilis, alcoholism, tuberculosis, gonorrhea) are still present in full force. The practice of abortion and birth control is still playing havoc. The fight against these plagues and for the increase of the birth rate must therefore be continued energetically.

The City of Paris and the New University City

The municipal council is considering the plan of transferring from the City of Paris to the University of Paris 9 hectares (22½ acres) of ground near Montsouris Park for the erection of the new university city. This project received its first impetus from a donation of 10,000,000 francs made by Mr. Deutsch (de la Muerthe). The price of the site has been fixed at 13,500,000 francs, and it has been agreed that the plans for laying out the new university grounds shall be made in accordance with a common understanding between the City of Paris and the University of Paris.

Death of Dr. Charles Porak

Dr. Charles-Auguste Porak died recently after a long illness, at the age of 76. Porak was born in Paris in 1845, and after a brilliant record as a medical student he was appointed in 1882 obstetric surgeon to the Paris hospitals. He became chief of service at the Saint-Louis Hospital, and later occupied a similar post at the Lariboisière Hospital. Just before his

retirement he was chief obstetric surgeon at the Maternité Hospital. He was president of the Obstetric Society of France and of the Society for the Protection of Children. He published a number of works, which deal chiefly with infections of the umbilicus in the new-born, congenital dystrophia of the bones, and the passage of drugs and poisons through the placenta. He had been a member of the Academy of Medicine since 1894.

Poisoning by Rhubarb Leaves

In certain parts of France it is a common practice to cook rhubarb leaves and to eat them in place of spinach. This custom is not entirely devoid of danger, and the *Bulletin des sciences pharmacologiques* mentions several serious cases of poisoning by rhubarb leaves. The symptoms of poisoning manifest themselves within a few hours after the meal, and are marked by pains in the stomach with a burning sensation, vomiting, sanguinolent diarrhea, and passage of cloudy urine of mahogany color. The urine contains albumin in large quantities, numerous epithelial cells, red blood cells, etc. Several similar cases, one of which ended fatally, have been reported in Switzerland. It is probable that the poisonous effect is due to soluble oxalates contained in the leaves and stems of certain species of rhubarb. It would be interesting in this connection to determine what varieties and species of the plant, what soils and what other external conditions play a part in the poisoning.

LONDON

(From Our Regular Correspondent)

June 6, 1921.

Heliotherapy

In a letter to the *Times*, Mr. Leonard Hill points out the superior therapeutic value of the sun's rays to those of artificial light and gives a new and interesting explanation of it. He first refers to experiments made by Dr. Sonne, of the Finsen Light Institute, who compared sunlight with sources of dark heat, each kind of radiation being taken of the same energy value per unit of surface. After deducting the amount of each kind of radiation reflected by the skin surface, he has found that thrice as much sunlight as dark heat is required to burn the skin. The difference is due to the fact that the visible rays of the sun penetrate the skin and are absorbed by the blood circulating in the deep and subcutaneous tissue, while the dark heat is mostly absorbed by the skin surface and warms. Dr. Sonne has found that sunlight may warm up the blood under the skin no less than 5 degrees Centigrade above the temperature to which dark heat warms it; that is, when the surface of the skin in either case is heated to a just endurable degree. The visible rays absorbed by the blood are converted into heat, and the heat carried away by the circulation warms up the body. Exposed to the cooling breezes of open air the body is kept cool as a whole, while locally the blood and deep skin in exposed parts are warmed by the sun to a temperature which may even exceed that of high fever. Mr. Hill thinks that this local warming, not excluding other possible results of absorption by the blood of the sun's visible rays, has a profound effect on the immunity of the body to disease. Children with tuberculosis of the bones, joints, glands and skin respond well to conservative treatment in sanatoriums in which they are exposed to open air and sunlight. It is the visible, not the ultraviolet, rays that stimulate health, for the latter are absorbed by the surface layer of the scarf skin, having the least penetrative power. To protect against overdoses of the visible rays the skin becomes pigmented, and experience shows that it is those who pigment deeply who do best. The red-haired, fair-skinned children who do not pigment cannot secure the benefits of sun exposure. The dark heat that we secure from stoves, steam pipes and hot water is a sorry substitute for sunshine. In place of dark heat and a

stagnant, warm atmosphere we want luminous sources of heat which will warm the blood as the sunshine does, and cool, moving air, which stimulates the metabolism of the body and the defensive mechanism of the respiratory membrane against catarrhal infections. To get luminous sources of heat we must use smokeless fuel and keep the sky clean, so that we can enjoy all the possible sunlight. Enormous economic effect would follow the national use of coal, not as fuel, but as raw material for the manufacture of smokeless fuels, solid, liquid and gaseous. A great increase of health would no less result from clear skies, increased sunlight and absence of fog, from skin and lungs, clothes, house decorations, and gardens no longer damaged by soot.

"Dangerous Drugs Regulations"

In a previous letter (THE JOURNAL, March 12, 1921, p. 738) the protest of the British Medical Association against these proposed regulations, which are designed to check the drug habit, was reported. Not only the association but also a number of other bodies medical, pharmaceutical, etc., raised objections. The government appointed a committee to amend the regulations, and it has met most of the objections. The drugs to which the regulations apply are morphin, cocain, ecgonin and diamorphin (heroin) and their respective salts, medicinal opium and any preparation, admixture, extract or other substance containing not less than 0.2 per cent. of morphin or 0.1 per cent. of cocain, ecgonin or diamorphin. Their manufacture, sale, distribution and possession are to be completely controlled, as no person other than those licensed will be permitted to take part in any of these. These drugs can be supplied to be public only on a prescription given in writing by a registered physician, dentist or veterinary surgeon, which must be dated and specify the name and address of the person for whose use the prescription is given and the total amount of the drug to be supplied. The government may prescribe and issue a form for use in prescribing these drugs, on which alone they can be prescribed. A prescription for any of the drugs on such an official form shall be dispensed only if the dispenser is acquainted with the signature of the physician, or the person for whose use the prescription is given, and has no reason to suppose that the prescription is not genuine. The drugs must not be supplied more than once on the same prescription, unless the prescription so directs, and then they may be supplied on not more than three occasions. Every person who supplies any of the drugs must enter in a register kept for the sole purpose all purchases and sales. A physician who records in a day book particulars of drugs supplied by him to patients with their names and addresses may, in lieu of keeping the register, enter separately for each of the drugs in a book kept for the purpose references under the appropriate dates to the records in the day book. Certain familiar remedies, such as opium plaster and ammoniated liniment of opium, containing the drugs mentioned are exempt from the regulations, as they are not likely to conduce to the drug habit.

The Decline of Fever Mortality

In his Chadwick lecture on fever in England during the past century, delivered at the Medical Society of London lecture room, Dr. William Hunter dealt with the remarkable results achieved by sanitary reform since the passing of the first public health act in 1848. If the rate per million of mortality of fevers existing in England and Wales in the four years 1847-1850 existed now, the total deaths from fevers in the years 1916-1919 would have been 600,000, whereas they were only 81,000. Of these, 19,000 were caused by diphtheria, 52,000 by measles and whooping cough, about 5,000 by scarlet fever, only 3,600 by typhoid, 110 by smallpox, and only seven by typhus. The chief problems regarding fever mortality in England at the present time were those connected with diph-

theria, measles and whooping cough, which were responsible for nine tenths of the number. Of deaths from the other fevers, the number in 1919 was the lowest in the history of England, namely, only 12,000 in a population of 34,000,000, as compared with 108,000 in 1849 in a population of 17,000,000.

A Nursing Hotel

It is announced that a nursing hotel, which may be described as a nursing home *de luxe*, will soon be established in London. It will dispel the gloomy atmosphere which so frequently pervades the ordinary nursing home. There will be no gray walls, no obstruction of uniformed nurses. A gorgeously attired hall porter will usher the guest-patient into a wondrous lounge amid flowers and palms, where on luxurious settees he (or she) will await examination by specialists. He will lunch socially with other newcomers, and at length each will adjourn to a special suite of rooms, each of which has its private bathroom. Special color schemes will be a feature of the mural decorations. Expert cooks will provide such special diet as each guest-patient is prescribed.

BELGIUM

(From Our Regular Correspondent)

Liège, June 1, 1921.

Sterilization of Typhoid Carriers

The Royal Academy of Medicine has received from Dr. Haibe an important communication relative to the typhoid bacillus for the best report on which a prize has been offered. Haibe has studied in animals the conditions under which the typhoid bacillus is carried to the bile when introduced directly into the circulation. He has noted, especially, that in the dog bacilli are found in small quantities in the bile forty minutes after intravenous injection of a heavy dose of a bacillary suspension. On the other hand, negative results are obtained if the typhoid bacillus is injected into the dog's stomach. It is an established fact that in carriers the contamination of the digestive tract is usually caused by the ejection of the bile; that is to say, the bile is a center of culture where the bacterial organisms can multiply and be preserved. But Haibe raises the question whether the bacillus could not sometimes maintain itself in the tissues of the intestine under the influence of inflammatory changes, especially in cases of appendicitis. He mentions the case of a person who suffered an attack of appendicitis eight months after having had typhoid fever. The appendix, when removed, yielded a culture of typhoid bacilli. Was it really a case of appendicitis of typhoid character, as the author seems to believe? This does not seem to be irrefutably proved, as it is not certain that this patient did not harbor typhoid bacilli in the gallbladder. In the second part of his report, Haibe studies the influence of a series of drugs given to dogs for the purpose of ridding them of the bacteria present in the bile ducts. These experiments, dealing mainly with colloidal silver, neo-arsphenamin and hexamethylenamin, have unfortunately not been markedly successful. Even autogenous vaccines were ineffective; however, they seemed to exert a favorable influence on the urinary elimination of bacilli. It would be interesting to follow up the study of this particular point. Haibe has carefully studied 351 cases of typhoid fever from the standpoint of the persistence of bacilli in stools. Bacilli have been found in 6 per cent. of the cases after seven weeks, and in 2.3 per cent. of the cases after three months. The chronic carriers were subjected to various forms of treatment. As a general rule, autogenous vaccines did not prove efficacious. Arsenical preparations did not show any results. Haibe believes that a rather strict dietetic regimen should be recommended, preferably a regimen with milk as a basis. Frequent purging doses of calomel seemed to be useful. However, no particular noteworthy results were secured.

Furthermore, Haibe recounts in minute detail his observations in a case of cholecystitis. The patient (a woman) was a carrier on whom autogenous vaccines, purges, etc., had no effect in dispelling bacilli. Cholecystectomy, however, gave decisive results. The bacilli soon disappeared definitively. This is easily understood, as the bile taken from the hepatic duct is sterile. The bacillus is found in the gallbladder. These facts clearly show all the difficulties pertaining to the problem of the sterilization of bacillus carriers.

Migraine

Before the Société clinique des hôpitaux, Monsieur Bouché presented a new conception of the pathogenesis of migraine arrived at through researches made in collaboration with Monsieur Hustin. He applies the term "vasotrophic shock" to the vessel and blood changes observed after injection of small doses of horse serum antigen. This name seems to him to be more exact than the customary term "anaphylactic shock," because the symptoms noted occur in an identical manner under conditions in which anaphylaxis does not intervene. During the first half hour following the injection, the effects may be attributed to the excitation of the sympathetic nerve (leukopenia in the capillaries with leukocytosis in the veins, variation of the refractometric index, etc.). Five or six hours later, a second period is produced by the excitation of the autonomic nervous system (general leukocytosis, mononucleosis, etc.). The authors, who had previously found this symptomatology in epilepsy, found the same manifestations in migraine, in which they were able to secure graphs showing the refractometric index and the duration of coagulation typical of vasotrophic shock. But whereas in epilepsy the attack occurs during the second phase, in migraine it indicates the final phase.

The American Commission for Relief in Belgium and the Rockefeller Foundation

The Fondation universitaire, founded through the generosity of the American Commission for Relief in Belgium, and endowed solely with civil rights and privileges, has just ended its first period of activity. It has already proved its usefulness through the many welfare movements that it has supported, which is particularly appreciated at this time when the intellectuals, both scientists and students, are striving to overcome the difficulties caused by the high cost of living. It has granted stipends to more than 300 students of our high schools and universities. It has accorded fellowships to twenty-four students desiring to study in the United States. It has subsidized the publication of reviews and books, and has assumed the total expense for the publication of a series of scientific works, and through this action will help those who are prevented from publishing their works on account of the increased cost of printing. This foundation is also establishing scholarships for our students in European universities.

Colonial Hygiene

In an interesting book published by Dr. Devalkeneer, entitled "Coloniser pour vivre—Vivre pour coloniser," and which he dedicates to those who are interested in the Belgian Congo, he emphasizes the two most important factors pertaining to hygiene: the health of the colonists and the amelioration of the black race. His remarks on this subject are worthy of attention: "The aim in view would not be reached," says the author to the colonists, "if the knowledge of hygiene that you are to acquire should not prove to be of some benefit to the people among whom you are residing, for it must be remembered that these negroes gave heroic proofs of their love for the mother country during the war and thus earned the right of our protection. The black race is the wealth of our colony, and we should strengthen its representatives

morally and physically. That is the reason why, when we shall study the social scourge called trypanosomiasis, your attention will be especially directed to the measures to be taken to overcome it."

Demonstration in Honor of Prof. Léon Stiénon

After having devoted more than thirty years to teaching in universities, Professor Stiénon has resigned his chair in the department of pathologic anatomy of the University of Brussels. The professor who has initiated so many generations in the study of this difficult subject, which is such an essential branch of pathology, takes leave of his pupils while his vitality is at its highest and his zeal for his work is keenest. The Cercle de médecine et de pharmacie of the University of Brussels, wishing to pay homage to the eminent professor, proposes to present to him a medallion executed by one of our best sculptors and to create an endowment in his memory which shall recall to future generations the distinguished services rendered by Professor Stiénon to the University of Brussels and to medical science in general.

BUENOS AIRES

(From Our Regular Correspondent)

May 27, 1921.

Argentine Medical Association

To the societies of biology, surgery and internal medicine that constituted this association originally there have been added others on ophthalmology, deontology, roentgenology, electrotherapy, hygiene and microbiology. However, there still remain some independent societies which have not joined the association, such as those of pediatrics, surgery, obstetrics and gynecology. The last two have a fixed membership and require the presentation of a thesis. The present tendency is to bring about the confederation of all societies located in the federal capital. On the other hand, the medical society of La Plata and those in other cities are taking steps to band together. Each society will preserve its independence and have control over its own funds, and may establish any relations it pleases with similar foreign associations.

For the first time the new society of deontology has undertaken a propaganda campaign in professional matters. It has asked the revocation of licenses granted by the Department of the Interior for the sale of several drugs, in spite of the fact that the technical governmental bureaus had shown that they are either inactive or harmful and lack any possible therapeutic action. There has been some talk, although it has not materialized as yet, of establishing an institution somewhat similar to the Council on Pharmacy and Chemistry, which has given such wonderful results to the American Medical Association.

Medical Congresses

During the present year there will be held a congress on internal medicine organized by the Argentine Medical Association. Next year there will be held the Second National Medical Congress, having for its subject hydatid disease.

Dr. Molina's Retirement

Dr. Samuel Molina has just given up his position as chief of Rivadavia Hospital, which he filled for forty-eight years. At the end of last year he also retired from the chair of clinical obstetrics. Dr. Molina was truly the creator of modern obstetrics in our country; the Rivadavia Hospital, devoted only to women, is one of the best of Buenos Aires.

Medical Teaching Conditions in the Schools of Medicine Continue Abnormal

At the recently established school at Rosario they are having a strike. The school at La Plata is still organizing

its second year course, although we are now at the middle of the school year. At present the students at Cordoba and Rosario have the power to appoint or dismiss professors, etc., and of course they "passed" the examinations. At these schools there is an antireligious tendency, and socialist and anarchist propaganda is active. So far Buenos Aires University is the only one that has escaped similar conflicts derived from the right enjoyed by students to intervene in the election of deans and boards of directors. The professors have ceased to take part in the elections, for should their opinion prevail the students would start disturbances.

MADRID

(From Our Regular Correspondent)

May 12, 1921.

Hazen's Theorem Applied to a Spanish Town

The truth of Hazen's theorem is well illustrated at the town of Vendrell in the province of Tarragona. Aug. 31, 1911, seventy people suddenly became sick of cholera; this number kept on increasing until it reached a total of 600 out of 4,700 inhabitants. The water supply was derived from two little streams and was exposed for a distance of 500 meters. The neighbors availed themselves of this opportunity to wash their clothes in the streams. So the very day before the catastrophe, some housewives washed there the underwear of a patient with diarrhea who, as found afterward, had been in contact with the crew of an Italian ship from a cholera-infected port. As soon as the epidemic was over, Dr. Murillo himself, who had charge of its suppression, decided to round up his work, endowing the city with a safe water supply. The work was ended in 1912 so that, if we leave aside that year and the one of the epidemic, we have seven years with a protected water supply (1913-1919) to compare with the seven previous ones, when the water was not protected. The death rate in the previous period was 94 and in the last period 75, a saving of nineteen lives every year. A curious fact, hard to explain, is that the deaths from brain hemorrhage, which is a common cause of death in this region, show a decrease from 32.2 per thousand in the first period to 17.7 afterward, a reduction of 45 per cent. This shows that many lives would be saved in Spain if public health measures were thoroughly enforced; but in this country only Coruña and Valencia have comparatively sanitary water supplies, and the other cities, such as Orense, Ciudad Real and Cádiz, which have low death rates, must thank fate for it.

Typhoid in Spain

Dr. Murillo, general inspector of the Spanish Sanitary Service, delivered at the National Academy of Medicine a lecture which made such a deep impression that the academy ordered its publication in a large edition to be distributed all over the country. In fact, it is a splendid sanitary lesson pointing out public health deficiencies in Spain, especially as regards municipal authorities. At the same time it overflows with medical optimism, since it lays stress on the sense of public duty among the medical profession, which is the only group in Spain which concerns itself with the lives of the people, and the only one which through a constant campaign has popularized sanitary improvements. The death rate decrease from 35 to 22 per thousand since 1900 is wholly due in Spain to the medical profession, which has saved 144,000 lives in this period.

In Spain, 5,000 people die every year of typhoid fever, which implies 50,000 typhoid cases. If we keep in mind that each gram of typhoid excreta holds an average of a hundred million bacilli, we gain a better idea of the enormity of this infection. The vast majority of typhoid patients cease to be carriers three months after recovering from the disease, but some remain carriers for an indefinite period. Dr. Murillo

reported an investigation he has carried out since 1917 to determine the survival of the typhoid bacillus left unmolested, i. e., in ground free from organic matter, sand sterilized up to 100 C. and kept in a damp environment. He found that under such conditions the germ survives fifty-five days. Afterward he carried out two experiments in a radish field in the open, first inoculating the ground with bacilli before planting the radishes and then introducing them just after the radishes began sprouting. In the first case the bacillus remained virulent during thirty-six days, and in the second, thirty days. As to the way in which the bacilli reach the ground, he said that everybody was familiar with the preparation of manure in Spain. There are no privies in most villages, and the whole family uses the stable to mix their stools with those of the animals. This is done not only by habit but also out of greed to enrich the fertilizer. Naturally, if there are any typhoid patients in the family there will be legions of bacilli which will be spread in orchards and gardens. A precisely similar situation compelled the German commission against typhoid fever to devote a good share of the 12,000,000 marks it had available, to build 56,000 privies and 51,000 manure bins. The same German commission traced 10,000 patients and found out the source of the infection in over 5,500. Four thousand were contact cases, while the others had been infected through other agents such as water, milk, food and excreta. This does not mean that water has lost its epidemiologic importance, especially in Spain, but that we should never neglect to study direct infection. Water-borne epidemics are massed infections; contact cases spread like oil spots; a water-borne infection is like lightning, and a direct infection like a short circuit.

WATER-BORNE TYPHOID OUTBREAKS IN SPAIN

There have been many instances of water-borne typhoid epidemics in Spain. One of them occurred at Madrid last year and was characterized by a sequence of outbreaks and its long duration. In January, 1920, there were sixty-two typhoid deaths, and in February, March and April, twenty-eight, thirty-seven and fifty-one, respectively. There were forty-one deaths in August, and then in the fall an explosive outbreak localized in one borough. Spain is far below other countries as regards water-borne infection. In the decade 1910 to 1919, the typhoid death rate varied between 22 to 35 per hundred thousand inhabitants. The average was 28 per hundred thousand, the only redeeming feature being that in the previous decade it had been 37 per hundred thousand. The best proof that municipal authorities do neglect public health is shown in the fact that in all the provinces the typhoid death rate is higher in the capital cities than in the rest of the province. This is the very opposite of what happens in all other countries. Among capital cities, of the two largest cities of Spain, Barcelona and Madrid, Madrid has a minimum typhoid death rate of 20 and a maximum of 43 per hundred thousand. Barcelona's lowest typhoid death rate is 39, and its highest, 308, having in other years of the same decade figures of 115, 152, 171 per hundred thousand. This is much higher than Moscow's death rate of 56 and Petrograd's, 126. Among the cities with highest typhoid mortality in the triennium 1917 to 1919 were Almería, which had 530 per hundred thousand; Tarragona, 243; Zaragoza, 243 and Barcelona, 211.

Child Welfare and the Protection of Mothers

Professor Bar of Paris delivered before the National Academy of Medicine a lecture describing the work accomplished in Paris to protect babies and their mothers. He referred to the recent mothers' centers, which are somewhat like the *Gotas de leche* established in Madrid through the late Dr. Ulecia's efforts. In these centers, mothers are advised as to

the bearing and rearing of children. Milk is furnished if needed, and the children are inspected when they are still well without waiting until they get sick. Infant mortality in France, according to Professor Bar, is 9 per cent.; but in places where these consultories have been established, it has decreased to 4.5 per cent.

He referred to the present status of obstetrics in France. He said that cesarean section is very much in favor before labor. Preventive obstetrics is the watchword of the times, this being due to the consultories for healthy pregnant women, established through Professor Bar's efforts. In 1920 he saw in his consultory for normal pregnant women 17,000 patients, who were advised as to the best measures to bring about an ideal labor. Evolution of obstetrics is clearly shown in the subjoined table, in which is also given the name of the professor in charge of the service and the year.

	1897 Tarnier	1905 Budin	1917 Bar
Number of labor cases.....	2,307	1,625	2,233
Shoulder presentation.....	25	20	8
Embryotomies	8	4	4
Head presentation.....	1	5	4
Cesarean section.....	1	5	19
Induced labor.....	4	4	0
Placenta praevia.....	8	4	4
Eclampsia	17	10	3

In the research work done in his clinic no signs were found of Widal's hemoclastic shock in normal young pregnant women during the first five months of pregnancy, and only one third exhibited it in the last three months. The doctrine of a liver toxemia is losing ground. The latest investigations have shown that the chorionic villi are always at work. The syncytium is a glandular organ which acts as an antigen; and while no antibodies have ever been found after the first five months, their existence may be accepted in the early part of pregnancy. Abderhalden's test has proved positive in one third of nonpregnant women. The villi do not act directly but through the endocrine glands, there being during pregnancy an increase of cells in the anterior lobe of the pituitary gland so typical as to gain for them the designation of pregnancy cells. There are also changes in the thyroid gland, the ovary and the suprarenals. In these there is at first an increase of cholesterol, and the medullary substance becomes enormously enlarged, thus causing an increase of the chromaffin substance. The placenta acts on the uterus through the ovary, not directly but through the endocrine glands. Hence the influence of these glands on pregnancy.

Marriages

- IRWIN B. MARCH, Major, M. C., U. S. Army, Richmond, Calif., to Miss Elizabeth Louise Stevenson, in Manila, P. I., May 6.
- JOHN HARPER, Lieut., Commander, M. C., U. S. Navy, to Miss Henrietta Elizabeth Berens, at Washington, June 2.
- FRANCIS A. O'REILLY, Lawrence, Mass., to Miss Mary M. Haverstraw of Providence, R. I., at Lawrence, June 22.
- WALTER CUNNINGHAM OVERSTREET to Miss Josephine Hedwig Thomas, both of Jonesboro, Ark., June 24.
- THOMAS DONALD CUNNINGHAM to Miss Isabel Coolidge Radcliffe, both of Boston, June 21.
- ARTHUR O. BRUCE, Boston, to Miss Marion Patrician of Somerville, Mass., June 14.
- EARL E. VANDERWERKER to Miss Emily H. Langmann, both of New York City, June 25.
- EMOR L. CARTWRIGHT to Miss Leota F. Anspach, both of Fort Wayne, Ind., June 1.
- JACOB J. ENTZ, Marion, Kan., to Mrs. Virginia Knox Kimble of Wichita, Kan., May 5.

Deaths

- Wallace Calvin Abbott ⊕ Chicago; University of Michigan, 1885, died at his home, July 4, aged 64, from chronic nephritis. He was a graduate of Dartmouth College. Following his graduation in medicine he engaged in general practice but shortly began the manufacturing of alkaloidal granules, later forming the Abbott Alkaloidal Company. This concern developed into a general pharmaceutical manufacturing company now known as the Abbott Laboratories. Dr. Abbott founded the *Alkaloidal Clinic* devoted to the publication of material relative to alkaloidal therapy and now published as the *American Journal of Clinical Medicine*. He was also the author of several books on the practice of medicine with alkaloidal products.
- William T. Jenkins, New York; University of Virginia, 1879; health officer of the port of New York at the time of the cholera epidemic, in 1892; established, in 1892, the system of sanitary inspection of immigrants at the ports of embarkation, and was an incorporator and director of the merchant marine hospital service for foreign sailors; appointed health commissioner of the city of New York in 1898; and while holding this position was appointed a member of the state board of health by Theodore Roosevelt, then governor of New York State; died in the Hahnemann Hospital of liver trouble, June 25, aged 66.
- Richard Kalish ⊕ New York; Bellevue Hospital Medical College, N. Y., 1884; a fellow of the American College of Surgeons; member of the New York Academy of Medicine; president Society of Alumni of Bellevue Hospital, 1889-90; consulting ophthalmologist to the Knickerbocker, City, Sea View, St. John's and Long Island City hospitals; died, June 21, from heart disease, aged 67.
- Seth C. Gordon, Portland, Me.; Medical School of Maine, Portland, 1855; LL.D., Dartmouth Medical School, Hanover, 1905; Fourth vice president of the A. M. A., 1883; Civil War veteran; member of Democratic National Committee for Maine, 1896-1900; surgeon at the Maine General Hospital, 1874-1894; specialized in gynecology; died, June 23, aged 91.
- Eugene Bernard Laird, Haverstraw, N. Y.; College of Physicians and Surgeons, Columbia University, New York, 1877; consultant surgeon at New York State Hospital for Crippled and Deformed Children, West Haverstraw; member of the Medical Society of the State of New York; died, June 24, aged 65.
- Sarah Elizabeth Finch ⊕ Sound Beach, Conn.; Cornell University Medical College, Ithaca and New York, 1904; for several years bacteriologist of the New York Skin and Cancer Hospital; died from heart disease following an operation at the Lenox Hill Hospital, New York, June 21, aged 40.
- George D. McGauran ⊕ Newburyport, Mass.; Laval University, Quebec; New York University Medical College, 1892; city physician of Newburyport and consultant, medical staff, Anna Jacques Hospital; died, June 15, from hardening of the liver following severe gallstone trouble, aged 71.
- Allen Lamson, Worcester, Mass.; New York Homeopathic Medical College, 1883; at one time a surgeon on the staff of the Worcester Hahnemann Hospital; seized with heart attack while attending the centennial of Amhurst College, and died June 22, at the college hospital, aged 66.
- Maurice Edgar Rose, Albany, N. Y.; Columbia University College of Physicians and Surgeons, N. Y., 1907; director of child hygiene, New York State Department of Health; died suddenly from angina pectoris at his office in the Capitol building, June 22, aged 37.
- W. W. Culpepper, Crowley, La.; New Orleans School of Medicine, 1870; died in June from injuries suffered in an accident, June 15, in Port Arthur, when a motor cycle in which he was riding was wrecked by two automobiles, aged 86.
- Eugene B. Dunbar, Manchester, N. H.; Dartmouth Medical School, Hanover, N. H., 1887; member New Hampshire Medical Society; died, June 19, in the local hospital, where formerly he had been a member of the staff, aged 64.
- Louis A. Grimes ⊕ Concord, Ky.; Starling Medical College, Columbus, Ohio, 1863; Jefferson Medical College, Philadelphia, 1864; local surgeon, Chesapeake and Ohio Railroad; died, June 20, after a brief illness, aged 82.
- Louis J. Bechtold, Belleville, Ill.; St. Louis Medical College, 1871; a practitioner in Belleville for nearly half a cen-

⊕ Indicates "Fellow" of the American Medical Association.

ture; member of Illinois State Medical Society; died, June 17, from angina pectoris, aged 73.

James H. Owen, Randolph, Ky.; Louisville Medical College, 1876; member of the Kentucky State Medical Association; died, June 16, at Summer Shade, Ky., from organic heart lesion, aged 71.

Charles Teuber, Moorpark, Calif.; College of Physicians and Surgeons, New York, 1877; University of the City of New York, 1885; died in Oxnard, Calif., June 9, aged 65.

Robert E. Conniff ♂ Sioux City, Iowa; State University of Iowa College of Medicine, Iowa City, Iowa, 1884; died, June 20, from a complication of diseases, aged 63.

Lawrence Contessa ♂ New York; Long Island College Hospital, Brooklyn, 1909; member of staff at the Sydenham Hospital, New York; died, June 21, aged 38.

Ralph G. Smith, Oakland, Iowa; Queen's University, Kingston, Ontario, 1893; member Iowa State Medical Society; died, June 23, from pneumonia, aged 55.

Robert B. Combs, College Hill, Ky.; Hospital College of Medicine, Louisville, 1889; member Kentucky State Medical Association; died, June 9, aged 70.

Lotan Chilson Read, Grand Rapids, Mich.; Cincinnati College of Medicine and Surgery, 1884; Civil War veteran; died suddenly, June 19, aged 76.

William B. Daniel ♂ Disputanta, Va.; Medical College of Virginia, Richmond, 1863; a Confederate veteran; died at Richmond, June 12, aged 81.

John W. House ♂ Indianapolis; Miami Medical College, Cincinnati, 1886; died at the Methodist Hospital following an operation, June 21, aged 62.

John S. Inks, Nappanee, Ind.; College of Physicians and Surgeons, Chicago, 1889; died at Wakarusa, Ind., June 16, from bronchitis, aged 73.

George B. Garrison, Pearl, Ill.; American Medical College, St. Louis, 1877; a practitioner of Pearl for forty-five years; died, June 15, aged 83.

Henry J. Laciari ♂ Bethlehem, Pa.; College of Physicians and Surgeons, Baltimore, 1881; died, June 13, from cerebral hemorrhage, aged 65.

John Miles Caldwell ♂ Bemidji, Minn.; Trinity Medical College, Toronto, Canada, 1899; died at Wimbledon, N. D., June 14, aged 48.

Walter Hitchcock, Norwalk, Conn.; College of Physicians and Surgeons, New York, 1883; died, June 21, after a brief illness, aged 65.

Andrew J. Terrill, Collinsville, Okla.; St. Louis College of Physicians and Surgeons, 1907; died, June 4, from heart lesion, aged 42.

Samuel N. A. Downing, Salt Lake City; Denver College of Medicine, 1884; died, June 19, from cerebral hemorrhage, aged 63.

B. Roswell Hubbard, Los Angeles; Eclectic Medical Institute, Cincinnati, 1879; died, after a lingering illness, June 11, aged 68.

William Calhoun Ebaugh, Granville, Ohio; Jefferson Medical College, 1867; died, June 11, from cerebral hemorrhage, aged 82.

Edward W. Bittner, Wheatland, Iowa; University of Iowa, 1907; died in Cedar Rapids, Iowa, June 18, of embolism, aged 37.

Daniel E. Roberts ♂ Keyport, N. J.; University of the City of New York, 1883; died at Holmdel, N. J., June 15, aged 60.

Joshua D. Janney, Riverton, N. J.; Starling Medical College, Columbus, Ohio, 1865; died, June 15, aged 90.

Robert Wesley Johnson, Assumption, Ill.; Eclectic Medical Institute, Cincinnati, 1872; died, June 17, aged 71.

Robert Mosser ♂ Phoenix, Ariz.; College of Physicians and Surgeons, Chicago, 1908; died, June 24, aged 52.

Leo Karlinsky ♂ Baltimore; University of Maryland, Baltimore, 1906; died suddenly, June 13, aged 36.

George Creswell, Glenrock, Wyo.; Rush Medical College, Chicago, 1897; died in June, aged 50.

Herbert T. Risdon, Berkeley, Calif.; University of Vermont, 1879; died, June 15, aged 66.

Correction.—The report of the death of Dr. W. T. JOHNSON in THE JOURNAL, June 18, was an error. We are informed by Dr. Johnson that the report should concern the death of his wife. The information received by THE JOURNAL was contained in press clippings from two newspapers in towns near Eldorado, Ill., in which Dr. Johnson resides.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE


MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Gonosan.—A quantity of this product, alleged to have been shipped by Riedel & Co., Inc., New York City, to San Juan, P. R., in July, 1919, was declared misbranded by the federal authorities. The Bureau of Chemistry reported that analysis showed Gonosan to consist essentially of oil of sandalwood. The following statements regarding the alleged curative or therapeutic effects appeared in a Spanish circular in the trade package.

"Gonosan . . . the best of balsams in gonorrheal therapeutics . . .
"Makes the acute, scalding pains and violent erections disappear . . . likewise those manifestations which are accustomed to show themselves in acute gonorrhea."
". . . in those cases in which inflammation of the bladder is added to them, Gonosan rapidly calms the nerves of same and makes dysuria disappear. . ."

These claims were declared false and fraudulent "as the article contained no ingredient or combination of ingredients capable of producing the effects claimed." In August, 1920,



To ALLEVIATE PAIN, to PROMOTE DIURESIS and to PROTECT the membrane of the urethra, especially THE POSTERIOR PORTION—these are the important objects of the treatment of acute cases of Gonorrhea.

The entire urinary tract should be influenced by means of proper internal medication. Local injections alone will not be sufficient. This is the rationale of GONOSAN.

Samples and literature at your disposal.

RIEDEL & CO., Inc.

Bush Terminal Building 5 BROOKLYN, NEW YORK CITY

Riedel & Co., New York City, claimant, having consented to a decree without denying the allegations of the libel, judgment of condemnation and forfeiture was entered and the court ordered that the product be released to the claimant on payment of the costs and the execution of bonds in the aggregate sum of \$750.—[Notice of Judgment No. 8661; issued April 28, 1921.]

[The Council on Pharmacy and Chemistry published a report on Gonosan, declaring it inadmissible to New and Non-official Remedies, in THE JOURNAL, Oct. 13, 1917.]

C. C. Capsules.—The Evans Drug Mfg. Co., Greensburg, Pa., shipped a quantity of this product in November, 1918. Analysis of a sample by the Bureau of Chemistry showed that the contents of the capsules consisted of a mixture of copaiba balsam and cubebs. The following claims appeared on or in the trade package:

"A speedy relief for diseases peculiar to the kidney, bladder and urinary organs, especially gonorrhea, cystitis and gleet."

These statements were declared false and fraudulent in that the preparation "contained no ingredients or combination of ingredients capable of producing the therapeutic effects claimed." In September, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8601; issued April 26, 1921.]

C. G. Remedy.—A shipment of this product, alleged to have been made by the Allan-Pfeiffer Chemical Co., St. Louis, Mo. in February, 1919, was declared misbranded by the federal authorities. The Bureau of Chemistry reported that the product was essentially a solution of zinc salts, boric acid, eucalyptol, phenol (carbolic acid) and glycerin and an unidentified plant extractive. It was falsely and fraudulently recommended as a cure and preventive of gonorrhea, blenor-

rhea, leucorrhea and "Allied Forms of Acute and Chronic Inflammatory Mucous Discharges from the Urethra." In September, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8655; issued April 28, 1921.*]

Pulmo Oil Compound Emulsion for the Lungs.—This product, alleged to have been shipped by the Callahan Chemical Co., Inc., New Orleans, La., in January, 1920, was declared misbranded. Analysis of a sample by the Bureau of Chemistry showed it to consist essentially of sperm oil containing a small amount of methyl salicylate and alcohol. It was falsely and fraudulently recommended as a valuable remedy for tuberculosis and all pulmonary affections. In July, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8664; issued April 28, 1921.*]

A. W. Chase's Nerve Pills.—A quantity of this product, alleged to have been shipped by the Dr. A. W. Chase Medicine Co., Buffalo, N. Y., in June, 1920, was declared misbranded. The Bureau of Chemistry reported that analysis showed the pills to consist essentially of aloes, iron (ferrous) carbonate, arsenic, manganese and strychnin. It was falsely and fraudulently represented as a remedy for nervous prostration, exhaustion, lack of energy, paralysis, locomotor ataxia, female troubles, neuralgia, etc. In October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8669; issued April 28, 1921.*]

[The Dr. A. W. Chase "Nerve Pills" were exposed in the Propaganda Department of THE JOURNAL, Sept. 7, 1918, and the matter has been reprinted in the pamphlet "Miscellaneous Nostrums."]

QUASSIA COMPOUND TABLETS

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report, declaring that Quassia Compound Tablets (Flint, Eaton and Company) are inadmissible to New and Nonofficial Remedies.

W. A. PUCKNER, Secretary.

Quassia Compound Tablets, marketed by Flint, Eaton and Company, Decatur, Ill., according to the label on a trade package submitted to the Council, contain in each tablet:

Quassia	¾ grain
Chionanthus	1 grain
Wahoo	¾ grain
Nux Vomica	½ grain
Cascara	⅓ grain
Aloin	¼ grain
Ipecac	⅛ grain
Podophyllin	¼ grain
Gingerine	q. s.

In the advertising the "Cascara" of the label is replaced by the indefinite term "Cascarin" and the "Gingerine q. s." by "Carminative Antigripe q. s." Flint, Eaton and Company informed the Council that "Carminative Antigripe is C. P. Sodium Sulphite of which each tablet contains ¼ grain." The tablets were treated with dilute hydrochloric acid and the odor of sulphur dioxid became apparent. This shows that the company's statement to the Council, that the tablets contain a sulphite, is correct and the formula on the label is incorrect.

In the advertising for this preparation we read:

"A careful study of this formula [which formula? That on the label or that in the general advertising?—COUNCIL] will reveal the outstanding fact that, while there are several drugs employed, each ingredient is there for a purpose and all do splendid teamwork. If your patient is constipated because the stomach is not sufficiently energetic, the Quassia stimulates that organ to an increased secretion of digestive fluids and sets it to working normally. If the liver be sluggish, the Chionanthus and Wahoo prompt it to increased activity. Chionanthus has no superior for producing a sustained healthy hepatic condition. Should the bowels be slow and uncertain, the small doses of Aloin, Cascarin and Podophyllin stimulate to free peristaltic action, while the Nux Vomica sets the nervous system right. We use an effective Antigripe so that there is no griping."

It is absurd to suppose that a complex mixture of drugs in fixed proportions can have the actions claimed for Quassia Compound Tablets. As regards the claim that "Chionanthus has no superior for producing a sustained healthy hepatic condition," it was brought out in a report of the Council on "Some Unimportant Drugs" (Reports of Council on Pharmacy and Chemistry, 1912, p. 36) that the "claims for this remedy [Chionanthus] are not supported by experimental evidence and the clinical reports of its use fail to show indications of discriminating critical observation. It is not noticed by most pharmacologic authorities."

Of Wahoo (Euonymus N. F.) the "Epitome of the U. S. P. and N. F." says: "Actions and uses.—Obsolete cathartic; toxic digitalis effects. Caution: the uncertain absorption of this drug makes its use inadvisable."

Quassia Compound Tablets (Flint, Eaton and Company) are inadmissible to New and Nonofficial Remedies because (1) they contain drugs of unproved value; (2) their composition is needlessly complex, and, therefore irrational; (3) unwarranted therapeutic claims are made for them; (4) the name is misleading and not descriptive of their composition, and (5) the statement of their composition is indefinite and incorrect.

Correspondence

THE PLAN OF FULL-TIME CLINICAL TEACHERS

To the Editor:—I have just read the remarks of the chairman of the Council on Medical Education and Hospitals to the House of Delegates, as printed in the June 18 issue of THE JOURNAL. I think the wording of that portion which discusses the plan of full-time clinical teachers is most unfortunate. It conveys the impression that the medical profession resents the aid and advice which have been given in matters of medical education from persons outside the profession. I am sure this is not the attitude of the majority of those engaged in medical education. A large portion of the advance which has been made in medical education in the last quarter of a century has been adapted from other departments of education under the advice and direction of great educational leaders, conspicuously such university presidents as President Eliot and the late President Harper. The keen and incisive criticism of the American medical schools in the report of Mr. Abraham Flexner to the Carnegie Foundation was one of the most potent factors in arousing the faculties of our medical schools to their glaring deficiencies. It was more impressive and effective because of the fact that it came from an educational expert in fields other than medicine.

The question of full-time clinical teachers is by no means settled, nor can it be for some years to come. The subject is much too large for full discussion in such a communication as this, but briefly these things may be said:

1. The teaching of the clinical branches by practitioners of medicine as an incidental diversion to practice was utterly inadequate and unsatisfactory.

2. No one, I think, has contemplated that in any medical school the clinical instruction should be in the hands exclusively of full-time teachers. If such a plan were attempted it would be possible only in certain heavily endowed schools. In its extreme form it has nowhere been attempted.

3. In the medical schools where the so-called full-time plan is in operation, a number of the members of the clinical faculty (varying in different schools) are on a full-time basis; the remainder are not. Many variations of the full-time plan are thus possible. Some are in actual operation.

The real questions at issue are these:

What proportion of the necessarily large personnel of the clinical faculty should be on a full-time basis? Should these

be the older and more experienced teachers, or the younger men who might be employed to give their undivided time to teaching and research from the ages of 30 to 40 (incidentally their most productive period) with the expectation that they would then engage in private practice for a part of the time and devote the remainder of their time to the work of the school? Is it possible to secure a sufficient number of teachers of mature years and reputation who are willing to forego the large emoluments of private practice for such salaries as the medical schools can offer? If not, can we hope to develop a group of such men in the coming generation? Should the conduct of the school, its educational policies and methods be determined by the full-time members only, the part-time teachers constituting an adjunct faculty, without voice in such matters, or should the faculty be on a democratic basis, all persons engaged in teaching having a vote? Should the heads of departments, if such there be, be chosen only from full-time teachers but selected solely in reference to qualities for such administrative work? Should some or all of the part-time teachers be required to restrict their private practice to office and hospital, the office to be located in immediate proximity to the college and hospital so that the working hours of each faculty member are all spent in or near this center? Shall the part-time teacher be limited as to the amount of time he may devote to private practice and, finally, is it logical or wise to permit the full-time clinician to accept fees for consultation, or require him to turn these over to the college?

These are all problems which can be solved only by an experiment extending over many years. Obviously, the expense of maintenance of a medical school is greatest in which there are the largest number of full-time clinical teachers in the higher ranks. Indeed, this expense would be prohibitive were it not for generous endowments, and the medical profession is under great obligation to the foundations and individuals which have made this experiment possible.

It is, indeed, to be hoped, as the chairman of the Council has suggested, that it may be made possible after a number of variations of the full-time plan are thoroughly tried out. Time and trial can alone determine which plans will be most successful. The medical profession can ill afford to reject the aid and advice from every possible source to elevate the standards of medical education in this country.

JOHN M. DODSON, M.D., Chicago.

PSYCHOLOGY OF EVERYDAY LIFE

To the Editor:—A. G. Tansley, in "The New Psychology and Its Relation to Life" (New York, Dodd, Mead & Co., 1921), speaking of forgetting associated with a repressed complex, quotes from Freud the case of a man who was unable to remember the words "with a white covering" in a well known poem, because these words were associated with a shroud. "The mind shrunk away, as it often does, from thoughts of death, and the words of the poem, which had been taken up into the repressed death-complex, showed the oblivion to which the complex had been consigned."

How are we to interpret a new repression in Mr. Tansley's cerebration? Freud, who quotes the case from Jung, does not name the author of the poem in which the words occur, but speaks of "the well-known poem," Heine's "Ein Fichtenbaum steht einsam." Tansley, not only once (p. 109), but again on page 115, speaks of it as "Schiller's poem." It would be interesting to know whether the repression is due to the aversion to Heine among certain people, or to some cruder trick of memory. But if the latter, what becomes of the theory?

GEORGE DOCK, M.D., St. Louis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

KIELLAND'S FORCEPS

To the Editor:—In THE JOURNAL, Jan. 24, 1920, p. 292, there is a reference to Kielland's forceps. Please describe these forceps and their mode of application.

L. SENIS ALMELA, M.D., Montanejos, Spain.

ANSWER.—Dr. C. Kielland is an obstetrician of Christiania, Norway, formerly in charge of the gynecologic clinic, who thinks he has obviated all the drawbacks of the ordinary forceps with the forceps he has devised, which have also been commended by many others. The anterior blade of the forceps is introduced separately, the concave side turned away from the head of the fetus. By this method of introduction, the tip can be insinuated very gently and without the slightest injury of displacement of the fetal head. Once introduced to the required depth, it is turned completely around to bring the concave side against the side of the head, against which it fits closely from the cheek near the mouth to the tubera parietalia. The twisting around of the blade is easily accomplished without injury. The posterior blade is introduced directly, and it fits symmetrically against the opposite side of the head. Traction is exerted in the axis of the handle of the forceps, the blades fitting in it in bayonet shape. The only drawback, he says, is that the exact position of the fetal head, direction of the sagittal suture and position of the fontanels have to be determined beforehand, in order to introduce the anterior blade exactly at the correct point. The forceps have been described with illustrations in Scandinavian journals and also in the *Monatsschrift für Geburtshilfe und Gynäkologie* (43:48, 1916), with nine illustrations.

"TEKARKIN" CANCER CURE

To the Editor:—I am in receipt of *Therapeutic Leaves*, the content of which are devoted to the cause and cure of cancer. This leaflet is published by the National Bio-Chemical Laboratory of Mount Vernon, N. Y. They are manufacturing "Tekarkin" remedy, claiming to cure cancer. I have not seen any recent literature concerning this new found "cure." I am sending, under separate cover, the pamphlet.

LEONARD A. JULSEBOSCH, M.D., Fort Edward, N. Y.

ANSWER.—"The National Bio-Chemical Laboratory" (Edward Percy Robinson) and "Tekarkin," the cancer "cure," were discussed in the Propaganda department of THE JOURNAL May 28, 1921. A reprint will be sent in response to any request accompanied by a two cent stamp.

ARSPHENAMIN, AMERICAN AND GERMAN

To the Editor:—Please let me know the consensus of opinion as to the respective advantages and disadvantages of American and German neo-arsphenamin. Can you tell me whether the latter is superior?

G. RIGAU, M.D., Yauco, Porto Rico.

ANSWER.—The neo-arsphenamin made here and abroad is essentially the same. The quality of the product of the United States is controlled by the U. S. Public Health Service, and there is no reason to believe that foreign made products are superior in any way whatsoever.

FACTITIOUS DERMATITIS

To the Editor:—It might interest "M. Q. E., Mississippi" (THE JOURNAL, May 28, 1921, p. 1517), to know that I had a case of dermatitis factitia which fooled not only myself, but also several surgeon and medical men to whom I referred the patient, a young woman. They made different suggestions, such as the removal of various foci of infection, including the tonsils, appendix and gallbladder. Finally I decided to have a dermatologist see her. He looked her over, called me to one side, and informed me that she was burning herself with phenol (carbolic acid). This discovery resulted in a cure, but the girl later entered a nurses' training school, where she again repeated the performance of burning holes in her arms.

P. M. M., Illinois.

Advertised Remedies Dangerous.—Many advertised remedies are dangerous because they cause deferring the proper steps until valuable time is lost. If a ready-made medicine will stop a cold in two minutes, why go to bed? Yet innumerable examples prove that in such conditions rest and simple treatment are more valuable than any drug so far known, and indispensable even with the most promising serum or vaccine.—G. Dock, *J. Missouri M. A.* 18:84, 1921.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, July 12. Chairman, Dr. Samuel W. Welch, Montgomery.

CONNECTICUT: Hartford, July 12-13. Sec., Regular Board, Dr. Robert Rowley, 79 Elm St., Hartford

CONNECTICUT: New Haven, July 12. Sec., Eclectic Board, Dr. James L. Hair, 730 State St., Bridgeport. Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, July 12-14. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington, D. C.

INDIANA: Indianapolis, July 12-14. Sec., Dr. Wm. T. Gott, 84 State House, Indianapolis.

MARYLAND: Baltimore, July 19. Sec., Regular Board, Dr. J. McP. Cott, 141 W. Washington St., Hagerstown.

MASSACHUSETTS: Boston, July 12-14. Sec., Dr. Walter P. Bowers, Room 144, State House, Boston.

NEW MEXICO: Santa Fe, July 11-12. Sec., Dr. R. E. McBride, Las Cruces.

OKLAHOMA: Oklahoma City, July 12-13. Dr. J. M. Byrum, Shawnee.

SOUTH DAKOTA: Deadwood, July 19-20. Director of Medical Licensure, Dr. H. R. Kenaston, Bonesteel.

WASHINGTON: Olympia, July 12. Commissioner of Licensure, Mr. Wm. Melville, Olympia.

WEST VIRGINIA: Charleston, July 12. State Commissioner of Health, Dr. L. T. Vinson, Masonic Bldg., Charleston.

Arizona April Examination

Dr. Ancil Martin, secretary, Arizona State Board of Medical Examiners, reports the written examination held at Phoenix, April 5, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 5 candidates examined, 2 passed and 3 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Kansas Medical College.....		(1898)	81
University of Michigan Medical School.....		(1906)	80.9
FAILED			
Louisville Medical College.....		(1906)	69.2
University of Missouri School of Medicine.....		(1898)	72.9
St. Louis College of Physicians and Surgeons.....		(1920)	57.8

Connecticut March Examination

Dr. Robert L. Rowley, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, March 8-9, 1921. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 37 candidates examined, 29 passed and 8 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University School of Medicine.....		(1920)	84.8
Atlanta Medical College.....		(1914)	79.1
Bennett Medical College.....		(1914)	75
Rush Medical College.....		(1903)*	
Rowdoin Medical School.....		(1920)	76.5, 84.8
College of Physicians and Surgeons, Baltimore.....		(1907)	82.3
Johns Hopkins University Medical Department.....		(1907)*	
Medical School of Harvard University.....		(1920)	83.1
Tufts College Medical School.....		(1919)	77.2, 86.8
Bellevue Hospital Medical College.....		(1892)*	
Columbia University.....		(1886)*	
Cornell University Medical College.....		(1907)*	
Fordham University School of Medicine.....		(1920)	82.4
Long Island College Hospital.....		(1917)	79.3
P Jefferson Medical College of Philadelphia.....		(1919)	79.2
Medical-Chirurgical College of Pennsylvania.....		(1915)	75
University of Pennsylvania School of Medicine.....		(1910, 2)*	
Voman's Medical College of Pennsylvania.....		(1912)	75.4
Vanderbilt University Medical Department.....		(1906)*	
University of Vermont College of Medicine.....		(1920)	78.4, 81.8
Medical College of Virginia.....		(1919)	75
University of Budapest.....		(1912)†	75
American University of Syria.....		(1907)†	76.3
Ottoman Medical School.....		(1917)†	80.8
FAILED			
Georgetown University School of Medicine.....		(1919)	74.1
Fordham University School of Medicine.....		(1916)	60.6
Temple University.....		(1919)	66.7
University of Vermont College of Medicine.....		(1914)	68.8
Queens University Faculty of Medicine.....		(1904)*	
University of Montreal Faculty of Medicine.....		(1916)*	
University of Naples.....		(1920)†	35.8, 46

* No grade given.

† Graduation not verified.

Iowa April Examination

Dr. Guilford H. Sumner, secretary, Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, April 12-14, 1921. The examination covered 8 subjects and included 100 questions. An average of 75 per cent. was required to pass. Three candidates were examined, all of whom passed. Seventeen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Loyola University School of Medicine.....		(1918)	75
Rush Medical College.....		(1876)	82.2
University of Vermont College of Medicine.....		(1918)	86

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University Medical School.....		(1916)	Minnesota
Bennett Medical College.....		(1915)	W. Virginia
Loyola University Medical School.....		(1917, 3)	Illinois
Rush Medical College.....		(1908), (1917)	Illinois
University of Illinois.....		(1913), (1919)	Illinois
University of Louisville Medical Department.....		(1916)	Nevada
University of Minnesota Medical School.....		(1920)	Minnesota
John A. Creighton Medical College.....		(1917)	Nebraska
University of Nebraska College of Medicine.....		(1920), (1921)	Nebraska
Meharry Medical College.....		(1906)	Texas
Medical College of Virginia.....		(1907)	Virginia
Western University Medical School.....		(1906)	Nebraska

Minnesota April Examination

Dr. Thomas S. McDavitt, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 5-7, 1921. The examination covered 15 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 13 candidates examined, 12 passed and 1 failed. Twenty-four candidates were licensed by reciprocity. One candidate was licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University Medical School.....		(1920)	88.5
Johns Hopkins University Medical Dept.....		(1911) 89.1, (1918)	83
Med. Sch. of Harvard Univ.....		(1909) 92.4, (1920) 91.9, (1921)	86.5
University of Minnesota Medical School.....		(1918) 89.6, (1920)	88.3,
		89.2, 93.1, (1921)* 86.5, 89.1	
University of Toronto Faculty of Medicine.....		(1907)	87.3

FAILED

Hospital College of Medicine, Louisville.....(1902) 65

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery.....		(1916)	N. Dakota
Northwestern University Medical School.....		(1919), (1920)	Illinois
Rush Medical College.....		(1917), (1920)	Illinois
University of Illinois.....		(1918)	Illinois
Johns Hopkins University Med. Dept.....		(1904) Ohio, (1906)	Wisconsin
University of Maryland.....		(1909)	Maryland
University of Michigan Medical School.....		(1904)	Dist. Colum.
		(1909), (1918), (1919) Michigan	
Washington Univ. Med. School.....		(1902) Washington, (1919)	Missouri
John A. Creighton Medical College.....		(1914)	Nebraska
University of Nebraska Coll. of Med.....		(1918), (1920)	Nebraska
University of Pennsylvania.....		(1912) Maine, (1907), (1913)	Penna.
Vanderbilt University Medical Department.....		(1916)	Tennessee
University of Virginia.....		(1914)	Mississippi
University of Heidelberg.....		(1899)	Maryland

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement with
University of Illinois.....	(1920)	Nat'l Bd. of Med. Exam.

* These candidates have finished the medical course and will obtain the M.D. degree after they have completed a year's internship in a hospital.

Wisconsin March Examination

Dr. J. M. Dodd, secretary, Wisconsin State Board of Medical Examiners, reports that 8 candidates were licensed by reciprocity and 3 candidates were licensed on government credentials at the meeting held at Madison, March 30, 1921. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....		(1911)	Illinois
University of Illinois.....		(1913)	Illinois
University of Michigan Medical School.....		(1916)	Michigan
St. Louis University School of Medicine.....		(1914)	Missouri
Dartmouth Medical School.....		(1900)	Illinois
Albany Medical College.....		(1906)	New York
University of Pennsylvania.....		(1917)	New York

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Rush Medical College.....		(1917)	U. S. Army
University of Michigan Medical School.....		(1916)	U. S. Army
Medical College of the State of South Carolina....		(1917)	U. S. Army

Miscellany

KOPLIK SPOTS

In 1896, Koplik¹ published the result of a study of the enanthems on the buccal mucous membranes in measles showing that this eruption, preceding the appearance of the exanthem on the skin by from three to five days, is characteristic of measles and occurs in no other known condition. His description was accurate, and the spots have been generally known as "Koplik spots" since that time. It is interesting, however, to learn that this eruption had been observed by at least two other physicians who had studied it thoroughly previous to that time. According to Herrman,² Filatow in the third edition, 1895, of his book on "Acute Infectious Diseases of Children" briefly described this buccal eruption, and in 1878 Flindt,³ a Danish physician, made a report to the Danish government on a measles epidemic which he had observed on the Island of Sansø in which he observed the spots on the buccal membranes. He described them in detail, following the development from day to day. His description follows:

In a few cases seen on the first day of definite illness, there was only some diffuse redness in the pharynx. On the second day in the evening the appearances are thus described (p. 210): "The tonsils and the mucous membrane of the posterior pillars of the fauces as in the morning, showed an even hyperemia, slight swelling; but on the anterior surface of the soft palate and extending forward to the back part of the hard palate, in which location the mucous membrane otherwise just as in other places of the oral cavity was of a natural color, there was noted an exanthem, consisting of a number of round or more irregularly formed, light red, not quite sharply defined spots, which hardly rose above the otherwise normal, appearing surface of the mucous membrane; these spots were from pinhead to lentil in size, partly singly, partly gathered in quite irregular in part confluent groups. But what in particular gave this exanthem a peculiar appearance were numerous small, whitish glistening, punctiform, apparently vesicular formations that were seen in the center of the small, red spots, and which by the grouping of these formed similar irregular groups. These extremely small miliary vesicles could be both seen and felt as rising above the surface. The conjunctiva palpebrarum now showed itself hyperemic throughout its whole extent, and besides the injection, which was netlike owing to the distribution of the vessels, there was noted sometimes also a spotted distribution of redness and similar miliary, dully lustrous, prominent formations as on the mucous membrane of the palate. Most often, however, this could not be recognized definitely on account of the marked general hyperemia.

On the third day the appearances are thus described (p. 211): "The tongue moist, with a light whitish coat and without prominent papillae. On the otherwise and generally naturally colored mucous membrane in the oral cavity the exanthem mentioned was found now always widely spread over the whole of the anterior surface of velum palatinum, the anterior pillars of the fauces and often also over the hard palate with the exception of its anterior third; it formed numerous partly discrete, partly confluent spots in irregular configurations of a deeper red color than earlier, here and there slightly elevated over the level of the rest of the mucous membrane and provided with the already described punctiform vesicles with a dull luster, isolated or grouped according to the arrangement of the spots; but here and there they found also on the normally appearing mucosa just as there also could be found spots without these vesicular formations. Similarly grouped spots with vesicles were noted now also on the mucous membrane of the cheeks, particularly on the parts directly opposite the space between the upper and lower canines. The gingiva and mucous membrane on the inside

of the lips as a rule of normal or mildly hyperemic appearance, nearly always at this time with recognizable exanthem. The tonsils and both arcus pharyngopalatini as earlier uniformly hyperemic."

On the fourth day the description is as follows (p. 213): "The exanthem on the palate and the mucous membrane of the cheeks sharply defined, the spots often markedly confluent and on the cheeks more widely spread than before."

Fifth day: "Exanthem in the mouth as a rule as well marked as at any time; at the same time there was noted now quite frequently light red spots on the mucous membrane of the lips and even on the prolabium; less frequently and more faintly also on the gingiva. The hyperemia in the posterior part of the pharynx unchanged."

Sixth day: "The mouth exanthem no longer visible; a more or less marked diffuse redness was seen, however, oftenest on the mucous membrane of the cheeks and the palate.

The small vesicular formations with the dull luster that were observed together with the morbillous spots on the mucous membrane of the palate and mouth were found especially where the folds in the membrane are most numerous, and as they closely resembled the follicles of the normal mucous membrane that as a rule can be recognized in good light as small shining parts, being often only larger and more definite, there can hardly be any doubt but that the vesicular formations are caused by swelling of these follicles. Nevertheless this does not make them any less peculiar of the morbillous exanthem both by virtue of their size as well as their grouping and connection with the spots."

According to Herrman, who was able to secure a German translation of a portion of Flindt's work, the eruption described by Flindt is not the same as that observed by Koplik. However, Filatow, Herrman believes, undoubtedly described the Koplik spots but did not give a detailed account of the cycle of their appearance. In any event, it is interesting to see how carefully and accurately Flindt observed this condition and the detail in which he presented his report. It may well serve as a lesson to the practitioner on the research opportunity offered to him, provided he utilizes to the fullest extent the faculties with which Nature endowed him.

POISON GAS IN WAR

Last year the International Red Cross Societies passed a resolution at a convention in Geneva urging all governments to sign an agreement, in addition to the Hague Convention for the prohibition of poison gas in warfare. A defender of the use of poison gas has arisen in England in the person of an eminent chemist, Sir W. J. Pope, professor of chemistry in the University of Cambridge, and president of the Society of Chemical Industry. In an article contributed to the *Chemical Age* he refers to the protest made in 1915 by men qualified to speak for the medical profession—the presidents of the Royal Colleges of Physicians and of surgeons of England, Scotland and Ireland, and the Regius professors of physic in the Universities of Oxford and Cambridge—who urged that the comity of nations should prohibit chemical warfare. They declared that use of gas is self-condemned for the following reasons: It is an uncontrollable weapon whose effects cannot be limited to combatants; it is an unclean weapon, condemning its victims to death by long drawn out torture; it opens the door to infinite possibilities of causing suffering and death, for its further development may lead to the devising of an agent that will blot out towns and even nations. Sir William Pope traverses all these reasons and holds that "poison gas is far less fatal and cruel than any other instrument of war." He contends that poison gas is responsible for many casualties and few deaths, and that it is therefore a merciful agent. "Among the mustard gas casualties the deaths were less than 2 per cent., and when death did not ensue, complete recovery generally ultimately resulted. Contrast this with the proportion of death among the casualties from projectiles and with the maimed and crippled produced by them. Other materials of chemical warfare which were in use at the time of the armistice did not kill at all: they produce casualties which after six weeks in hospital are discharged without permanent hurt."

1. Koplik, Henry: *Diseases of Infancy and Childhood*, New York, 1918, p. 289.

2. Herrman, Charles: *Measles, Incubation, Infectivity, Immunity, Early Manifestations*, Arch. Pediat., December, 1914.

3. Flindt, N.: *Måslingsepidemien paa Samsø, 1878* (The Measles Epidemic on Samsø, 1878) in *Medicalberetning for Kongeriget Danmark for Aaret 1878*, Copenhagen, 1887.

Book Notices

DIAGNOSIS OF PROTOZOA AND WORMS PARASITIC IN MAN. By Robert W. Hegner, Associate Professor of Protozoology, and William W. Cort, Associate Professor of Helminthology, Department of Medical Zoology, School of Hygiene and Public Health, The Johns Hopkins University. Paper. Pp. 72. Baltimore: The Johns Hopkins University, 1921.

In pamphlet form the authors have presented information relative to the protozoa and worms parasitic in man. Classification is brief; the descriptions and technic are accurate and to the point. There are comparative tables and references to significant literature. The numerous illustrations are a valuable feature.

ADVANCED LESSONS IN PRACTICAL PHYSIOLOGY FOR STUDENTS OF MEDICINE. By Russell Burton-Opitz, S.M., M.D., Ph.D., Associate Professor of Physiology, Columbia University. Cloth. Price, \$4 net. Pp. 338, with 123 illustrations. Philadelphia: W. B. Saunders Company, 1920.

This is a laboratory outline designed to accompany the author's textbook. It is arranged for convenience of instruction into experiments which should require one laboratory period of three hours for their performance. The book contains many illustrations, some of which are duplicates of those in the textbooks, and the directions are clearly given. The material covers the field well and should prove adequate for the usual college course in physiology.

A COMPEND OF DISEASES OF THE SKIN. By Jay Frank Schamberg, A.B., M.D., Professor of Dermatology and Syphilology, Graduate School of Medicine, University of Pennsylvania. Sixth edition. Cloth. Price, \$2 net. Pp. 314, with 119 illustrations. Philadelphia: P. Blakiston's Son & Co., 1921.

This, like the preceding editions, is an excellent book of its kind. All of the common, and most of the rarer, cutaneous disorders are covered, and there is a short section dealing with the anatomy of the skin and with the general symptomatology and classification of cutaneous disorders. The text is of necessity very concise, but the salient points of all the conditions treated are well brought out. The frequent tabulation of the points in the differential diagnosis of certain dermatoses is a helpful feature. The treatment of syphilis has been rewritten, but the space allotted to a discussion of the use of arsphenamin seems inadequate, particularly in comparison with the more detailed consideration of the treatment of neurosyphilis. The illustrations are fairly numerous, and for the most part are adequate, although the quality of some could be improved considerably. The text is recommended as a ready reference book for those who are concerned only with the essentials of the subject.

LABORATORY MANUAL FOR THE DETECTION OF POISONS AND POWERFUL DRUGS. By Dr. Wilhelm Autenrieth, Professor in the University of Freiburg. Authorized Translation by William H. Warren, Ph.D. Fifth edition. Cloth. Price, \$3.50 net. Pp. 342, with 25 illustrations. Philadelphia: P. Blakiston's Son & Co., 1921.

This edition has been enlarged somewhat by the addition of new material by the translator, although both this and the former edition are translations of the fourth German edition. Among the new tests added we note Fujiwara's pyridin test for chloroform; Magnin and Zappi's method for isolating alkaloids; the para-dimethylamino-benzaldehyd test for the pyridiatic alkaloids; Denigès' and Pisani's tests for cocaine; Lugliamelli's test for pyramidon; Palet's test for pyramidon; Palet's test for apomorphin; Lautenschlager's diazonium test for morphin, and Warren's test for papaverin. An entirely new section on wood (methyl) alcohol has been inserted, owing to the importance of detecting this poison in the numerous cases which have arisen in the last few years. As the title indicates, the book concerns itself with the methods for the detection of poisons, so that it cannot replace the larger works on toxicology, which cover a much more extensive field. However, for use in the teaching of the chemical bases of toxicology this work has found and will continue to find wide acceptance, as it covers the field in a very satisfactory manner. The style is clear and concise; the tests for the various poisons are the generally accepted ones, and the methods of separation and identification of the various groups of poisons are sufficient for the purpose of the general

worker. We have no hesitancy in recommending this book to the medical student as well as to those workers who may have occasion to test material submitted to them for poisons.

HOW THE MIND CURES. A Consideration of the Relationship Between Your Outside and Your Inside Individualities and the Influence They Exercise Upon Each Other for Your Physical and Mental Welfare. By George F. Butler, A.M., M.D., Medical Director North Shore Health Resort, Winnetka, Illinois. Cloth. Price, \$2.50 net. Pp. 286. New York: Alfred A. Knopf, 1921.

The author has written fourteen chapters of conversation between a seeker and a physician, in the style of the ancient Greek dialogues. As was the case then, the seeker now and then shows a glimmer of intelligence, but impresses one on the whole as being somewhat of a *non compos mentis*. Nevertheless, he seems to pick out the right questions to ask the physician at the right time, and the physician is always ready with a perfect answer. By this circumlocutory method the fundamental facts of good hygiene are brought out and some excellent principles of mental hygiene are presented in a sugar-coating of literary reference and historical review. The chapters on the "History of Psychotherapy," on "Air," on "Food Supply," and on "Fatigue" are especially worth while. The excellent results achieved by the seeker were probably due in large part to the personality of his physician and to the fact that the physician had the time to talk to him for ten full days, thus impressing on him the vital points. If the reader will take the necessary time to get all of these points firmly fixed in his mind, he will undoubtedly benefit greatly. Dr. Butler has a pleasing method of expression, and his book is full of common sense.

DIE SPECIFISCHE PERCUTANBEHANDLUNG DER TUBERKULOSE MIT DEM PETRUSCHKYSCHEN TUBERKULINLINIMENT. Von Dr. Felix Grossmann, Oberarzt an der Landesanstalt Görden bei Brandenburg a.H. Mit einem Geleitwort von Prof. Dr. J. Petruschky, Vorsteher des Hygienischen Instituts der technischen Hochschule in Danzig-Langfuhr. Paper. Price, 12 marks. Berlin: Urban & Schwarzenberg, 1921.

Grossmann's book is the response to inquiries from country and small-state physicians, following his original journal publications on the treatment of tuberculosis with Petruschky's liniment. It seems rather highly technical for physicians of this class, but the author holds that a thorough grounding in theory is necessary to proper administration of tuberculin. It is noteworthy in this connection, however, that Petruschky himself differs from Grossmann in his interpretation of the tuberculin reaction. The latter openly commits himself to the view that the phenomenon is a manifestation of anaphylaxis, while Petruschky in the foreword states his belief that the hypersensitiveness of the tuberculous is not the same sort of condition as the allergy of a patient sensitive to foreign serum. Grossmann reviews the early work of Spengler and Petruschky on rubbing in tuberculin. Petruschky made a great contribution in proving that the skin not only is an excellent absorbing medium for whole bacteria, but also is capable of digesting them during the process, experiments on guinea-pigs having shown that tubercle bacilli rubbed into the skin were in the corium in a few hours, were broken up in twenty-four hours, and quite digested in forty-eight hours. This observation led to his introduction for therapeutic purposes of a glycerolated emulsion of dead, unground bacilli together with the evaporated broth on which they grew. It will probably be agreed by all that if tuberculin is of any value in treatment it is through the production of what is known as the focal reaction, the inflammation following the introduction of tuberculin and the succeeding resorption. It is Grossmann's point that the tuberculin liniment produces this readily, and yet by a process of such slow absorption that febrile reaction and other unpleasant symptoms are avoided, the treatment being carried out by the simplest of all methods, inunction. Numerous cases are described, the author himself, for one; and while there is something eminently unconvincing in the citation of individual cases cured by tuberculin, Grossmann makes one point which justifies the most serious consideration. This is that the time to treat tuberculosis is in what Petruschky, comparing with syphilis, terms the primary stage, namely, the childhood lymph gland infection. With the passing of that stage and the development of open tuberculosis, the chance for complete healing is in the majority of instances gone. Grossmann claims that

the liniment treatment is the best administration for this type of tuberculosis and class of patient, and permits easy use on a large scale in what he calls Familien- and Ort-sanierung. The terms are self-explanatory. Directions for dilution and usage are given, and the contraindications enumerated. They resemble those for tuberculin treatment in general.

EDEMA AND NEPHRITIS. A Critical, Experimental and Clinical Study of the Physiology and Pathology of Water Absorption in the Living Organism. By Martin H. Fischer, Doctor of Medicine, Eichberg Professor of Physiology in the University of Cincinnati. Third edition. Cloth. Price, \$10. Pp. 922, with 217 illustrations. New York: John Wiley & Sons, 1921.

The changes in this edition are additions to the text of a more detailed discussion of hydrophilic colloids; observations on the swelling of aleuronat; further experiments on swelling and solution of gelatin in nonacid mediums; consideration of hydration capacities of proteins, and further discussions of the nature of water secretion, of the distinction between swelling and solution of colloids, of behavior of colloids in the presence of buffer mixtures, of the nonrelationship between disease of the kidney and the so-called signs, symptoms and complications of nephritis; also suggestions for treatment of nephritis and "a bolder insistence on the purely infectious origin of vascular disease with its consequences, including the chronic interstitial nephritis of Bright." The book is the outcome of an able effort to present a practical consideration of edema and nephritis as due to changes in the colloid state of protoplasm. It will be recalled that the view and theories of the talented author when first advanced met with severe criticism and condemnation. His vindication now seems complete. Here we have the third edition of his book based on those views and theories which in the mean time have become the basis of clinical tests in general use and of methods of treatment.

LEHRBUCH DER DIFFERENTIALDIAGNOSE INNERER KRANKHEITEN. Von Professor Dr. M. Matthes, Direktor der Medizinischen Universitäts-Klinik in Königsberg in Pr. Second edition. Paper. Price, 68 marks. Pp. 621, with 106 illustrations. Berlin: Julius Springer, 1921.

The second edition of Prof. M. Matthes' differential diagnosis of diseases of internal medicine compares favorably with any recent work of its kind. It is unfortunate that books of this character, which, on account of their completeness and scope, are of such great value, cannot be made available to a large number of practitioners to whom this volume would appeal in particular. An English translation is highly desirable. The subject is covered in twenty-two chapters comprising acute and chronic infectious diseases of the peritoneum, the respiratory tract, cardiovascular and renal system, the gastro-intestinal tract, chronic bone and joint diseases and some forms of neuralgia. One chapter is devoted to the differential diagnosis of diseases of metabolism of endocrine origin. The usual plan of first emphasizing the subjective and objective symptoms of the particular disease in question, followed by a consideration of the differentiation of every other condition which may be confused with the former, even remotely so, is followed. Forty-six pages are devoted to the diagnosis of diseases of the peritoneum and of ileus. Every possible intra-abdominal condition is covered as completely as one could expect; forty-five pages are devoted to the disturbances of the cardiovascular system, and more than a hundred to those of the intestinal tract. A hasty perusal is made possible by marginal references. Roentgen-ray studies of the gastro-intestinal and respiratory tracts and pneumoperitoneum are given full consideration. The author lays considerable stress on liver function tests. American readers would expect to see emphasis laid upon points which in many instances are accepted almost without question. Thus, one would be tempted to criticize the failure to mention the relative importance of the excretion of urea, uric acid and creatinin as evidence of disturbed renal function. The author has had little experience with the phenolsulphonephthalein test, and devotes only a few lines to the subject. Other functional renal tests are given in detail. Matthes gages the functional capacity of the heart by the clinical signs, as dyspnea and edema, and the size of the heart, rather than by mechanical means. He does not feel that the electrocardiogram can furnish functional proof of heart capacity, although he does

say that an inverted T-wave is a bad prognostic omen. On the other hand, a positive T-wave does not rule out disease of the myocardium. The tests of functional capacity based on various types of work are considered inexact. No mention is made of the skin tests in asthma and hay-fever, nor is fractional aspiration considered. These few omissions, with the possible one exception (skin tests) are more than outweighed by the excellent presentation, arrangement of the text, ease of reading, numerous illustrations and a full bibliography.

GONOCOCCAL INFECTION IN THE MALE. For Students and Practitioners. By Norman Lumb, O.B.E., M.B., B.S., Clinical Assistant, St. Peter's Hospital for Stone. Cloth. Price, \$6. Pp. 328, with 178 illustrations. New York: William Wood and Co., 1921.

This book unnecessarily increases the flood of publications on gonorrhea that have lately inundated the market of medical books. The author's ambition seems to reach rather for accumulating numerous items than for emphasizing the leading points and sorting the chaff from the wheat. The looseness in presenting definitions and in discussing pathologic conditions is another disagreeable feature. Epididymitis and orchitis, for instance, should certainly not be confused in a specialistic publication. Inflammation of the acini of the ureteral glands may hardly be defined as "abscesses being such a typical feature of gonorrheal urethritis," as the author asserts. Obsolete instruments, as air dilating urethroscope and Ultzman's irrigating catheter, are extensively described and illustrated, while an instrument as indispensable to the urologist as Guyon's capillary catheter is not even mentioned. In his therapeutic suggestions, the author certainly will encounter opposition among American urologists, for instance when he advocates in acute anterior urethritis forced irrigations into the bladder. The puncture of and iodoform injection into buboes is not mentioned in this book. Instead of impressing on the reader the enormous dignity of an ocular infection with the gonococcus and the necessity of expert treatment, the author indulges in a discussion of the diagnosis and medical measures. The recommendation of rectal incision in certain cases of prostatic abscess may be susceptible of discussion, but how about the statement that drainage into the urethra following massage is the most satisfactory method for dealing with prostatic abscess?

THE PRINCIPLES OF IMMUNOLOGY. By Howard T. Karsner, M.D. Professor of Pathology, Western Reserve University, Cleveland, and Enrique E. Ecker, Ph.D., Instructor in Immunology, Western Reserve University, Cleveland. Cloth. Price, \$5. Pp. 309, with illustrations. Philadelphia: J. B. Lippincott Company, 1921.

In the historical introduction there is not adequate reference to the very interesting development of the idea of specificity of infectious diseases even in the pre-Jennerian times. The main body of the book is in twelve chapters and an appendix: virulence of organisms; general conditions of infection and resistance; the general phenomena of immunity; toxins and antitoxins; agglutinins and precipitins; cytolytic cellular resistance (phagocytosis, etc.); complement fixation; application of complement fixation to the diagnosis of disease; hypersusceptibility; hypersusceptibility in man; defensive ferments. The appendix considers the therapeutic employment of blood serum, prophylactic vaccination, and vaccine therapy. The book, though smaller than some already in this field, is a satisfactory and reliable exposition of the fundamental principles of immunology, and merits many readers among physicians as well as students.

DIAGNOSTIC DES TUMEURS. Par Gustave Roussy, Professeur agrégé Chef des Travaux d'Anatomie pathologique à la Faculté de Paris, et Roger Leroux, Moniteur des Travaux pratiques d'Anatomie pathologique à la Faculté de Paris. Paper. Price, 25 francs. Pp. 352, with illustrations. Paris: Masson et Cie, 1921.

In the first part the definition and classification of tumors are considered and the different kinds of tumors succinctly described. In the second part are described, by means of excellent black and white drawings, the structure of practically every variety of tumor. To any one who desires a book on tumors for reviewing or as a guide in daily work this book is recommended warmly as reliable, brief and to the point.

Medicolegal

Basis and Weight of Opinions as to Insanity

(*Kelley v. State (Ark.)*, 226 S. W. R. 137)

The Supreme Court of Arkansas says, in this homicide case herein one of the defenses was insanity, that medical experts, when duly qualified as such, are competent witnesses on the issue of insanity. Their opinions, expressed in answer to correct hypothetical questions embracing data which the evidence tends to prove, are relevant testimony. Hypothetical questions must contain all the undisputed facts essential to the issue. When there is a dispute about the existence of the facts stated in the hypothetical question, it is the exclusive province of the jury to determine whether such facts do exist. The truth or existence of each and every fact included in the hypothetical question is assumed. The opinions of the experts are built on this assumption, and if this foundation falls, the superstructure goes with it. Therefore, if the jury finds that any fact stated in the hypothetical question is untrue, does not exist, the jury must then disregard the opinion of the experts. But, on the other hand, if the jury finds that all the data stated in the hypothetical question exist, are true, then the jury must consider the opinion of the experts in connection with all the other evidence in the case. The jury is the sole judge of the credibility of the witnesses; that is, of the weight to be given their testimony. This applies to the opinions of the experts as well as to the testimony of the other witnesses. Under the guidance of instructions given it by the trial court, the jury is the sole and final arbiter of the issues of fact as to the sanity or insanity of the accused. In determining that issue, the jury may give to the opinion of the experts, as well as to the testimony of any other witness, just such weight as the jury, under all the circumstances, believes it deserves.

Classification of Drugless Healers

(*Vells v. State Board of Drugless Examiners (Wash.)*, 194 Pac. R. 388)

The Supreme Court of Washington says that the drugless healers' statute of that state of 1919 provides that the following forms of certificates shall be issued by the board: To practice mechanotherapy; suggestive therapeutics; food science; physcultopathy; and for any other separate and ordinate system of drugless practice. The plaintiff was granted a license to practice suggestive therapeutics; but, insisting that he had been improperly classified, sought to have issued to him a license to practice mental therapy. His objections to the classification made by the board were that, though his system operated through the mind of the patient, that operation was effected by the application of reason; and that cause hypnotism was licensed under the designation of suggestive therapeutics, a great percentage of suggestive theropaths being hypnotists, whereas in the public estimation hypnotists and hypnotism are the subject of adverse criticism. The court confesses to having the same difficulty which the ordinary layman has in exactly determining the rather refined distinctions sought to be drawn between the various systems, but it holds that it was not the purpose of the legislature, in providing licenses for these various systems of drugless healing, that each practitioner might choose for himself a name to describe his practice and be licensed under that name. Four distinct classifications were made, and a fifth was provided for systems which were separate and coordinate to the four specifically described. It could not be said that the system explained by the plaintiff is separate and coordinate. The fact that it was possible to license persons to practice suggestive therapeutics whose method of operation was distasteful to him did not privilege him to choose some other designation under which he would be licensed. Nor did the fact that the board may have erred and granted licenses under names not set forth in the statute, although the persons practicing under those names were, in fact, practicing what should properly be designated suggestive therapeutics, give to him the power to compel the board to commit another error in his case. It would seem to the court that the distinction was not in the method

that was used to secure the operation of the mental processes of the patient to encompass a cure, but that the provision as to suggestive therapeutics refers to a school of practice which operates through the mind of the patient, and whether the cure is secured by mental operations resulting from suggestions from the practitioner or from reasoning between the practitioner and the patient is of no importance. Wherefore the action of the lower court in ordering the board to issue a new license to the plaintiff is reversed.

General Duty Owed to Stricken Employees

(*Carey v. Davis et al. (Iowa)*, 180 N. W. R. 889)

The Supreme Court of Iowa says that the plaintiff alleged in his petition that while he was employed by the defendants as a farm laborer and was working in the excavation of a gravel pit, he became overheated and fell in a faint or fit of unconsciousness, and, having partially recovered therefrom and resuming work, he again suffered an attack of that nature; and while he was in that condition the defendants caused him to be removed and laid in a wagon box where he was left in an even more exposed condition, unattended and without care or protection for four hours or more, until he had recovered sufficiently to make his own way home with great difficulty. He charged the defendants with negligence in failing to give him reasonable care in his sick and helpless condition, and in aggravating his suffering by placing him in the wagon box exposed to the rays of the sun and to the effect to weather conditions, whereby he became sick, etc., and asked to be allowed damages therefor. The defendants demurred to the petition on the ground that no facts were alleged showing actionable negligence on their part, nor any duty on their part to furnish the plaintiff the help or relief which he stated that he needed. The demurrer was sustained; but the judgment sustaining it is reversed by the supreme court, which, however, wants it to be borne in mind that in this decision it confines its expression of opinion to the consideration of the single question of whether the petition stated a cause of action. What damages might be recovered if the allegations of the petition were sustained on the trial, and the nature and measure thereof, the supreme court did not consider or decide.

There was no allegation or claim that the faintness or prostration of the plaintiff was caused or in any manner produced by the neglect or misconduct of the defendants. So far as the pleading went, the cause of his ailment was entirely unknown, a misfortune for which damages were recoverable from no one. If there was any failure of legal duty alleged, it was in the charge that the plaintiff being stricken down and rendered helpless while in the defendants' service, and on their premises and in their presence, it became their duty to render him the needed aid and relief. Did such legal duty arise under the alleged circumstances? It is unquestionably the well-settled general rule that, in the absence of any agreement or contract therefor, the master is under no legal duty to care for a sick or injured servant for whose illness or injury he is not at fault. Though not unjust in principle, this rule, if carried unflinchingly and without exception to its logical extreme, is sometimes productive of shocking results. To avoid this criticism there is a tendency of the courts to hold that, when in the course of his employment a servant suffers serious injury or is suddenly stricken down in a manner indicating the immediate and emergent need of aid to save him from death or serious harm, the master, if present, is in duty bound to take such reasonable measures or make such reasonable effort as may be practicable to relieve him, even though such master be not chargeable with fault in bringing about the emergency. Assuming the truth of the plaintiff's petition, that he became suddenly ill, prostrate and helpless in the defendants' immediate presence, the court holds that they were required to make some reasonable effort to render him the aid his immediate necessities demanded. Not necessarily that they were bound to employ a physician or to take him into their own home, but they could at least have seen that he was placed in some proper shelter and his family or friends notified. Furthermore, the defendants having assumed to pick up the plaintiff in his unconscious condition and remove him from the place where

he fell, it became their duty to use reasonable care in so doing not to aggravate his misfortune. One person seeing another in distress may or may not be under legal obligation to afford him relief; but, if he does undertake it, he is bound to act with reasonable prudence and care to the end that, if his effort be unavailing, it shall at least not operate to increase the injury which he seeks to alleviate.

Company Held Liable for Malpractice of Physician

(*McMahan v. Carolina Spruce Co. (N. C.), 105 S. E. R. 439*)

The Supreme Court of North Carolina finds no error in a judgment in favor of the plaintiff on a verdict which included a finding that he was entitled to recover \$4,000 damages for the malpractice of a physician employed by the defendant to treat him when he was injured while working for the defendant. The court says that there could be no question but that there was some evidence which tended to establish the charge of unskilfulness in the method of treatment, and a failure to exercise proper care and to make a proper diagnosis. There was undoubtedly also sufficient evidence that the defendant knew of the incompetence of the physician. The particular allegation was that the physician, assisted by another physician, failed to place the broken bones of the plaintiff's left arm in proper alinement, but left them overlapping, and without a union between them, thus shortening the arm about two inches, and leaving it very crooked and ugly in appearance, and practically useless. There was evidence that the physician was employed, and paid, from the wages of the employees, on the assessment plan, to treat them; and the defendant owed the duty to the plaintiff, after it had undertaken to secure a physician for him, to secure one of reasonable skill and ability. The evidence of a prior suit to which the defendant was a party, and in which it was informed of the physician's lack of skill, was sufficient to charge it with notice of the same on the question of negligence. It was not competent as substantive evidence of the physician's incompetence, nor of negligence itself, but only of notice to the defendant that he was considered as unskilful. The information came to the defendant under oath, and therefore was most solemnly imparted to it; and the jury found that he was incompetent before this transaction. With these facts within its knowledge, the defendant should have proceeded more cautiously. Some latitude is necessarily allowed in proof as to notice or knowledge. This court has held that while such company was under no obligation to furnish a physician to its employees, when it assumed to do so, the duty arose to exercise due care in selecting him and in continuing him in its service.

Physician Not Liable for Death of Other Child

(*Skilling v. Allen (Minn.), 180 N. W. R. 916*)

The Supreme Court of Minnesota, in affirming an order denying the plaintiff a new trial after a verdict had been directed in favor of the defendant, says that the plaintiff, an employee of a mining company, lived with his wife and seven children in a one-room house. The defendant was the company physician and had a hospital. The plaintiff called the defendant to attend one of his children, named Alice, who was found to be suffering from an attack of pneumonia. As the plaintiff's house was too small and crowded for her to receive proper care at home, she was taken to the defendant's hospital. After about two weeks, the pneumonia was followed by scarlet fever; and about two weeks later she had recovered sufficiently to leave the hospital, and was taken home. Before taking her home, her mother asked the defendant concerning the danger to the other children, and was informed that in his opinion Alice would not then communicate the disease. About a week after Alice was taken home, another child, named Glen, became sick and three days later died. As administrator of his estate, the plaintiff brought this action alleging that the defendant in his capacity as a physician had negligently and wrongfully advised the plaintiff and his wife that Alice could be taken home without danger of communicating scarlet fever to the other children; that in reliance on this advice they took her home; that she was then at the desquamation stage of the disease and very

likely to communicate it to others; that she did communicate it to Glen, and that he died from it. The parents did not call a physician during Glen's sickness, deeming it not serious, but immediately after his death called a physician who found two of the other children sick with scarlet fever. The physician reported the death of Glen to the health authorities, giving scarlet fever as the cause of death; but on the witness stand the physician stated that he could give no opinion as to the cause, as he did not attend the child and made no necropsy. The mother testified that when the defendant informed her that Alice had scarlet fever at the hospital Alice was broken out with a fine, red rash; that all of the children had had the same rash in the home; that Alice was the first to have it, and had it about two weeks before she was taken to the hospital; that all but two of the children had it before Alice went to the hospital, and had it twice that the other two, Glen and another, first had it while Alice was at the hospital, and that she observed no difference between the symptoms of the disease which Alice had at the hospital and the symptoms of the disease which the children had in the home. There was no other evidence as to the disease which the children had in the home. At the trial when the plaintiff rested, the defendant also rested, without presenting any evidence. The burden was on the plaintiff to show that Glen died of scarlet fever; that he contracted the disease from Alice, and that he contracted it from her in consequence of the negligent performance by the defendant of his duties as a physician. While a jury might, perhaps legitimately infer from the facts and circumstances that Glen died of scarlet fever, it could not legitimately infer that he contracted the disease from Alice after her return from the hospital rather than from some of the other children, or from some other source. The evidence would not sustain a finding that Glen contracted the disease from which he died through the negligence of the defendant.

Damages Allowed for Loss or Injury of Leg

(*Powell v. Kansas City Rys. Co. (Mo.), 226 S. W. R. 916*)

The Supreme Court of Missouri, Division No. 1, says that it has always considered that \$10,000 for the loss of a leg was a good, round consideration. The evidence showed that the chief injury sustained by the plaintiff was a broken leg above the knee, and that her leg was from 1 inch to 1 1/2 inches shorter than the other, and that as a result she limped slightly, but otherwise had perfect use of the leg. It was without saying that she was far better off than she would have been had she lost the leg. The court is therefore of the opinion that \$8,000 was ample consideration under the circumstances, and affirms the judgment in her favor on condition that she remit \$4,000 therefrom, the amount for which it was rendered being \$12,000, which itself was a reduction from \$15,000 awarded by the jury and at first approved by the trial court.

Interest on Expenses for Physician and at Hospital

(*First Wisconsin Trust Co. v. Schmidt (Wis.), 180 N. W. R. 832*)

The Supreme Court of Wisconsin says that this action was brought by the company as executor to recover damages for personal injuries to and resulting death of a woman who the defendant ran into with his automobile. On the trial it was stipulated that the amount expended for hospital, physician and funeral expenses was \$407.50. In entering judgment, interest on this amount was allowed from the date of the accident to the time of entry of judgment; but the trial court was in error in allowing interest on these items. Necessary reasonable expenditures for physician, hospital and burial were to be taken into consideration by the jury in determining the amount of damages which the plaintiff was entitled to recover. But the damages did not become liquidated and fixed until the amount thereof was determined by a verdict. The recovery here was not by way of implied contract to reimburse, but the expenditures were shown to be an element of damage, because they were due to the negligent act of the defendant, for which he was liable. The judgment should therefore be modified by deducting therefrom the amount of the interest erroneously allowed.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

June, 1921, 1, No. 9

- Adenomyometritis, Not Adenomyoma of Uterus. L. W. Strong, New York.—p. 901.
Hyperemesis Gravidarum. E. Speidel, Louisville.—p. 906.
Secondary Operations. E. L. Dorsett, St. Louis.—p. 910.
Chronic Endocervicitis. W. T. Kennedy, New York.—p. 929.
Thrombosis Gravidarum. G. D. Royston, St. Louis.—p. 941.
Intwining of Umbilical Cords in Single Amnion Twin Pregnancy. S. F. Abrams, St. Louis.—p. 955.
Ovary After Hysterectomy for Fibroids. E. M. Hawks, New York.—p. 959.
Hemoglobin After Childbirth; Resumption of Menstruation. M. P. Rucker, Richmond, Va.—p. 964.

Adenomyometritis.—Strong reviews the evidence for the purpose of determining whether we are justified in regarding the overwhelming majority of these conditions of the uterus as neoplasms, rather than metritic hyperplasias. The term adenomyoma denotes a neoplasm capable of unlimited growth, while hyperplasia may regress if the exciting cause is removed.

How to Avoid Secondary Laparotomies.—Dorsett advocates the removal of every appendix in women when the abdomen has been opened. He believes that conservative measures are rather unsatisfactory when dealing with "cystic ovaries" and that conservative operative measures used in dealing with pelvic infection should be abandoned.

Chronic Endocervicitis.—A partial review of the literature made by Kennedy, and he discusses the surgical use of ethyl alcohol presenting a preliminary report of the treatment of endocervicitis with ethyl alcohol injected interstitially. After drying the cervix and applying tr. iodine to the vaginal orifice, the cervix is grasped with a double tenaculum and from 1 to 2 c.c. of a 25 per cent. solution of ethyl alcohol in distilled water is injected with an ordinary hypodermic needle attached by an adapter about 8 cm. long to a record syringe into the anterior and posterior lips of the cervix parallel to the canal, care being taken not to penetrate a gland and thus secrete the solution in the canal, because it has no value unless it is placed interstitially. Hawks states that his observations indicate that it is better to leave ovaries and tubes after hysterectomy for fibroids done before or near the time of the menopause.

Hemoglobin After Childbirth.—Hemoglobin estimations were made by Rucker in seventy-four cases. It would seem that hemoglobin is a deciding factor in the postpartum resumption of menstruation. Immediately after delivery there is a definite drop in the hemoglobin from which the patient slowly recovers. In the average cases menstruation begins when the hemoglobin reaches about 75 per cent. Certain women menstruate with a much lower hemoglobin, and these are patients who have had some anemia for a long time. Retrodisplacement with its pelvic hyperemia is also a factor in the early restoration of the menstrual phenomena.

American Journal of Physiology, Baltimore

June 1, 1921, 56, No. 2

- Studies on Cerebrospinal Fluid: VII. Volume Changes of Cerebrospinal Fluid after Epinephrin, Pituitary Extract, Pilocarpin, and Atropin. F. C. Becht and H. Gunnar, Chicago.—p. 231.
Influence of Various Circulatory Conditions on Reaction to Low Oxygen of Rebreathing. E. C. Schneider and D. Truesdell, Washington, D. C.—p. 241.
Correlation Between Motor Control and Rifle Shooting. R. A. Spaeth and G. C. Dunham, Baltimore.—p. 249.
Role of Intrinsic Plexuses in Determining Effects on Gastric Motility of Vagus Stimulation. F. T. Rogers and Z. Bercovitz, Dallas, Texas.—p. 257.
Comparative Study of Ethanol, Caffeine, and Nicotine on Behavior of Rats in a Maze. D. I. Macht, W. Bloom and G. C. Ting, Baltimore.—p. 264.
Modification of Crossed Extension Reflex by Light Etherization and Its Bearing on Dual Nature of Spinal Reflex Innervation. A. Forbes, Boston.—p. 273.

- Blood Volume Studies: V. Carbon Monoxide Method.—Its Accuracy and Limitations. H. R. Arnold, E. B. Carrier, H. P. Smith and G. H. Whipple, San Francisco.—p. 313.
Id. VI. Plasma Volume as Determined by Hemoglobin Injection. F. W. Lee and G. H. Whipple, San Francisco.—p. 328.
*Id. VII. Comparative Values of Welcker, Carbon Monoxide and Dye Methods for Blood Volume Determinations. Accurate Estimation of Absolute Blood Volume. H. P. Smith, H. R. Arnold and G. H. Whipple.—p. 336.
Experimental Studies on Regulation of Body Temperature: IV. Maintenance of Practically Uniform Temperature in Rabbits by Elimination of Random Movements. L. M. Moore, Berkeley, Calif.—p. 361.
Id. V. Temperature Effects of Different Concentrations of Sodium Chloride Solution Intravenously Administered. L. M. Moore, Berkeley, Calif.—p. 365.

Volume Changes of Cerebrospinal Fluid.—A method is described by Becht and Gunnar for measuring and recording graphically the amount of fluid in the skull under slightly less than the normal pressure. Epinephrin does not increase fluid formation, because by this method it can be shown that the fluid flows out of the canal during the pressor stage of the action, but returns in equal amount while vascular readjustment is taking place. In the same way it can be shown that neither pituitary extract nor pilocarpin increases fluid formation. Atropin following pilocarpin may—but by no means always—produce increased arterial and venous pressure, accompanied by an increase in the amount of fluid forced into the bottle. The return of this fluid may be slow and tedious but finally takes place. It is believed that this also is a purely mechanical change not accompanied by new formation.

Three Blood Volume Methods Compared.—Three standard blood volume methods are compared by the same workers under uniform conditions with a carefully controlled technic. The dye method, the carbon monoxide method and a modified Welcker method were used on the same dog within a short space of time. It was found that the dye method determines with reasonable accuracy the plasma volume but not the red cell volume. The carbon monoxide or Welcker method determines the total hemoglobin or red cell volume but not the plasma volume. The true total blood volume can be obtained by the use of the carbon monoxide method (red cell volume) plus the dye or similar method (plasma volume). The sum of these figures gives the true blood volume.

Annals of Surgery, Philadelphia

June, 1921, 73, No. 6

- Gravimetric Method for Determining Superficial Area of Wounds. B. D. Douglas, New Haven, Conn.—p. 673.
*Acute Hematogenous Osteomyelitis. F. W. Bancroft, New York.—p. 681.
Treatment of Open Infected Wound. R. J. Behan, Pittsburgh.—p. 701.
*Recurrent Unilateral Subluxation of Mandible Excision of Inter-articular Cartilage in Cases of Snapping Jaw. A. P. C. Ashhurst, Philadelphia.—p. 712.
*Treatment of Carcinoma of Tongue. D. Quick, New York.—p. 716.
Benign Stenosis of Esophagus. N. W. Green, New York.—p. 724.
Mechanical Factors in Management of Recent Empyemas. F. S. Mathews, New York.—p. 735.
Clinically Doubtful Breast Tumors: Their Diagnosis and Treatment. E. I. Bartlett, San Francisco.—p. 740.
Cultures from Appendix. C. E. Farr, New York.—p. 749.
*Results of Treatment of Twenty Recent Cases of Intracapsular Fracture of Femur by Abduction and Plaster Fixation. E. C. Murphy and G. M. Dorrance, Philadelphia.—p. 752.
Cancer of Large Intestine. J. I. Russell, New York.—p. 755.

Acute Hematogenous Osteomyelitis.—From clinical experience and animal experimentation Bancroft is convinced that in the future in the treatment of osteomyelitis in children, we can be more conservative. Adequate drainage should be obtained with as little trauma as possible. When the patient is clinically progressing favorably, bone, which by roentgen ray or gross examination appears dead, may frequently be saved to advantage in order to prevent deformity and hasten convalescence.

Operation for Subluxation of Jaw.—In a case of this type, Ashhurst made an incision under ether anesthesia over the zygoma 2 cm. in length, backward to the auricle, thence downward for 3 cm. in front of the auricle. The masseter muscle was detached superiosteally and the small triangular flap of skin and muscle turned down. The cartilage was easily identified, moving with the condyle of the mandible, but very loosely attached. It was caught in a sharp tenaculum, and excised with scissors. Bleeding was controlled by

a temporary gauze pack. The incision was closed in layers, without drainage. No luxation had occurred since the operation.

Radium for Carcinoma of Tongue.—In Quick's opinion the primary lesion in cancer of the tongue should be managed entirely by the use of radium. Quick is convinced that this form of treatment in unselected cases will yield a higher percentage of clinical cures than will surgery alone in the selected operable group.

Abduction Treatment of Fractured Head of Femur.—The final results of the twenty cases recorded by Murphy and Dorrance show that nine patients have full function restored, eight cases have slight impairment of function, but all are capable of walking about. Five use a cane. One has complete absorption of the neck of the femur and a shortening of two and three-quarter inches and requires an elevation of the sole of her shoe which enables her to walk with the aid of a cane.

Archives of Dermatology and Syphilology, Chicago

June, 1921, 3, No. 6

- Statistical and Histologic Studies of Fordyce's Disease. A. Margolies, Philadelphia.—p. 723.
- *Blastomycetoid Bodies in Sarcoma-Like Tumor of Leg. F. D. Weidman and H. R. Douglas, Philadelphia.—p. 743.
- Impetigo Contagiosa: Results of Cultures Made of Thirty Cases with Special Reference to the Character of Streptococci Isolated. D. L. Farley and F. C. Knowles, Philadelphia.—p. 753.
- Viability of Ringworm Fungi in Dry Cutaneous Material. D. L. Farley, Philadelphia.—p. 759.
- *Syphilitic Backache: Symptom of Syphilis of Spinal Cord, Lumbar Muscles and Vertebrae; Report of Cases. J. V. Klauder, Philadelphia.—p. 761.
- Infectivity and Survival of Spirochaeta Pallida in Rabbits, with Observations on Some Strains from Latent Syphilis. XXIII. F. Eberson, St. Louis.—p. 775.
- *Is Lupus Erythematosus Discoides Chronicus Due to Tuberculosis? W. H. Goeckerman, Rochester, Minn.—p. 788.
- Chemotherapy of Rhus Dermatitis and Tentative Method for Treatment. J. B. McNair, Washington, D. C.—p. 802.

Blastomycetoid Bodies in Sarcoma-Like Tumor of Leg.—A fungous growth on the leg, clinically suspected as sarcoma, was first regarded by Weidman and Douglas on histologic examination as lupus vulgaris. Further study showed a vascular granulation tissue, tubercle-like granulomas and blastomycetoid bodies. Elastic fibers were found to have evoked foreign body giant cell production in both this and known cases of blastomycosis. The cause of the lesion under consideration is left an open question, but it is insisted that the "bodies" are higher fungi and not degenerative tissue products or concretions.

Syphilitic Backache.—Five cases are reported by Klauder. Syphilitic backache is classified as a symptom of syphilitic involvement of the spinal cord, lumbar muscles and vertebrae. In the majority of instances, it is a symptom of spinal cord syphilis. Syphilitic backache, a symptom of syphilis of the spinal cord, is meningeal in origin and due to irritation of the posterior sensory roots. The symptom backache is a part of the meningeal syndrome. These symptoms in general are essentially the same as those in other forms of meningitis. Hyperesthesia is sometimes present, and the tendon and skin reflexes are increased. In addition, there are symptoms of motor irritation. Backache, stiffness and tiredness are the chief complaints of the patient. Clinically, in addition to these neurologic abnormalities, there is rigidity of the back, combined with localized tenderness on percussion of the vertebral column. Other objective evidences of neurosyphilis are usually present, since an isolated involvement of the spinal cord is exceptional. The usual spinal fluid findings in this condition are given. Case histories illustrating this type of syphilitic backache are presented. A plea is made for a thorough history and clinical examination of every syphilitic order that treatment may be administered in the meningeal stage of neurosyphilis rather than in the parenchymatous stage.

Etiology of Lupus Erythematosus Discoides.—The tuberculous origin of lupus erythematosus discoides chronicus has not been proved by experimental work. Clinical observation, including this statistical study by Goeckerman, seems to favor varied etiologic factors.

Archives of Internal Medicine, Chicago

June 15, 1921, 27, No. 6

- *Incidence and Histopathology of Tuberculosis of Tonsils. C. V. Weller, Ann Arbor, Mich.—p. 631.
- *Fatal Chronic Nephritis in a Fourteen Year Old Girl with Only One Kidney and a History of Scarlet Fever. O. H. P. Pepper and B. Lucke, Philadelphia.—p. 661.
- Liver Regeneration Following Chloroform Injury as Influenced by Feeding of Casein or Gelatin. N. C. Davis and G. H. Whipple, San Francisco.—p. 679.
- Response of Circulation to Low Oxygen Tension: A Sphygmographic Study of the Pulse During the Rebreather Test. N. C. Gillette, Chicago, and C. W. Greene, Columbia, Mo.—p. 688.
- *Use of a High Fat Diet in Treatment of Diabetes Mellitus; Blood Sugar. L. H. Newburgh and P. L. Marsh, Ann Arbor, Mich.—p. 69.
- New Methods for Estimating Enzymatic Activities of Duodenal Contents of Normal Man. C. W. McClure, A. S. Wetmore, and Reynolds, Boston.—p. 706.
- *Dermatitis and Allied Reactions Following Arsenical Treatment of Syphilis. J. E. Moore and A. Keidel, Baltimore.—p. 716.
- *Total Nonprotein Nitrogen Constituents of Blood in Arterial Hypertension. J. L. Williams, Chicago.—p. 748.

Tuberculosis of Tonsils.—Weller's paper is based on tonsillectomies. The incidence of active tonsil tuberculosis in this series was found to be 2.35 per cent. The range of age was from 2 to 59 years. Weller divides tonsil tuberculosis into three types: focal crypt infections; ulcerative lupus-like lesions; and diffuse miliary tuberculosis. The crypt infection is the most common type, is usually unilateral, involves one or more crypt areas only and avoids the lymph follicles. Some of these cases are autoinfections in open respiratory tract tuberculosis but the majority must be considered cases of primary focal tonsil tuberculosis. The ulcerative lupus-like lesions result from the coalescence of crypt infections at the mouths of crypts or from direct extension from neighboring surfaces. The diffuse miliary tuberculosis is usually a bilateral or, if the pharyngeal tonsil is examined, a universal tonsil lesion. The tubercles are widely scattered and occur almost exclusively in the follicles and germ centers. This type can best be explained as a hematogenous miliary dissemination. Mixed types occur, as in patients with open pulmonary tuberculosis, in which autoinfection may be associated with hematogenous miliary tuberculosis giving a combination of crypt infections with diffuse miliary tubercles.

Fatal Chronic Nephritis Following Scarlet Fever.—A clinicopathologic study is reported by Pepper and Lucke of a fatal case of renal disease in a 14 year old girl. The clinical picture was that of a uremia terminating a chronic interstitial or glomerular nephritis. All the usual evidences, both clinical and laboratory, were present. In addition there was a marked purpuric tendency. The postmortem disclosed aplasia of the left kidney; histopathologic study of the small right kidney showed a combination of true chronic interstitial nephritis and chronic glomerulonephritis. A remarkable degree of regeneration was seen, which, however, was morphologically and functionally insufficient (frustrated regeneration). An attempt to weigh the evidence concerning etiology leads to the tentative conclusion that this unusual picture was the result of the injurious action of scarlatina initiating nephritis, which, because of the inadequate and possibly anomalous kidney present, rapidly resulted in a condition analogous to chronic nephritis of adults.

High Fat Diet in Diabetes Mellitus.—In twenty-eight cases observed by Newburgh and Marsh, a high fat diet brought the blood sugar down to normal and kept it at that level during the period of observation. Seven patients had a severe nephritis. The blood sugar of each of these individuals was brought to a point well within normal limits. Six cases showed well the occurrence of hyperglycemia resulting from diet high in protein and the reduction of the blood sugar to within normal limits subsequent to the use of a diet low in protein and high in fat. One case is especially instructive in this respect. After four days on a diet containing 37 gm. protein and 1,400 calories, the blood sugar was 0.135 per cent.; after an increase of the protein to 50 gm., with a slight decrease in carbohydrate and total calories, a hyperglycemia of 0.195 per cent. is noted. A return to the former diet brought the blood sugar down to 0.130 per cent. while the substitution of the second diet again produced a hyperglycemia of 0.190 per cent. In five cases response to treatment was not satisfactory.

Reactions Following Arsenical Treatment of Syphilis.—Of ten deaths at the Johns Hopkins Hospital due to the arsphenamins, two were cardiac (in patients with marked aortic and myocardial lesions), two were from causes unknown (probably impurity in the drug used), one was from acute yellow atrophy of the liver, and five were from reactions of the dermatitis group. Among the twenty-three patients whose cases are reported by Moore and Keidel there were four whose reactions place them in the "mild group," and eighteen in whom there were twenty-one instances of severe reactions, resulting in five deaths, a mortality of 27.7 per cent. Most of the remaining thirteen patients with severe reactions were seriously and uncomfortably ill, and the average hospital stay exceeded a month. Evidence is presented that the lesions of syphilis or the duration of the disease exercise no modifying influence upon the incidence of dermatitis. Dermatitis has been observed to follow all chemotherapeutic arsenic compounds employed in the treatment of syphilis. In the majority of these cases, arsenic was the only drug employed so that mercury and potassium iodid as causative factors can be excluded. Dosage, technic of administration, and impurities in the drug can be excluded as etiologic factors. The complications of dermatitis exfoliativa, including acute nephritis, polyneuritis, jaundice, skin infection, bronchopneumonia, and septicemia, are discussed. Attention is directed to the possible relation between the complication due to infection and the disturbance of hematopoiesis. The literature is reviewed, and the possible etiologic facts in reactions of this group are discussed. The evidence is in favor of their anaphylactic origin.

Nonprotein Nitrogen of Blood in Arterial Hypertension.—Williams claims that there is a disease, arterial hypertension, which when uncomplicated by nephritis or cardiac decompensation gives no functional evidence of kidney insufficiency. Cardiac decompensation with marked passive hyperemia of the kidneys is associated with a moderate retention of nonprotein nitrogen in the blood. The height of the blood pressure bears no relationship to the amount of the nonprotein nitrogen substances in the blood. Arterial hypertension with normal nonprotein nitrogen values in the blood and normal kidney excretion, determined by functional tests and urine examinations, does not justify the clinical diagnosis of chronic nephritis.

Archives of Neurology and Psychiatry, Chicago

June, 1921, 5, No. 6

- *Family Spastic Paralysis of Spinal Type on Heredosyphilitic Basis. G. Mingazzini, Rome, Italy.—p. 637.
- *Pathogenesis of Epilepsy from Historical Standpoint, with a Report of an Organic Case. M. Kasak, Madison, Wis.—p. 645.
- Global Aphasia and Bilateral Apraxia Due to Endothelioma Compressing Gyrus Supramarginalis. F. Bremer, Brussels, Belgium.—p. 663.
- Revival of Spiritism: Psychologic Facts. C. B. Farrar, Ottawa, Canada.—p. 670.
- *Blood Sugar Studies in Dementia Praecox and Manicdepressive Insanity. T. Raphael and J. P. Parsons, Ann Arbor, Mich.—p. 687.
- Serology of Spinal Fluid and Blood in Epidemic Encephalitis. W. M. Kraus and I. H. Pardee, New York.—p. 710.

Spastic Spinal Paralysis on Heredosyphilitic Basis.—Three cases, occurring in two brothers and a sister, the offspring of a syphilitic father, are recorded by Mingazzini. The father was a tabetic patient; the history and clinical findings were typical. With the exception of the first-born, all his children were more or less deficient; all three, at about the same age (at puberty) began to suffer from progressive motor disturbances of the lower extremities terminating in the syndrome of family spastic paralysis (spinal type). One of the brothers also suffered from optic atrophy, choroiditis and double cataract. Cases in the literature are reviewed.

Pathogenesis of Epilepsy.—In Kasak's case the symptoms were those of idiopathic epilepsy, and in the necropsy revealed a frontal lobe tumor, a psammoma.

Blood Sugar Studies in Dementia Praecox.—On the basis of the data secured in the experiments, employing the Benedict modification of the Lewis-Benedict method for blood sugar, Raphael and Parsons state that tolerance curves differ from those obtained in normal individuals, in cases of hypomaniac depressed phases of manic depressive insanity and in cases of dementia praecox; that among the pathologic groups studied there were striking differences among the different

groups; that in each clinical group, the curves had features in common that suggest a type curve; that among cases of dementia praecox, tolerance curves vary according to the phase of the clinical course.

Boston Medical and Surgical Journal

June 16, 1921, 184, No. 24

- Treatment of Cancer. F. Bryant, Worcester, Mass.—p. 615.
- Treatment of Tumors by Roentgen Rays and Radium. R. B. Greenough, Boston.—p. 622.
- *Visceroptosis as Cause of "Stomach Trouble." W. D. Reid, Boston.—p. 628.
- Essential Factors of Cancer Causation. J. W. Shannon, San Diego, Calif.—p. 632.
- *Two Cases of Acaraphobia. A. Myerson, Boston.—p. 635.
- Recent Progress in Proctology. T. C. Hill, Boston.—p. 638.

Visceroptosis as Cause of "Stomach Trouble."—Cases of visceroptosis presenting "stomach symptoms" are cited by Reid. A lack of good physical development and subnutrition are commonly associated with the condition. The diagnosis is based on evidence obtained in the history, physical and roentgen-ray examinations. Organic disease should be excluded in these and by suitable laboratory tests. Treatment should be directed toward the patient's mental condition, his subnutrition, and his mechanical handicaps.

Acaraphobia.—In the two cases which Myerson reports, the psychosis in each case was definitely associated with skin disease, in the one case with leukoderma or vitiligo, and in the other with a lesion resembling leukoderma but differing from it in its extraordinary transiency. One patient presented a pseudoparanoid psychosis of slow evolution, while there developed in the other case a hallucinosis and confusion associated with profound bodily disturbances.

June 23, 1921, 184, No. 25

- *Congenital Malformations of Vertebrae. N. Mills, New York.—p. 659.
- Principles of Posture, with Special Reference to Mechanics of Hip Joint. M. E. Todd, Boston.—p. 667.

Congenital Malformations of Vertebrae.—A study of the abnormalities of the vertebrae, as revealed in roentgenograms of 100 consecutive cases of scoliosis, shows that they are of quite common occurrence and frequently the cause of scoliotic deformity. Forty per cent. of the cases in this series had some abnormality at the lumbosacral junction as the apparent cause of their deformity. Therefore, Mills says, it is advisable to make a careful roentgen-ray study of all cases of scoliosis, as these cases need treatment directed at the primary asymmetry which occurs in the lumbosacral junction. The attempt may be made to correct this asymmetry by exercises. If jackets are used, their object must not be primarily to correct the curve, but to correct the asymmetry which is the cause of that curve. If an operative procedure is used to stiffen the spine, the result will not be completely satisfactory unless a normal relation is first restored at the lumbosacral junction and this relation fixed by fusion.

Journal of Biological Chemistry, Baltimore

June, 1921, 47, No. 1

- Préparation of Galactose. E. P. Clark, Washington, D. C.—p. 1.
- *Absorption of Calcium Salts in Man. E. H. Mason, Montreal, Canada.—p. 3.
- *Dinitrosalicylic Acid: A Reagent for Estimation of Sugar in Normal and Diabetic Urine. J. B. Sumner and V. A. Graham, Ithaca, N. Y.—p. 5.
- Gasometric Determination of Nitrogen. R. L. Stehle, Philadelphia.—p. 11.
- *Gasometric Determination of Urea in Urine. R. L. Stehle, Philadelphia.—p. 13.
- Further Improvements in Nephelometer-Colorimeter. P. A. Kober and R. E. Klett, New York.—p. 19.
- Substitution of Turbidimetry for Nephelometry in Certain Biochemical Methods of Analysis. W. Denis, New Orleans.—p. 27.
- Creatinuria: II. Arginin and Cystin as Precursors of Creatin. E. G. Gross and H. Steenbock, Madison, Wis.—p. 33.
- Creatinuria: III. Effect of Thyroid Feeding on Creatinuria. E. G. Gross and H. Steenbock, Madison, Wis.—p. 45.
- Distribution of Phosphoric Acid in Blood of Normal Infants. G. M. McKellips, I. M. De Young and W. R. Bloor, Berkeley, Calif.—p. 53.
- Determination of Inorganic Sulphate, Total Sulphate and Total Sulphur in Urine by Benzidine Method. C. H. Fiske, Boston.—p. 59.
- *Basil Metabolism of Normal Women. K. Blunt and Marie Dyc, Chicago.—p. 69.
- *Fat-Soluble Vitamin and Yellow Pigmentation in Animal Fats with Some Observations on Its Stability to Saponification. H. Steenbock, M. Sell and M. V. Buell, Madison, Wis.—p. 89.

- Supplementary Protein Values in Foods: I. Nutritive Properties of Animal Tissues. E. V. McCollum, N. Simmonds, and H. T. Parsons, Baltimore.—p. 111.
- Id. II. Supplementary Dietary Relations Between Animal Tissues and Cereal and Legume Seeds. E. V. McCollum, N. Simmonds and H. T. Parsons, Baltimore.—p. 139.
- Id. III. Supplementary Dietary Relations Between Proteins of Cereal Grains and Potato. E. V. McCollum, N. Simmonds and H. T. Parsons, Baltimore.—p. 175.
- Id. IV. Supplementary Relations of Cereal Grain with Cereal Grain; Legume Seed with Legume Seed, and Cereal Grain with Legume Seed; with Respect to Improvement in Quality of their Proteins. E. V. McCollum, N. Simmonds and H. T. Parsons, Baltimore.—p. 207.
- Id. V. Supplementary Relations of Proteins of Milk for Those of Cereals and of Milk for Those of Legume Seeds. E. V. McCollum, N. Simmonds and H. T. Parsons.—p. 235.

Absorption of Calcium Salts in Man.—Two calcium salts, the lactate and the chlorid, were used by Mason. A single large dose of calcium lactate influences the plasma values little. Calcium chlorid seems to be absorbed better and shows more consistent increases in the plasma values. Its solution in weak hydrochloric acid does not affect its rate of absorption.

Dinitrosalicylic Acid for Estimation of Sugar in Urine.—Using dinitrosalicylic acid as a reagent, Sumner has found a way to obtain the true values for the sugar in normal urine as follows: 1 c.c. of urine is heated in boiling water with 1 c.c. of 3 per cent. sodium hydroxid for fifteen minutes. This treatment destroys the reducing sugars completely, provided the amount present is less than 1 mg. Either 0.5 or 1 mg. glucose, depending on the quantity of glucose estimated to have been present originally, is now added to the cooled solution, after which 1 c.c. of dinitrosalicylate solution is added and the test tube heated for five minutes. Any reduction exceeding that given by the added glucose is caused by substances which are not sugars. The reducing value of these substances is subtracted from the total reducing value of the urine, giving the value for sugar by difference. It has been found that the quantity of glucose added must be approximately equal to the amount destroyed by heating with alkali, otherwise an error is introduced.

Gasometric Determination of Urea in Urine.—A method for determining urea in urine is described by Stehle which is both brief and accurate. Ammonium salts are removed by treating the urine with permutit and the ammonium-free solution is then subjected to the action of sodium hypobromite in the vacuum obtained with a Van Slyke carbon dioxid apparatus. Nitrogen is liberated quantitatively from the urea but to an entirely negligible extent from other urinary constituents.

Basal Metabolism of Normal Women.—The basal metabolism of seventeen women, fourteen of them including one or more menstrual cycles, and one being observed for twenty-six almost consecutive days was studied by Blunt and Dye. There is no definite change in the basal metabolism during menstruation. The average of the intermenstrual and menstrual observations is almost the same, and no rhythmical periodic variation in metabolism can be noted. The daily variation for each subject is great, ranging from 7.4 to 28.8 per cent. There is no relation between minimum pulse rate and basal metabolism, neither is there definite constant change in the pulse rate during menstruation.

Fat Soluble Vitamin and Yellow Pigmentation in Animal Fats.—In cod liver oil there is present a very high concentration of the fat soluble vitamin with but small amounts of yellow pigments. Butter fat shows a seasonal variation in the fat soluble vitamin content when obtained from stall fed cows during the winter and pastured in the summer. The fat soluble vitamin content of butter fat does not run closely parallel to the yellow pigment; yet in general, due to determination by their content in the feed, butters highly pigmented are rich in the vitamin; butters low in pigment should be looked upon with suspicion. In beef fats the relations are somewhat similar; those most pigmented are also generally richest in their fat soluble vitamin content. The fat soluble vitamin withstands severe methods of saponification. This indicates that it is not a fat and probably not an ester and makes possible the compounding of satisfactory fat free synthetic rations for investigative purposes.

Journal of Experimental Medicine, New York

June 1, 1921, 33, No. 6

- *Useful Heart Method. C. K. Drinker, Boston.—p. 675.
- Improved Anaerobe Jar. J. H. Brown, Princeton, N. J.—p. 677.
- *Etiology of Yellow Fever. A. E. Cohn and H. Noguchi, New York.—p. 683.
- *Chemotherapeutic Studies with Ethylhydrocuprein Hydrochlorid in Experimental Pneumococcus Pleuritis. J. A. Kolmer and J. R. Sands, Philadelphia.—p. 693.
- *Experimental Studies of Nasopharyngeal Secretions from Influenza Patients. P. K. Olitsky and F. L. Gates, New York.—p. 713.
- *Biliary Obstruction Required to Produce Jaundice. P. D. McMaster and P. Rous, New York.—p. 731.
- *Tuberculin Hypersensitiveness in Nontuberculous Guinea-Pigs Induced by Injections of Bacillus-Free Filtrates. F. A. McJunkin, St. Louis.—p. 751.
- Studies on Bacterial Nutrition. T. Thjötta, New York.—p. 763.
- Dissociation of Microbic Species. P. H. de Kruif, New York.—p. 773.
- *Decreasing Reaction of Normal Skin to Destructive Doses of Roentgen Rays by Pharmacologic Means; Mechanism Involved. J. Auer and W. D. Witherbee, New York.—p. 791.
- *Effect of Small Doses of Roentgen Rays on Hypertrophied Tonsils and Other Lymphoid Structures of Nasopharynx. J. B. Murphy, W. D. Witherbee, S. L. Craig, R. G. Hussey and E. Strum.—p. 815.

Useful Heart Method.—Drinker describes a procedure in which the heart is exposed and the breathing is normal. It is used for experimental work only.

Heart Symptoms in Experimental Yellow Fever.—Slowing of the heart occurred in monkeys and guinea-pigs during the febrile period of the experimental infection due to *Leptospira icteroides*. A similar reaction took place in animals inoculated with *Leptospira icterohaemorrhagiae*. The mechanism of slowing was usually due to slowing of the whole heart. On one occasion incomplete heart block was seen by Cohn and Noguchi. Changes in the ventricular complex occurred four times.

Ethylhydrocupreine in Experimental Pneumococcus Pleuritis.—Solutions of ethylhydrocuprein (optochin) hydrochlorid showed a pronounced bactericidal activity for pneumococci in pleural pus. The injection of 1 c.c. of 1:500 solutions of ethylhydrocuprein hydrochlorid into each pleural cavity of guinea-pigs at varying intervals up to twenty-four hours after pleural infection has usually shown a marked curative influence. Similar results were observed with dogs. The intrapleural injection of mixtures of ethylhydrocuprein sodium oleate, and boric acid (Lamar) has also shown a decided curative effect in acute suppurative pneumococcus pleuritis of guinea-pigs. These and similar experiments on pneumococcus meningitis made by Kolmer and Sands suggest that in chemotherapeutic investigations certain drugs may be injected into serous cavities in amounts exerting distinct bactericidal activity in vivo without producing local irritation or general toxic effects.

New Bacterium in Influenza.—From the filtered nasopharyngeal washings of patients in the first thirty-six hours of uncomplicated epidemic influenza and rarely in later stages of the disease Olitsky and Gates have cultivated a minute bacilloid body, *Bacterium pneumosintes*, from 0.15 to 0.3 microns in length, of constant cultural characters and capable of indefinite propagation on artificial mediums. This organism not of the nature of ordinary bacteria, was also recovered in pure culture from the unfiltered and filtered lung tissue of rabbits and guinea-pigs inoculated with unfiltered and filtered nasopharyngeal washings of early influenza cases, both from the first epidemic of 1918-1919 and from the second one in 1920. The organism grows only under strictly anaerobic conditions, passes Berkefeld V and N filters, and withstands the action of sterile 50 per cent. glycerol for a period of months. It has been recovered from cultures contaminated with a variety of ordinary bacteria such as *Bacillus pfeifferi*, pneumococci, streptococci and staphylococci, and has been cultivated experimentally in symbiosis with them. The intracheal injection in rabbits and guinea-pigs of mass cultures of this organism has induced effects on the blood and lungs of these animals which are not to be distinguished from those obtained with the nasopharyngeal secretions of patients in the early hours of epidemic influenza. From the pulmonary lesions thus induced, the same organism has been recovered in pure culture, and has been found to cause similar lesions on subsequent animal passage. Its pathogenicity is not lost by prolonged artificial cultivation.

Biliary Obstruction in Jaundice.—McMaster and Rous state that the clinical jaundice encountered in association with local liver lesions should be viewed not as the result of local bile resorption, but as due to a general injury to the hepatic parenchyma or ducts, or to blood destruction.

Tuberculin Hypersensitiveness.—Hypersensitiveness of tissues of a tuberculous animal to tuberculin provides a means of diagnosis in tuberculosis. McJunkin found death occurs within twenty-four hours or the animal becomes extremely toxic. Such a peritoneal tuberculosis develops in about one month after 1 c.c. of a very heavy suspension of the same culture has been introduced into the abdominal cavity. If the viscid fluid which is contained within the peritoneal cavity is mixed with saline solution and passed through a Berkefeld filter a bacillus-free filtrate is obtained which induces in normal guinea-pigs a certain degree of cutaneous hypersensitiveness to tuberculin. The abdominal organs and the parietal peritoneum to which masses of leukocytes and tubercle bacilli are adherent, when crushed and extracted with saline solution yield a filtrate which likewise induces a cutaneous hypersensitiveness. The cutaneous hypersensitiveness does not appear before the seventh or eighth day after the filtrate injection, and is, therefore, considered to be the result of an active sensitization of the animal.

Skin Tolerance to Roentgen Rays.—From the experimental facts obtained by Auer and Witherbee it is evident that the skin of rabbits under certain conditions may acquire a remarkably increased resistance to doses of roentgen rays which are surely destructive to control animals. These conditions are that the animal whose skin tolerance to roentgen rays is to be increased must be sensitized with horse serum and this sensitization must take place before the rabbit is exposed to the roentgen rays.

Roentgen-Ray Therapy of Diseased Tonsils.—Forty-six individuals with tonsils both hypertrophied and otherwise pathologically altered and some of whom had in addition adenoid masses and lymphoid deposits posterior to the pillars of the fauces were given exposure to roentgen rays. In all but four cases the treatment was followed by marked atrophy of the tonsils and the other lymphoid deposits, attended by an opening and drainage of the tonsillar crypts. As this process progressed, the previously enlarged tonsils assumed a smooth and normal appearance, and the hemolytic bacteria—streptococci and staphylococci chiefly—which were often present in the affected tonsil disappeared usually within four weeks of the treatment.

Florida Medical Association Journal, St. Augustine and Jacksonville

May, 1921, 7, No. 11

Preventive Medicine and Trend of Practice. W. P. Adamson, Tampa.—p. 190.

Masochism. N. M. Owensby, Atlanta, Ga.—p. 193.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

June, 1921, 17, No. 5

Toxicity of Some Thioureas and Thiuramdisulphids. P. J. Hanzlik and A. Irvine, Cleveland.—p. 349.

*Quantitative Studies in Chemotherapy. V. Intravenous Versus Intramuscular Administration of Arsphenamin; Curative Power and Minimum Effective Dose. C. Voegtlin and H. W. Smith, Washington, D. C.—p. 357.

*Action of Drugs in Infection. I. Influence of Morphin in Experimental Septicemia. A. Kraft and N. M. Leitch, Chicago.—p. 377.

*Salicylates. XIII. Liberation of Free Salicylic Acid from Salicylate in Circulation. P. J. Hanzlik, Cleveland.—p. 385.

*Epinephrin Hyperglycemia. I. A. L. Tatum, Chicago.—p. 395.

*Effect of Benzyl Benzoate on Leukocytes of Rabbit. L. A. Emge and J. P. Jensen, San Francisco.—p. 415.

Intramuscular Administration of Arsphenamin and Neo-Arsphenamin.—As the result of a considerable study, Voegtlin and Smith claim that the intramuscular administration of arsphenamin and neo-arsphenamin is just as efficacious as the intravenous administration of these drugs in the treatment of experimental trypanosomiasis, as judged by both the minimum effective dose and the percentage of survivals of treated animals. The significance of this point in the treatment of human syphilis is discussed. The ratio of the minimum lethal

dose to the minimum effective dose is a substantial index to the curative power of a given drug under experimental conditions.

Morphin in Septicemia.—Kraft and Leitch state that morphin sulphate given in 0.03 gm. (0.5 grain) doses, which is from one-sixth to one-tenth fatal dose, lowers the resistance of rabbits toward septicemia produced by *Streptococcus hemolyticus*. Morphin sulphate, given as above, lowers the temperature of rabbits. In the administration of morphin at least two effects should be considered: first, the sedative action of morphin; second, the influence of morphin on the course of infection. The harmful influence of morphin is probably due to a number of factors, such as inhibition of phagocytosis, increase in intestinal stasis, with the increased production of toxins, and a general depression of the body temperature, of metabolism and the body defense.

Liberation of Free Salicylic Acid from Salicylates.—Hanzlik's observations have shown that free salicylic acid is demonstrably liberated from sodium salicylate at a very low degree of acidity, namely, an acidity whose hydrogen-ion concentration corresponds to $p_H = 6.7$; more definitely at $p_H = 6.5$. The presence of 25 per cent. serum or plasma in salicylate "buffer" mixture prevents the liberation of free salicylic acid at the degree of acidity of $p_H = 5.9$. Therefore, it is improbable that free salicylic acid could be demonstrated in the circulation during life. This was fully confirmed by Hanzlik on animals subjected to fatal asphyxia and whose cardiac and arterial bloods were rendered very slightly acid ($p_H = 6.8$ or 6.9). Consequently, the theory that free salicylic acid, liberated by virtue of the greater carbon dioxide content of venous blood of the right heart, exerts an antiseptic action and prevents the development of a right sided auriculoventricular (tricuspid) endocarditis in rheumatic fever is untenable.

Epinephrin Hyperglycemia.—From a study of all available evidences in the literature together with data obtained by him, Tatum concludes that epinephrin glycogenolysis cannot be satisfactorily explained on the basis of hepatic asphyxia or acidosis. The real mechanism of epinephrin mobilization of carbohydrates therefore is as yet undetermined.

Effect of Benzyl Benzoate on Leukocytes.—The experimental work done by Emge and Jensen showed that in rabbits a continuous administration of benzyl benzoate in small doses leads to a leukocytosis which in somewhat larger doses is accompanied by an increase in small mononuclear cells. This leukocytosis is transient and ultimately ends in a late mild leukopenia. In other words, the behavior of the blood picture suggests also that if it is due to some form of benzol or some intermediate product, such substance is of importance only after a sufficient amount of benzyl benzoate has accumulated in the system. In large but single doses of benzyl benzoate there is a tendency to change the even rise of the leukocytes into a broken curve of a diphasic character with a distinct depression of the polymorphonuclear element. Also here the mild and late leukopenia occurs. The changes in the blood curve are not dependent upon the method of the administration of the drug. In a very large, single, but not fatal dose the primary rise of the leukocytes does not occur necessarily but the blood curve assumes more of the leukopenia character, of the benzol curve. This leukopenia presents also here a diphasic polymorphonuclear picture. In the presence of latent or quiescent infections in rabbits larger doses produce an acute return of the disease. This is accompanied by sharp rises and sudden drops in the total as well as the small mononuclear white blood cells (actual lymphocytosis). A leukopenia was not observed when the recrudescence was very violent but when the recrudescence took a milder course there also was a suggestion of a late leukopenia. The flaring up of an infection in rabbits during benzyl benzoate therapy suggests a similarity to the action of benzol under similar circumstances. These data are in direct contradiction of those of Heller and Steinfield.

Military Surgeon, Washington, D. C.

May, 1921, 48, No. 5

Medical Department Program of Hospitalization and Evacuation of an Army in Preparation for Battle. A. N. Stark.—p. 493.
Reconstruction Work in United States Army Hospitals. W. J. Tindall.—p. 503.

- Anaphylaxis and Serum Sickness—Serum Allergy. A. P. Hitchens.—p. 511.
 Malingering and Simulation of Disease in Warfare. T. A. Williams, Washington, D. C.—p. 520.
 Posting and Reporting Water Supplies. E. J. Theriault.—p. 534.
 Water Supply for Railroad Transport Service. C. T. Male.—p. 540.
 Chlorination of Water Supplies. W. C. Russell.—p. 544.
 Water Supply Surveys. H. B. Hommon.—p. 550.
 Hemolytic Streptococcus Throat Surveys at Army Recruit Depots. J. E. Walker.—p. 561.
 Study of Army Ration and Its Relation to Height and Weight of Soldiers in Army Cantonments. L. A. Congdon.—p. 569.
 Malarial Fevers. R. W. Mendelson.—p. 581.

Minnesota Medicine, St. Paul

June, 1921, 4, No. 6

- Reconstructive Surgery. H. E. Mock, Chicago.—p. 343.
 Unsettled Problems in Management of Renal Tuberculosis. H. Cabot, Ann Arbor, Mich.—p. 354.
 Denudation of Inoperable Cancer, an Aid for Efficient Radiotherapy. E. G. Beck, Chicago.—p. 360.
 Fifty Consecutive Cataract Operations by Smith-Indian-Fisher Method. F. J. Pratt and J. A. Pratt, Minneapolis.—p. 370.
 *Relation of Hepatitis to Cholecystitis. W. C. MacCarty and A. Jackson, Rochester, Minn.—p. 377.
 Physical Signs of Early Pulmonary Tuberculosis. J. W. Bell, Minneapolis.—p. 382.
 Classification and Symptomatology of Pulmonary Tuberculosis. F. W. Wittich, Minneapolis.—p. 384.
 Roentgen-Ray Diagnosis of Tuberculosis. F. S. Bissell, Minneapolis.—p. 388.
 Spasmodic Stenosis of Esophagus. E. B. Freeman, Baltimore.—p. 390.
 *Saligenin, a New Nontoxic Local Anesthetic and Its Mercury Derivative, a New Antiseptic. A. D. Hirschfelder, Minneapolis.—p. 399.

Relation of Hepatitis to Cholecystitis.—Chronic cholecystitis is very frequently if not always associated with chronic hepatitis. MacCarty says that the general obscure symptoms which frequently occur in association with cholecystitis may have their origin in chronic disturbances of hepatic functions. The presence of chronic hepatitis in association with chronic cholecystitis may account for the recurrence of symptoms following a certain percentage of cholecystectomies and cholecystostomies.

Saligenin, a New Nontoxic Local Anesthetic.—Saligenin is the alcohol corresponding to salicylic acid and is oxidized to salicylic acid in the body. It is formed in nature by the splitting up of the glucoside salicin by the enzyme emulsion and it can be prepared synthetically in various ways. Hirschfelder says it has been found that saligenin is distinctly less irritant to the tissues than benzyl alcohol and that it is much more certain in its action. For ordinary purposes of inflation anesthesia a 2 per cent. solution is satisfactory. It is water soluble up to 10 per cent. and is from five to ten times less toxic than procain and from twenty-five to fifty times less toxic than cocain. Judging from results on the dog and cat (from 0.4 to 0.7 gm. per kilogram) a man could tolerate up to 1 or 2 ounces of the solid drug or from 1,500 to 3,000 c.c. of a 2 per cent. solution intravenously—or about 1 gallon subcutaneously. Hirschfelder makes reference to the results obtained by various operators with saligenin as the anesthetic.

New York Medical Journal

June 1, 1921, 113, No. 15

- Some Emotional Reactions in Epileptics. L. P. Clark, New York.—p. 785.
 Singultus. H. S. De Brun, New York.—p. 789.
 Case of Hysterical Aphasia. A. A. Rutz, Brooklyn.—p. 793.
 Sensory Aphasia. E. M. Ellison, Washington, D. C.—p. 796.
 Shaker Celibacy and Salacity Psychologically Interpreted. T. Schroeder, Cos Cob, Conn.—p. 800.
 Mental States Associated with Apoplexy and Allied Conditions. A. C. Buckley, Philadelphia.—p. 806.
 *Effect of Tobacco on Man. W. J. Gies, M. Kahn, and O. V. Limerick, New York.—p. 809.
 Ataxic Paraplegia with Pernicious Anemia. K. A. Menninger, Topeka, Kan.—p. 812.
 *Syphilis of Lungs Simulating Tuberculosis. H. M. Minton, Philadelphia.—p. 813.
 Lethargic Encephalitis as a Complication of Influenza. B. Frankel, New York.—p. 815.
 Cases of Injury to Eyeball. W. L. Pyle, Philadelphia.—p. 816.
 Cases of Foreign Body in Larynx and Esophagus. J. Friedman and S. D. Greenfield, Brooklyn.—p. 818.
 Marie Curie. D. Waterson, New York.—p. 820.

Effect of Tobacco on Man.—The authors claim that the habitually moderate use of tobacco is not harmful to adults; the moderate use of tobacco proves distinctly helpful to certain adult types; the habitually excessive use of tobacco may

prove harmful to certain individuals, but the same holds equally true of all foods; the excessive use of tobacco may prove harmful in certain neurovascular disorders; the habitual use of tobacco by juveniles is harmful. Tobacco does not cause disease of either mind or body.

Syphilis of Lungs.—Minton has noted cases which to the casual observer might have been diagnosed as pulmonary tuberculosis, but, after investigation, have proved to be syphilis of the lungs. He believes that there are many cases of this disease being treated for pulmonary tuberculosis, and urges more frequent use of Wassermann and other blood tests in cases with signs and symptoms of active tuberculosis, but not giving positive sputum. This should be done whether a history of a primary syphilitic lesion is obtainable or not.

June 15, 1921, 113, No. 16

- Roentgen-Ray Therapy in Superficial Malignancy. W. H. Meyer, New York.—p. 845.
 Reciprocal Influence of Influenza and Epilepsy. A. Gordon, Philadelphia.—p. 849.
 Sociological Training of Epileptics. L. P. Clark, New York.—p. 851.
 Nervous Patient from Viewpoint of Vegetative Neurologist. E. H. Reede, Washington, D. C.—p. 853.
 Vertigo from Point of View of Otologist. W. A. Wells, Washington, D. C.—p. 859.
 Visual Errors in General Practice. L. H. Schwartz, New York.—p. 862.
 Diagnostic Value of Pupil in General Medicine. J. H. Bailey, Brooklyn.—p. 864.
 Eye Strain in Every-Day Practice. A. Brav, Philadelphia.—p. 869.
 *Serum Treatment of Lobar Pneumonia. W. L. Niles, New York.—p. 871.
 Rectal Traet as Source of Focal Infection. H. Goldman, New York.—p. 873.
 Hay-Fever; Report on Successful Detoxication Method of Treatment. G. L. Renaud, Detroit.—p. 875.
 Lure of Cathartic Giving. J. C. O'Day, Honolulu.—p. 878.

Serum Therapy of Pneumonia.—Niles endorses the serum therapy of pneumonia. He urges that an exact etiologic diagnosis should be quickly made in every patient suffering with lobar pneumonia. With very few exceptions Type I pneumococcus infections should be treated with Type I antipneumococcus serum. The serum should be given in large dose (generally 100 c.c.) and repeated every eight hours until the temperature falls and remains below 102 F.; if it subsequently rises the administration of serum should be repeated unless complications, which should always be suspected, are determined. The serum treatment should be commenced as early as possible; it should reach the vein at about the body temperature and the first 15 c.c. should be given slowly. Polyvalent serum should never be given and Type I serum should be administered only to proved Type I infections. Serum treatment reduces the mortality of Type I infection more than 50 per cent.

Northwest Medicine, Seattle

June, 1921, 20, No. 6

- Diagnosis of Chronic Cholecystitis. K. Winslow, Seattle.—p. 145.
 Clinical Application of Blood Chemistry. R. F. E. Stier and Hollister, Spokane.—p. 148.
 Case of Acute Lymphatic Leukemia. B. N. Wade, Portland, Ore.—p. 152.
 *Dermatitis Exfoliativa, Following Injections of Arsenical Preparation Intravenously. G. S. Whiteside, Portland, Ore.—p. 153.
 *Case of Bilateral Thrombosis of Lateral Sinuses Not Originating from Otitis. R. A. Fenton, Portland, Ore.—p. 155.

Dermatitis Exfoliativa Following Arsenic Injections.—Whiteside's three cases the urine and blood pressure were normal. Two of the patients were in the secondary stage of syphilis, one patient showing signs of neurosyphilis only, none with cutaneous or mucous membrane lesions. One was given mercury simultaneously; the other two received none. In unusual reaction to the arsenic at time of or immediately following the administration was noted. Injections were given once a week. In one case the dermatitis followed the second dose within three days; in the other two cases it followed the third or fourth dose after an interval of two or three weeks. In one case there was fever, prostration and all the classic symptoms, while the other two patients never were confined to bed and had normal temperatures throughout. In one case neo-arsenobenzol was given, in one arsenobenzol, and in one arsphenamin.

Bilateral Thrombosis of Lateral Sinuses Not Originating from Otitis.—In Fenton's case there was an abscess extending

vertically about 8 cm. from the left orbital roof and diagonally across the longitudinal sinus, eroding the inner surface of the bone. There was also a vast amount of pus filling the dural cavity and compressing the left cerebral hemisphere. Pus had burrowed through the roof of the orbit and traveled out toward the zygoma to appear under the eyebrow. Complete and organized thrombosis of the right lateral and sigmoid sinuses, extending down into the jugular, and* incomplete organized thrombosis of the left sigmoid sinus and jugular had occurred. Hundreds of abscesses were found in the lungs; there was bilateral coalescing bronchopneumonia, marked acute hemorrhagic and fibrinous pleurisy, acute tracheobronchial lymphadenitis, and marked cloudy swelling of the parenchymatous organs. A hemolytic streptococcus was the chief organism involved.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

April 27, 1921, 15, No. 1

Scientific Record. D. Allmand.—p. 1.

"Arneith Count" in Hookworm-Infected White Children in North Queensland. A. Breinl.—p. 49.

*Bronchomoniliasis Complicating Pulmonary Tuberculosis in a Native of Gold Coast, West Africa. J. W. S. Macfie and A. Ingram.—p. 53.
Case of Indigenous Infection with *P. falciparum*. B. Blacklock.—p. 59.
Mosquitoes in Isle of Man. B. Blacklock and H. F. Carter.—p. 73.
Some Unusual Breeding Places of *Stegomyia fasciata*, Fabr., in Australia. G. F. Hill.—p. 91.

Musca Domestica, Linn., as a "Bush Fly" in Australia. G. F. Hill.—p. 93.

New Tsetse-Flies (*Glossina*) from Belgian Congo. R. Newstead and A. M. Evans.—p. 95.

On a Collection of Pappataci Flies (*Phlebotomus*) from India. R. Newstead and J. A. Sinton.—p. 103.

Bronchomoniliasis Complicating Tuberculosis.—A case is recorded by Macfie and Ingram in which bronchomoniliasis complicated pulmonary tuberculosis in a native of the Gold Coast at Accra. The patient died of an hemoptysis. At the postmortem examination both lungs were found to be tuberculous. The left lung was collapsed, and the pleural cavity partially filled with exudate. In this exudate and in the thickened pleura over the lung *Monilia* was present. The organism, which belonged to the *Tropicalis* group of *Castellani* and Chalmers, closely resembled in biochemical reactions *M. nivea*, Cast. (1910).

Archives of Radiology and Electrotherapy, London

May, 1921, 25, No. 12

Calcification in Angioma. C. P. G. Wakeley.—p. 363.

Effect of Increased Protection from Radiation upon Blood Condition of Radium Workers. J. C. Mottram.—p. 368.

Case of Cancer of Portio Vaginalis Treated with Roentgen Rays. Mathes and Staunig.—p. 373.

Effects of Roentgen Rays on Lymphocytes. S. Russ, H. Chambers, and G. Scott.—p. 377.

Case of Acute Aplastic Anemia. F. E. Larkins.—p. 380.

Actinomycosis Treated with Radium. S. A. Heyerdahl.—p. 382.

Case of Long-Lasting Suppuration of Nasal Sinuses Successfully Treated by Galvanic Current. C. A. Robinson.—p. 386.

British Medical Journal, London

May 28, 1921, No. 3152

*Clinical Study of Three Cases of Heart Block. T. W. Griffith.—p. 763.
Capillary Pressure and Edema. L. Hill.—p. 767.

Dual Radiotherapy in Malignant Disease. S. G. Scott.—p. 771.

Treatment of Sleeping Sickness. C. H. Marshall and S. M. Vassallo.—p. 773.

Virulence of Diphtheria-Like Organisms. A. J. Eagleton and E. M. Baxter.—p. 775.

*Lingual Application of Iodin as Prophylactic in Cerebrospinal Meningitis and Influenza. J. A. Taylor.—p. 776.

Bilateral Hypoglossal Palsy Due to Gunshot Wounds. H. Burrows.—p. 776.

Heart Block.—In the first, cited by Griffith, a block which remained complete for a long period suddenly broke into a two to one block and ultimately passed off altogether. In the second case, though the vexed and difficult question of whether the block was partial or complete arose from time to time, there were periods when the block was of the former character. The phenomenon of ventricular "escape" is shown; an

auscultatory sign is mentioned to which Griffith elsewhere referred; the effects of amyl nitrite and of atropine are discussed, and tracings are shown which demonstrate the occasional occurrence of "flutter" of the auricle. The third case is not only an example of complete heart-block with an unusually slow ventricular rhythm, but on account of the large number of attacks of the Adams-Stokes character, during some of which satisfactory tracings were obtained. In this case also simultaneous tracings of the pulse and of the respiration showed a remarkable relation between the periods of asystole and those of the apnoeic phases of the Cheyne-Stokes respiration when that was present.

Application of Iodin to Tongue as Prophylactic Against Influenza.—The treatment of cerebrospinal meningitis by the application of iodine to the tongue led Taylor to try it also in this manner as a prophylactic for the same disease, and for influenza during the epidemic in the Mbarara and Kigezi districts, Uganda, in 1918-19. Taylor's assumption is that iodine to some extent causes disinfection of the mouth, throat, and tonsils, and thus prevents or reduces the intensity of the disease. Moreover, the iodine increases the flow of saliva which in itself is prohibitive to the growth of the organisms, and a four-fold action is thus brought into force. Ordinary tincture of iodine (B. P.) was mixed with an equal part of native honey, and, in the case of cerebrospinal meningitis, instructions were given that two or three drops of this mixture should be placed on the tongue of contacts two or three times daily. No contacts who used it developed the disease, and the number of deaths reported fell in a few months from an average of 100 to an average of forty a month. Strict isolation of contacts, however, was in force before the use of the iodine, and it was unusual for contacts to become infected after segregation. It is therefore doubtful whether the iodine had any effect. In influenza the results appeared to be more definite. The iodine was used in the same manner, but with the recommendation that applications should be made at least every three hours, or more frequently if convenient. Toward the end of December the disease became prevalent throughout the district, and nearly every person, except some of those to whom the iodine had been distributed, suffered from the disease in a more or less severe form. Among the Europeans, who all used the iodine more or less regularly, no case occurred, although many were in daily contact with persons suffering from the disease.

June 4, 1921, 1, No. 3153

*A Defense of Thesis that "Opportunities of General Practitioner are Essential for Investigation of Disease and Progress of Medicine." J. Mackenzie.—p. 797.

*Infective Arthritis and Allied Conditions. W. H. Willcox.—p. 804.
Coccygeal Fistula. J. P. Lockhart-Mummery.—p. 807

*Acute Osteomyelitis of Long Bones in Children. A. Mitchell.—p. 807.
Case of Idiopathic Muscular Dystrophy. H. S. Carter and W. Fleming.—p. 809.

Artificial Pneumothorax. C. Riviere.—p. 810.

Medical Research.—It is Mackenzie's object to demonstrate that the conception of medical research which is dominant today is so immature and imperfect that it renders fruitless much of the research work. Indeed, so imperfect is the conception that fields essential to medical progress are not recognized. It is well, therefore, that men engaged in medical research should at intervals pause and consider what they are doing, so that they clearly realize the object of their endeavor and be certain that their methods are suited to their purpose. Never in the history of medicine has there been such activity as now, and there never was a time when it was more necessary to have a clear perception of aims and methods, especially as great schemes are being launched in legislature, in research, and in education. A review of medical progress reveals the fact that medicine is emerging, slowly and hesitatingly, from a past burdened by tradition and even superstition. The conception of what constitutes medical science is still so imperfect that no clear understanding exists on what lines it should be pursued. While the aim of medicine may be recognized, the methods by which this aim may be achieved are not yet understood, and this lack of understanding is leading medicine astray.

Infective Arthritis and Allied Conditions.—Willcox endeavors to throw some light on the causation of these many forms of chronic rheumatism of doubtful etiology, and to

indicate the lines of investigation and treatment which are most productive of good results not only for existing attacks, but in the prevention of recurrences.

Bone Resection in Acute Osteomyelitis.—Mitchell believes that the correct treatment is to resect (subperiosteally) the whole thickness of the shaft, not necessarily the whole length, but always the whole diameter of the part over which the periosteum does not exhibit a normal degree of attachment to the underlying bone—an operation described and strongly advocated by Sir Henry Gray in 1909. While one has no hesitation in applying it to the humerus and to the femur in suitable cases, fortunately the bone for which this operation is most frequently demanded is the tibia, where, owing to the splinting afforded by the fibula and to the distribution of the muscle attachments, the conditions for operation, after-treatment, and for good end-results are ideal.

Journal of State Medicine, London

May, 1921, 29, No. 3

- Prevention of Venereal Infection. R. A. Lyster.—p. 129.
Relation of State and Doctor to Venereal Disease. S. Lomholt.—p. 136.
State, Doctor and Venereal Disease. Bayet.—p. 143.
Anaerobes in Hair Dust. R. M. Buchanan.—p. 149.
Cinematograph and Psychoneurosis. I. H. Lloyd.—p. 152.

Lancet, London

May 28, 1921, 1, No. 5100

- *Asthma. A. F. Hurst.—p. 1113.
Mitral Stenosis. B. Parsons Smith.—p. 1117.
Diagnosis of Dysentery by Sigmoidoscope. P. Manson-Bahr and A. L. Gregg.—p. 1121.
*Operation for Treatment of Ectopia Vesicae. C. Roberts.—p. 1125.
Urea Concentration Tests in Psychoses. J. Walker.—p. 1126.
Case of Osteitis Fibrosa. C. W. G. Bryan.—p. 1129.
External Dislocation of Patella. R. F. Maddren.—p. 1130.

Treatment of Asthmatic Attack.—An attack of asthma can most readily be cut short by the subcutaneous injection of epinephrin. The most efficacious dose is very much smaller than that generally given. In many cases a single minim of 1:1,000 is enough, more than two minutes being rarely required. But the injection should be given at the beginning of an attack, directly a patient wakes in the night, for instance, and not half an hour or an hour later when it has reached its full development. The relief is so immediate that the patient often falls asleep within five minutes of waking in an attack. Such small doses give rise to no unpleasant sensations, such as frequently follow the injection of three or more minims, and the blood pressure does not rise at all. Consequently, the treatment can be continued for long periods without any fear of ultimately causing arteriosclerosis. For slight attacks and for the feeling of slight dyspnea, which may persist throughout the day when severe attacks occur at night, atropin and cocain may be used with an atomizer. No patient should be allowed to use any of the numerous powders which are used by inhaling the fumes produced when they are burnt, as they invariably aggravate any bronchitis which may be present, and actually give rise to bronchitis in patients who have hitherto been free from it. The chief aim must be to devise such a course of action for the patient that he will eventually have no attacks to treat.

Operation for Treatment of Ectopia Vesicae.—The operation employed by Roberts consists in transplanting the ureters directly into the rectum through its anterior wall above the level of the peritoneal reflection of Douglas' pouch, the general peritoneal cavity being shut off by suture before opening the bowel.

June 11, 1921, 1, No. 5102

- Ambulatory Treatment of Fracture of Limbs; Tuberculous and Arthritis Disease of Joints. C. A. Hoefftcke.—p. 1222.
Surgery of Lung and Pleura. G. E. Gask.—p. 1223.
*Heart Disease and Pregnancy. J. Mackenzie.—p. 1230.
Schick Reaction and Diphtheria Prophylactic Immunization with Toxin-Antitoxin Mixture. A. T. Glenney, K. Allen and R. A. O'Brien.—p. 1236.
Post-War Neurosis. S. Herbert.—p. 1238.
*Hippuric Acid Synthesis Test as Regards Functional Condition of Kidney. P. L. Violle.—p. 1239.
*Evil Effects of Excess of Protein on Milk Secretion. G. A. Hartwell.—p. 1240.

Heart Disease and Pregnancy.—The physiology of the heart in relation to its efficiency is the subject discussed by Mac-

kenzie in this paper. The healthiest heart can be forced to do only a certain amount of work; in other words, the reserve force is limited. Exhaustion of the reserve force is shown by signs of distress, particularly by dyspnea. When effort is made the heart responds and continues to use its reserve force; so long as this is not exhausted, effort causes no distress. Thus, though an individual may be able to walk a certain distance in comfort, if he carries a heavy weight he will suffer distress before that distance is accomplished. His heart is not in any way impaired, but its reserve force is exhausted sooner. This explains many of the phenomena which occur in the heart during pregnancy. This state imposes more work on the heart, and this not only in connection with the maintenance of the placental circulation, but also in respect of the additional weight carried by the mother. There are again disturbing factors in the form of interference with the shape and movements of the chest and displacement of the heart itself. All this additional work is met by a call on the reserve force. This is shown by the fact that the field of response to effort becomes limited; the pregnant woman cannot run upstairs so freely or so easily as was her wont. The assumption that the heart hypertrophies during pregnancy Mackenzie believes is not justified. While it is impossible that long years of continued severe effort may produce a slight increase in the size of the organ, this increase is so small as not to be perceptible in the vast majority of people who lead strenuous lives. The fact that pregnant women are hampered by breathlessness in making some effort which previously they could undertake in comfort, shows an earlier exhaustion of the reserve force. This does not suggest hypertrophy. Further, hypertrophy cannot be detected by a physical examination of the heart, except in those instances—for example, aortic regurgitation—in which it is very well marked. In such cases there is a big and forcible apex beat. This forcible apex beat does not present itself in healthy pregnant women. The changes in the shape of the heart which occur are thus not due to hypertrophy. On the contrary, a complete explanation of these changes lies in the displacement of the organ and the widening of the chest caused by the uterine tumor. The law of heart failure is also discussed by Mackenzie.

Hippuric Acid Test for Functional Condition of Kidney.—Violle states that the arterial hypertension is fairly closely connected with the renal condition so far as it has been possible to discover that condition by testing the hippuric acid synthesis in the cases under observation. The azotemia, chloridemia, and albuminuria are evolved by crises. The modifications observed in the hippuric acid synthesis appear to be rather the reflection of functional parenchymatous disturbances that are capable of gradual modification. The hepatic disturbances, since they are not accompanied by renal disturbances, fail to effect any modifications in the hippuric acid synthesis, which appears to be of purely renal origin. From the point of view of hydrology these findings may explain the results obtained in cases of arterial hypertension by means of treatments of diuretic waters which act energetically on the renal parenchyma. On the other hand, Violle has noted that diuretic waters favor the production of hippuric acid, exciting the renal parenchyma, sometimes to such an extent as to double the output.

Evil Effect of Excess of Protein on Milk Secretion.—Hartwell points out that excessive proportions of protein in the mother's diet may lead to metabolic and nervous trouble in the suckling.

Practitioner, London

February, 1921, 116, No. 2

- Oriental Sore. A. W. Sheen.—p. 77.
Strain of Heart. W. Edgecombe.—p. 87.
Angina Pectoris. R. O. Moon.—p. 100.
*Pericardial Factor in Heart Disease. G. A. Stephens.—p. 109.
Recent Work on Diseases of Heart. C. W. Chapin.—p. 116.
Uses and Abuses of Psycho-Analysis. R. M. Wilson.—p. 125.
Psychologic Analysis of Case of Simple Hysteria. J. K. Reid.—p. 132.
Importance of Muscular Relaxation in Examination of Joints. C. Westman.—p. 139.
Syphilitic Lesions Simulating or Associated with Tubercle. Z. P. Fernandez.—p. 144.

Pericardial Fluid and Intrapericardial Pressure.—Stephens endeavors to show that, in normal health, the intrapericardial

pressure is negative to the extent of 4 c.c. of water, while with hearts that were exhausted at the time of death the pressure became atmospheric. The negative pressure produces a suction action, whereby the fluid is kept at a nearly equal thickness all over the heart while its movements are somewhat restricted; but if the intrapericardial pressure becomes less negative, it follows that the movements of the fluid are more marked. In health, the difference between the cardiograms taken in the vertical and horizontal positions is hardly noticeable, for the suction action is sufficiently strong to keep the fluid in position; but if this suction action is diminished, the fluid tends to fall to the most dependent part, whereby there is greater freedom of movement on its uppermost surface, and when the patient is lying down this surface is adjacent to the anterior chest wall. Cardiograms are shown to illustrate this. The more rapidly an engine works the greater the amount of lubricating material is required, and similarly with the heart, when it beats or contracts more rapidly it requires more pericardial fluid. An increased secretion of this fluid necessarily disturbs the intrapericardial pressure, and a certain amount of "distress" always occurs as the result of exercise until equilibrium of fluid and pressure, or "second wind," is established.

South African Medical Record, Cape Town

May 1, 1921, 19, No. 9

- Lethargic Encephalitis. A. M. Moll.—p. 162.
Hydatid Disease. K. Bremer.—p. 165.
Recent Advances in Radiology and Electrotherapeutics. H. W. Reynolds.—p. 167.
Case of Fibrosis Uteri in Young Unmarried Woman, with Atypical Symptoms. E. A. Seale.—p. 168.

Archives Médicales Belges, Liège

March 1921, 74, No. 3

- Food and Nutrition. F. Dauwe.—p. 161.
*Pain in the Arms. R. Marchal.—p. 206.
Present Status of Our Knowledge of Blood Platelets. E. Delcourt-Bernard.—p. 210.

Pain in the Arms.—Marchal emphasizes the diagnostic importance of the tendon reflexes in the arm, as reflex action cannot be simulated. He describes a case of Pott's disease with incomplete clinical picture; the main disturbances were abnormal sensations in the arms without distinct objective symptoms. The vague sensations of burning in the arm and chest, and the behavior of the tendon reflexes were explained by the roentgen picture showing extensive tuberculosis of the first four dorsal vertebrae. In another case the dysesthesia in the arm for the last twenty days led to the diagnosis of tabes from inherited syphilis.

Bulletin de l'Académie de Médecine, Paris

May 17, 1921, 85, No. 20

- *Surgical Treatment of Aneurysm of the Aorta. E. Delorme.—p. 582.
Idem. T. Tuffier.—p. 586.
Allyl-Theobromin. Rémond and Colombier.—p. 592.
*Postoperative Renal Hemorrhage. F. Legueu.—p. 590.
Resemblance Between Epidemic Encephalitis and Tuberculous Meningitis in Children. A. Jouin.—p. 594.

Surgical Treatment of Aneurysm of the Aorta.—Delorme recalls Leriche's suggestion in 1913 to relieve the pains with aortitis by resecting the network of nerves on its surface over a certain stretch. He described then the technic that might be followed, and presented arguments to show the logical indications for this liberation of the vessel from its nerve sheath.

Tuffier relates that his operative case of spindle-shaped aneurysm of the aorta, which was summarized in these columns, June 18, 1921, p. 1800, dates from 1911. It practically amounted to an unintentional sympathectomy. If this was responsible for the success of the intervention, then, he says, physicians can confidently recommend this simple and harmless treatment. There can be no question that removal of sclerous tissue around the aorta or removal of some mechanical obstacle may put an end to severe pains, as some of his cases testify. This list includes some of resection of ribs to relieve the hypertrophied heart with pericarditis. In one case this operation ten years ago restored the patient to almost normal life, but recently he began to suffer anew. Tuffier then resected the fifth rib, where the pain was felt, and this

relieved the patient at once and completely. He thinks that almost all forms of aneurysm of the aorta might be benefited by wrapping a strip of fascia around them, but progress in this line is slow as clinicians do not trust these patients to the surgeons. He is hoping that physicians will promote progress in this line by referring to the surgeons at least the otherwise hopelessly doomed cases.

Postoperative Hemorrhage from the Kidney.—In six of the twelve cases reported by Legueu, the hemorrhage occurred in a patch of necrosis, the result of infarction of a supernumerary or abnormally located artery. This artery had evidently been injured when the kidney was drawn out.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 20, 1921, 45, No. 17

- Obesity in Epidemic Encephalitis. Nobécourt.—p. 729. Idem. Labbé.—p. 731.
Vitiligo Consecutive to Abortive Syphilid. Milian.—p. 731.
Fatal Epidemic Encephalitis with Parotitis. Babonneix and Hubac.—p. 732.
*Syphilis of the Lung. E. P. Benoit (Montreal).—p. 738.
Aplastic Pernicious Anemia. E. P. Benoit.—p. 741.
*The Tourniquet Test in Vascular Disorders. d'Oelsnitz.—p. 746.
*Cardiac Form of Typhoid Sepsis. J. Minet and R. Legrand.—p. 749.
Mitral Stenosis and Syphilis. L. A. Amblard.—p. 753.
*Benzyl Benzoate in Treatment of High Blood Pressure. C. Laubry and A. Mougeot.—p. 757.
Syphilis in Origin of Diabetes. M. Pinard and Velluot.—p. 760.

Pulmonary Syphilis.—Benoit emphasizes that the peculiarly curable syphilitic disease of the lung may simulate in every respect pulmonary tuberculosis, unless roentgenoscopy reveals that it is located elsewhere than at the apex. Even with tubercle bacilli in the sputum, a positive Wassermann reaction should suggest the necessity for eliminating by proper treatment the syphilitic factor which always facilitates the development of the tuberculosis. He gives six weekly injections of an arsenical, and then six weeks of mercury or iodine or both. Then he repeats this twelve weeks' course, and after a rest of two or three months gives a third course, if the Wassermann is still positive. An instructive case is described in a man of 69 who had been spitting blood for a week, and the symptoms all pointed to tuberculosis except the Wassermann reaction and a roentgen shadow which would have suggested an aneurysm of the aorta if there had been pulsation in it. Prompt benefit followed specific treatment.

The Tourniquet in Treatment of Vascular Disorders.—The vasodilation which follows application of the Esmarch bandage for five minutes is attenuated when the sympathetic nervous system is paralyzed or otherwise below par, while it is exaggerated when the sympathetic is abnormally excitable. A local hot bath gives corresponding responses. D'Oelsnitz has been utilizing these phenomena in diagnosis, and now announces that systematic repetition of the procedures has a pronounced therapeutic effect in Raynaud's disease and other peripheral vascular disturbances of sympathetic origin. Marked benefit was realized in a severe case of Raynaud's disease described. The woman applied the elastic compression for five minutes, then plunged the hands in hot water for ten minutes, and then exercised the hands and fingers actively, repeating the whole procedure twice a day. Practically normal conditions were restored, although the chronic vascular derangement had been so severe that one finger had begun to gangrene and ulcerate.

Cardiac Form of Typhoid Sepsis.—Minet and Legrand report two cases of pure typhoid septicemia, sparing the intestines but inducing symptoms of severe myocarditis in one case and of endocarditis followed by pulmonary valve stenosis in the other case. The symptoms in both subsided on recovery except the persisting instability of the pulse in the first case and the pulmonary stenosis in the other.

Benzyl Benzoate in High Blood Pressure.—Laubry and Mougeot have been giving this drug a trial in their service, and the experiences with it are to be reported in Péron's thesis. In this communication they extol its effect in cases of high blood pressure, saying, "It should be ranked among the adjuvants giving surprising results sometimes, rarely negligible, never harmful, useful to alternate or combine with other drugs."

Journal de Médecine de BordeauxMay 25, 1921, **92**, No. 10

Importance of the Blood Pressure in Ear, Nose and Throat Disease. G. Canuyt.—p. 271.

*The Phrenic Sign in Pulmonary Tuberculosis. A. Ragot.—p. 272.

Impalement Injury of Rectum. J. Peyrot.—p. 274.

*Surgical Treatment of Trigeminal Neuralgia. G. Jeanneney.—p. 275.

Medical Conceptions in Roman Law. H. Galamiel.—p. 278.

Attempt at Suicide with Veronal. J. Vergely.—p. 279.

Estimation of Retention of Chlorids. A. Labat.—p. 279.

The Phrenic Sign in Pulmonary Tuberculosis.—Ragot has been impressed with the constancy of a very sensitive point in the supraclavicular fossa with pulmonary tuberculosis. The pain on pressure is diffuse and extends deep into the middle of the chest. The point in question is where the phrenic nerve lies on the anterior scalenus muscle, between the two heads of the sternocleidomastoid muscle. Pain on pressure here is a very early sign of tuberculous infection of the lung, and seems to be constant with this, but he never found it with pneumonia or other nontuberculous process.

Surgical Treatment of Trigeminal Neuralgia.—Jeanneney has found it easy on the cadaver to introduce a cystoscope through a trephining opening, and thus have direct illumination of the field for operating on the trigeminal nerve. Under its guidance the operation can be done with scarcely any mutilation.

Presse Médicale, ParisMay 25, 1921, **29**, No. 42

*Esophagoscopy. R. Bensaude and M. Lelong.—p. 413.

*Spontaneous Reflux of Bile into Stomach. G. G. Moppert.—p. 415.

Esophagoscopy.—Bensaude and Lelong give an illustrated description of an improved esophagoscope which is pushed in by turning a small cog-wheel, and the tube is in interlocking segments so it can be made as long or short as desired for the individual case. The patient assumes the knee-chest position with the head low, the physician crouching in front of the table. When the tube has passed below the throat, the subject raises his head, and the tube is then horizontal. There is no need for an assistant owing to the simplicity and ease of this mode of esophagoscopy, especially for examination of the lower portion of the esophagus. In the final position of the subject he is squatting on his heels supported by both hands in front, the physician standing.

Spontaneous Reflux of Bile Into the Stomach.—Moppert has been studying the Einhorn thread under roentgen examination, and reports that in 72 per cent. of the cases examined there was spontaneous reflux of bile into the stomach.

Revue de Médecine, ParisJanuary, 1921, **38**, No. 1

Reducing Power of the Tissues. H. Roger.—p. 1.

Radial-Jugular Tracings with Auricular Fibrillation.—Guilleaume.—p. 24.

Inorganic Murmurs of Precordial Region. J. Meyer.—p. 35.

Annali d'Igiene, RomeFebruary, 1921, **31**, No. 2

*Pathogenesis of Cholera. G. Sanarelli.—p. 73. Cont'n.

Advantages of Mixing Tuberculin and Antiserum in Treatment of Experimental Tuberculosis. G. Rapisarda.—p. 90.

Disease in the Russian Army 1914-1916. C. Kryszkowsky.—p. 102.

*Action of Bile on Tetanus Toxin. C. Ninni.—p. 121.

Meat from Tuberculous Cattle. G. C. Sparapani.—p. 128.

Pathogenesis of Cholera.—In this fourth communication, Sanarelli reports that cholera vibrios injected into the peritoneal cavity pass rapidly into the walls of the digestive tract, either directly from the peritoneum or through the general circulation. The guinea-pigs do not die from peritonitis nor from general infection or intoxication, but from the extremely acute gastro-enteritis induced by the vibrios. When the disease is not rapidly fatal, the vibrios leave not only the peritoneal cavity but the blood stream, and accumulate and proliferate exclusively in the walls of the digestive tract.

Action of Bile on Tetanus Toxin.—The experiments related by Ninni with tetanus toxin and fresh bile confirm the assumption that tetanus toxin is of a mostly lipoid nature, as bile acts on fats. Fresh bile neutralizes tetanus toxin; 0.2 c.c. is able to neutralize ten times the minimal lethal dose.

Policlinico, RomeMay 16, 1921, **28**, No. 20

*Indications in Abdominal Pathology. P. Gilberti.—p. 679.

*Transperitoneal Low Cesarean Section. P. Gaifami.—p. 682.

Typhoid Meningism. P. Fornara.—p. 684.

Indications in Abdominal Pathology.—Gilberti discusses the period in abdominal disease in which it is a question whether medical or surgical measures should prevail. He emphasizes that in peritonitis the main thing is to discover the source of the inflammation; it is always secondary to disease in some viscus or the thorax. When complicating scarlet fever, smallpox or measles, medical measures alone usually suffice. Purulent peritonitis from trauma is generally graver than from perforation of a viscus on account of the speed of the invasion. When the invasion occurs more gradually, the peritoneum has time to rally its defenses. Acute diffuse purulent peritonitis is a strict indication for operation neither too early nor too late, giving the peritoncum a chance to wall off the primary focus. The peritonitis may already be diffuse before the classic symptoms of it appear. Pain, tenderness, rigid walls and exploratory puncture may enable the diagnosis before the pulse grows small and weak, and before meteorism and the tongue tell the story. The laparotomy is to evacuate the pus, and he incises the lower right quadrant of the abdomen, the patient in Fowler's position, refraining from the slightest manipulation of the intestine or irrigation of the peritoneum, but providing the best possible condition for drainage by gravity, preferably with absorbent gauze.

Low Transperitoneal Cesarean Section.—Gaifami has been impressed with the superior advantages of this operation on the lower segment of the uterus as he performed it in seven cases. They were all suspicious cases but none actually septic, and the outcome was perfect in all. In fifty-one cases of repeated cesarean section by the classic technic, he found adhesions in more than 50 per cent. One patient developed ilcus in consequence, and three others required hysterectomy. This danger of adhesions is obviated with the incision on the lower segment, and as this incision is lengthwise of the fibers there is less danger of rupture than if the incision were transverse, and it is too low for a placenta to develop on the cicatrix. The operative shock is less than with other technics, the intestines not being molested and the hemorrhage being slight.

May 30, 1921, **28**, No. 22

*Paratyphoid Infection. V. Zamorani.—p. 747.

*Polycythemia. P. F. Zuccola.—p. 756.

Treatment of Cancer. S. Menghetti.—p. 757.

Paratyphoid Infection.—Zamorani relates that in an epidemic of 130 cases of paratyphoid A infection in soldiers, the clinical picture resembled typhoid very closely, but in some cases the gallbladder showed marked involvement. In some the jaundice did not appear until four or five days after apyrexia. In others the angiocholitis dominated the clinical picture from the start. In still others, except for more or less fever during the first three days, the temperature kept normal. Cultivation of the bacilli from the blood is the only means for differential diagnosis in the first two groups. The symptoms sometimes indicated lesions in the colon, and these were confirmed in the few cases that came to necropsy. Intestinal hemorrhage and perforation were observed only in the paratyphoid B cases, the A infection running an apparently milder course. He was impressed by the epidemic character assumed by the various forms of the disease.

Polycythemia.—Zuccola refers to recent American research on peripheral polyglobulia, saying that the results confirm what had already been announced by Italian workers a decade or so before. The latter stated that in conditions with polycythemia, carbon dioxide is thrown off in perspiration more actively than under other conditions. They explained this as representing an attempt at vicarious respiration, the blood accumulating and stagnating at the periphery.

May 1, 1921, **28**, Medical Section No. 5

Auscultation at the Mouth. G. Ancona.—p. 185.

Origin of Blood Platelets. U. Erede.—p. 203.

*Pathology of Icterohemorrhagic Spirochetosis. C. Basile.—p. 211.

The Skull and Brain from the Mechanical and Physical Standpoint. F. Pedrazzini.—p. 221. Cont'n.

Pathology of Icterohemorrhagic Spirochetosis.—Basile discusses the pathogenesis of jaundice and of hemorrhage in general, and especially in icterohemorrhagic spirochetosis. The jaundice in these cases, he thinks, is the result of destruction of erythrocytes; the liver has little if anything to do with it. The hemoglobin thus released by the toxic action of the spirochetes becomes transformed into bilirubin without the aid of the liver, while the liver, suffering from the action of the toxins, as well as of the spirochetes, is unable to accomplish the elimination of the bile pigment.

Riforma Medica, Naples

May 21, 1921, 37, No. 21

- *Visceral Ptosis. G. Parlavecchio.—p. 481.
- *Calcification in Mediastinum. N. Samaja.—p. 485.
- *Eversion of Hernial Sac. D. Taddei.—p. 489.
- *The Heart-Liver Angle. G. Cattani.—p. 490.
- *Tests for Urobilin. E. Pittarelli.—p. 492.
- Treatment of Intracranial Hypertension. E. Aievoli.—p. 494.

Diagnosis and Treatment of Nervous Disturbances from Visceral Ptosis.—Parlavecchio reviews the symptoms which may be induced by sagging viscera dragging on and twisting the sympathetic nerve, with secondary malfunction of elements of the endocrine system. The nervous and psychic clinical picture of exophthalmic goiter, without visceral ptosis, is practically identical with that which may be induced by a sagging kidney, for example, without goiter. The ptosis of the kidney may escape detection, even with radioscopy, as the kidney may slide back into place on reclining. Operations to correct visceral ptosis may prove brilliantly successful in curing nervous and psychic disturbances traceable to this cause. Even if the sagging organ is not causing any disturbance at the moment, it is bound to suffer sooner or later, and grave disturbances may develop insidiously. When mechanical measures fail to relieve, a correcting operation can be recommended with confidence in its efficacy and harmlessness. In all his experience, he has never had a fatality nor any complications. In some cases three or more organs had to be fastened back in place, at one or more operations, before the final cure. He emphasizes the importance of early intervention, especially when the symptoms resemble those of neuroses, appendicitis or peptic ulcer; nervous disturbances of these types tend to persist even after removal of the cause. He advises not to shrink from an ample exploratory incision when necessary, and adds that measures for suspension of the organ imitate Nature better, especially for organs that vary in shape and size. The operation should always be supplemented by efforts to restore the endocrine-nervous balance. This may require breaking the sympathetic nerve chain connecting the ptosis with the nervous disturbances. The fine results he has realized he ascribes, in large part, to his intentional or unintentional breaking of this sympathetic chain between the sagging organ and the corresponding ganglia. Whether to resect or stretch the nerve, or to apply electrolysis is the question now, his preference inclining to conservative methods. He adds, "This suggestion is sure to arouse ferocious criticism, but the success realized by Leriche and others by peripheral sympathectomy answers all theoretical objections."

Calcification in Mediastinum.—In Samaja's case the calcification in the anterior mediastinum and diaphragmatic eventration were casual discoveries on roentgenoscopy of the woman of 63, whose only complaint was of an inguinal hernia.

Eversion of Hernial Sac.—Taddei gives an illustrated description of his method of correcting adherent inguinal or scrotal hernias by eversion of the sac, instead of merely leaving the stump loose to invite adhesions, etc.

The Heart-Liver Angle.—Cattani warns that the liver may be twisted forward and sag a little, thus presenting an aspect as if it were hypertrophied. This is liable to be misleading, unless the area of dullness at the back is compared with the anterior dullness, and the outline of the liver is determined by percussion. A right pleural effusion can be excluded by the yielding of the liver to pressure when it is pushed toward the center of the diaphragm. The angle formed by the right margin of the heart and the top of the liver is exceptionally accessible, and the change in this angle, with changes in either heart or liver, is very instructive. In the normal, the angle is between 40 and 50 degrees, exceptionally up to 60. With

enlargement of both heart and liver, the angle broadens out and may even become an obtuse angle. The tip of the angle approaches closer to the median line the smaller the heart, or with excentric left hypertrophy. The angle is characteristically displaced with pericardial effusion and adhesive pericarditis.

Tests for Urobilin.—Pittarelli concludes from his comparative research that the fluorescence with zinc urobilate is the only practicable reaction available for estimation of the urobilin content of the urine. For this, two parts urine are added to one part of the reagent, which is a mixture of 100 c.c. of a 2 per cent. solution of zinc acetate in methyl alcohol; 5 gm. each of acetic acid and ammonia acetate, and 100 c.c. amyl alcohol. The contents of the test tube are gently mixed and set aside for a few minutes, when fluorescence will testify to the presence of urobilin. In all tests for urobilin, a possible source of error is the presence of eosin in the urine, when eosin has been used in coloring icing, or other foods, disinfecting dishes, etc.

Crónica Médica, Lima

April, 1921, 38, No. 694

- Amyloid Degeneration of the Heart. E. Odriozola.—p. 108.
- *The Grave Form of Carrión's Disease. E. Odriozola.—p. 113.

Peruvian Verruga.—This entire number is devoted to the late Professor Odriozola and his contributions to science, from his thesis on amyloid degeneration of the heart, at Paris, in 1888, to his latest article published in the *Crónica Médica* this year, on dextritis, summarized in these columns, April 30, 1921, p. 1286. The list of his communications fills nearly six pages. This study of Carrión's disease, or Peruvian verruga, was read at the fifth Pan-American Medical Congress in 1913.

Siglo Médico, Madrid

May 7, 1921, 68, No. 3517

- *Acute Leukemia. R. Alvarez de Toledo y Valero.—p. 429.
- *Meningitis Diagnosed by the Eye. V. Ribón (Bogotá).—p. 434.

Acute Monocyte Leukemia.—The woman of 28 died sixteen days after the onset of the acute leukemia of the hemorrhagic, pseudoscorbutic and buccopharyngeal type. The first symptoms were violent pain in the epigastrium, with vomiting and signs of infectious purpura, infarction of lymph glands in neck and spleen, and pains in the limbs as manifestation of the disease of the bone marrow. Under the influence of various measures, including injection of horse serum and of 5 per cent. peptone, the leukocytes dropped from 80,000 to 9,000 and 2,100, but the disease continued its fatal course. There was a history of an attack of subleukemia eighteen months before, which had retrogressed under iodine, arsenic, a change to the mountains, and heliotherapy.

Meningitis Diagnosed from the Eye.—A somewhat similar article by Ribón was summarized in THE JOURNAL, June 12, 1920, p. 1682. He here describes the case of a woman who developed cerebral symptoms eleven days after removal of the kidney on account of a tuberculous process. She attributed her staggering gait and dizziness to weakness from the nephrectomy, but the discovery of choked disk confirmed the assumption of tuberculous meningitis. The edema and inflammation of the optic disk were not so pronounced as usual with a brain tumor. Tuberculous meningitis in the adult rapidly entails coma and death, as a rule. Death followed in two days in this case.

Acta Scholae Med. Univ. Imperialis, Kioto

March 25, 1921, 4, No. 1

- *Pathogenesis of Osteomyelitis. T. Hobo.—p. 1.
- Influence of Drugs on Action of Veratrin on Muscles. S. To.—p. 31.
- *Gastrointestinal Mucosa Under Chloroform. H. Komoda.—p. 57.
- *Operation for Chronic Osteomyelitis. H. Komoda.—p. 79.
- Peripheral Action of Coniin, Spartcin and Gelseminin. G. Tamba.—p. 85.
- *The Urine During Fasting. N. Suzuki and N. Hasui.—p. 105.

Pathogenesis of Osteomyelitis.—Hobo's handsomely illustrated article shows how bacteria in the blood stream tend to accumulate at points of more sluggish flow. This occurs particularly in the venous capillaries and, above all, in those in the bone marrow, liver and spleen. The venous capillaries in

the bone marrow twist and turn so that conditions are exceptionally favorable here while conditions are particularly unfavorable for phagocytosis.

Irritation of Gastro-Intestinal Mucosa from Chloroform.—Komoda announces that the mucous membrane of the digestive tract of dogs, cats, rabbits, guinea-pigs and white mice shows changes after inhalation or subcutaneous injection of chloroform which are like those of acute gastro-intestinal catarrh after poisoning. The chloroform swallowed in the saliva and the chloroform in the blood stream cooperate in this irritation. The nausea and vomiting after chloroform anesthesia are easily explained by this acute gastric catarrh. The degree of irritation is not proportional to the amount of chloroform or the size of the animal, but rather to the individual resisting powers. The changes were found most pronounced in the dog and least in cats and rabbits. Certain features of the experiments seemed to indicate that chloroform undergoes a chemical change from the action of hydrochloric acid.

Chronic Osteomyelitis.—Komoda describes a case in which chronic suppurating osteomyelitis of the lower third of the femur in a student of 19 kept recurring, with fistulas, after a total of seven operations. At the eighth operation, under chloroform, the whole layer of the vastus externus muscle was divided. The incision running around the femur down to the bone seemed to modify conditions, so that healing proceeded undisturbed thereafter. He explains how the flexion of the limb caused conditions counteracting the healing of the chronic inflammation. By severing the muscle close to its lower end, these unfavorable conditions were done away with. The distal stump healed with connective tissue attachment to the proximal stump, so that the movements of the knee were not impaired later.

Composition of the Urine During Fasting.—Suzuki and Hasui were able to examine the urine systematically in a healthy man of 29 who undertook a three weeks' course of fasting "to develop his mind." In another case a two weeks' course of fasting was undertaken to cure dyspepsia. Nothing but water was taken by either subject during the fast, and the tabulated findings are given for the entire period. With the exception of hunger and slight dizziness, during the whole fast neither experienced any appreciable disturbances. The metabolic findings under various tests are also tabulated, and the behavior of the amino-acids and their cleavage products in the fasting organism.

Archiv für klinische Chirurgie, Berlin

Feb. 28, 1921, 115, No. 1-2. Kocher Memorial Number

Treatment of Appendicitis in Kocher's Service. A. Vogel.—p. 1.

*Gastric and Duodenal Ulcer. A. Kocher.—p. 86.

*Importance of Nucleoproteids for the Organism. W. Gröbly.—p. 170.

*The Relative Phosphorus Content of the Blood. W. Gröbly.—p. 261.
Anuria with Bilateral Hydronephrosis in Sagging Kidneys. G. Dardel.—p. 275.

*The Alcohol Test Breakfast. W. Lanz.—p. 294.

*Fracture of Neck of Femur. H. Rubeli.—p. 388.

Kocher Memorial Number.—The eight articles in this bulky number issue from the surgical clinic of the University of Berne of which the late Prof. T. Kocher was in charge for so many years. During his nearly forty-six years of teaching he trained over 100 assistants. Most of these articles were being prepared under his supervision at the time of his death in 1917.

Gastric and Duodenal Ulcer.—A. Kocher relates that the diagnosis of florid ulcer proved correct in only 86 per cent. of the total cases. In the others a healed ulcer or adhesions were found in 12 per cent. but in 2 per cent. no trace of an ulcer could be discovered. He argues that in the majority of cases the gastric or duodenal ulcer is only one manifestation of a general pathologic condition. This explains the frequent tendency to recurrence with either medical or surgical treatment, the underlying constitutional vagotonia or sympatheticotonia, arteriosclerosis, etc., not being cured thereby. In 144 cases recently reexamined after gastro-enterostomy, the intervals since up to nineteen years, the results have been very good and permanent in 17.7 per cent.; fair results in 9.9 per cent., and the condition has been unsatisfactory since in only 11.4 per cent. Resection cannot show such a good record as this, as a rule, he declares, emphasizing

that these figures prove that a correctly located and correctly functioning gastro-enterostomy not only heals the ulcer but seems to ward off recurrence. The ultimate outcome was satisfactory in a larger proportion of cases after the gastro-enterostomies than after resections.

The Nucleoproteids and the Endocrine Organs.—Gröbly ascribes a very important rôle to the nucleoproteids in the organism in general in respect to the growth, endocrine functioning and the predisposition to cancer. He presents evidence to the effect that the nucleoproteids are predominantly important in the growth of the cell, and that they regulate certain chemical processes in the organs in which they are found most abundant. These organs are the organs of nucleoprotein metabolism, and this group includes all of the glands with an internal secretion. Any disturbance in the nucleoprotein metabolism deranges all these organs at once and simultaneously. "This conception of the simultaneous disturbance of nucleoprotein metabolism in all these organs renders unnecessary the assumption of nerve or hormone control relations between these organs of nucleoprotein metabolism, alias the endocrine glands." His data further testify that a pathologic exaggeration of nucleoprotein metabolism represents an anomaly of the constitution which seems to predispose to malignant disease.

Cancer and the Relative Phosphorus Content of the Blood.—Gröbly continues with further evidence which apparently demonstrates that the synthesis of phosphorus is dependent on the synthesis of nucleoproteids. Hence the phosphorus content of the cell is an index of the ability to elaborate nucleoproteids. The phosphorus content of the blood consequently may be regarded as an objective index of this ability; it enables us to distinguish between conditions of normal, subnormal and hypernormal nucleoprotein synthesis. He never found up to 1.5216 per thousand except in cases of cancer, and subjects with a phosphorus quotient of over 3.17 always had a tumor. He thinks that the results of his research may supply a basis for further biologic experimentation, especially in the diagnosis, treatment and prophylaxis of malignant disease.

The Alcohol Test Breakfast.—Lanz expatiates on the many advantages and freedom from drawbacks of this method of testing stomach functioning which he has been applying in 102 cases. The subject drinks, fasting, 20 c.c. of the mother solution in 300 c.c. of water, keeping out 20 c.c. for colorimetric control. The mother solution is a mixture of 150 c.c. of 96 per cent. alcohol; 10 c.c. of a 1 per cent. alcoholic solution of phenolphthalein, and distilled water to 200 c.c. This test breakfast is taken with relish and never harms the most delicate stomach, and there is no disturbing reflex action from chewing. The fluid is aspirated out at fifteen minute intervals, emptying the stomach completely at the hour. Twenty-seven pages of the tabulated findings are given, with the control tests in a number of the total 102 cases, including fourteen with apparently sound stomachs. No typical curve was found for ulcer in general, but classified according to site, a certain regularity in the findings was manifest. A general predisposition to ulcer was accompanied by a special curve even when there did not happen to be any ulcer. This predisposition is most instructively revealed by this alcohol test breakfast before the full clinical picture of ulcer develops, while there is yet time to ward off erosion and ulceration.

Fracture of Neck of Femur.—The full details of sixty-four cases are given with illustrations of the various types of fracture in this region. In the total ninety-seven cases reviewed, one third were in women or girls. The treatment and the outcome in the different groups are compared.

Beiträge zur klinischen Chirurgie, Tübingen.

1921, 121, No. 2

*Cardiospasm, Atony and Dilatation of Esophagus. F. Thieding.—p. 237.

*Sensibility of the Abdominal Cavity. F. Breslauer.—p. 301.

*Explanation of Death in Ileus. M. Flesch-Thebesius.—p. 321.

Appendicitis in the Elderly. Mertens.—p. 341.

Narrowing of the Gastro-Enterostomy Opening. J. Dorn.—p. 345.

*Incarcerated Hernia in Infants. A. Krause.—p. 361.

*Hernia of the Omental Bursa. W. Pfanner.—p. 376.

*Mammary Cancer. V. Hoffmann.—p. 400.

*Roentgen Exposures After Mammectomy. H. Kästner.—p. 413.

*Surgery of Bones. O. Orth.—p. 424.

Fracture of the Radius in the Young. W. Peters.—p. 439.
Chronic Arthritis Deformans in the Young. H. Tichy.—p. 453.
*Gibbus from Tetanus. H. Spieth.—p. 460.
*Arrest of Hemorrhage by Muscle Flap. F. C. Hilgenberg.—p. 468.

Cardiospasm, Atony and Idiopathic Dilatation of the Esophagus.—Thieding devotes nearly 100 pages with seven pages of bibliography, set solid, to demonstrate that cardiospasm, atony and idiopathic dilatation of the esophagus are not independent clinical pictures, but merely the clinical signs of an upset in the vegetative nervous system. The one feature common to all is the dysphagia. He gives a long list of causes that may induce this dysfunction in the vegetative system, from tumors and neuritis to frights, infectious diseases, and lead and other poisoning.

Sensitivity of the Abdominal Cavity.—Breslauer concludes from his study of this subject that the nerve fibers are not sensitive to brief stimuli. But long continued or violent stimuli lead in time to a summation which results in the sensation of pain.

Fatal Factors in Ileus.—Flesch-Thebesius found in examining the urine of 188 surgical patients with the nitric-acid test that a double ring was evident in 25 cases. These were all cases of severe lesions with much destruction of tissue, or peritonitis, etc. In 35 other cases with ileus or suspected of ileus, the double ring was constant in the 17 with signs of severe intoxication. In the others the double ring appeared as the case progressed to severer toxic manifestations. The findings confirm that death in ileus is due to intoxication, and that this intoxication is the work of the same substance which induces the upper ring in Heller's test. With a positive reaction, a bluish gray ring forms above the ring at the zone of contact of the nitric acid and the urine.

Incarcerated Hernia in Infants.—Krause states that infants formed 4.5 per cent. of his 834 cases of hernia requiring operative treatment. The hernia was incarcerated in 4 per cent. of the 183 incarceration cases. He compares this material with the records, his conclusion being that in infants the intestine is not injured so promptly as in the adult, and that taxis is permissible if an operation can follow at once if it fails. The danger of incarceration imposes prompt operative measures for all hernias in infants. The results and the permanent cure are especially good.

Hernia of the Omental Bursa.—Pfanner discusses the relations between hernia of the omental bursa and gastric ulcer, and the interpretation of the radiographic findings.

Mammary Cancer.—Hoffmann reviews the experiences at Heidelberg with 174 cases of mammary cancer. The permanent cures of scirrhus cancers were as 1:2 (44), while with other cancers the proportion was 1:3.6 (130).

Roentgen Exposures After Mammectomy.—Kästner relates that in forty-two cases given thorough postoperative roentgen exposures, there was recurrence in 47.6 per cent. by the end of a year, while recurrence occurred in only 33 per cent. of the nonexposed cases, and in 36 per cent. of the imperfectly exposed cases. These figures speak for themselves, and Payr has now abandoned the custom of postoperative irradiation with mammary cancer.

Surgery of Bones.—Orth discusses with illustrations the operative treatment of pseudarthrosis and also a method of applying the prosthesis, after amputation, directly to the bone. This can be facilitated by separating the tibia and fibula, for example, and suturing the skin separately around each. Another means is by inserting a metal rod directly into the tibia stump. A third method is described in which part of the fibula is removed and implanted in the marrow cavity of the tibia, to lengthen the latter. It is reenforced by two metal bars worn outside.

Spine Deformity from Tetanus.—Spieth reviews the five cases that have been published in which the spine developed more or less of a gibbus from traction of muscles during tetanus. They have been published as cases of primary gibbus, but he concludes on the basis of a personal case described that there was always some underlying tuberculous or traumatic spondylitis.

Arrest of Hemorrhage by Sutured Scrap of Muscle.—Hilgenberg comments on the promptly effectual arrest of

hemorrhage when a piece of muscular tissue is sutured over the bleeding spot. He gives some typical examples of severe bleeding from parenchymatous organs, the thyroid, liver and lung; also a number of cases of bleeding from veins, sinuses or arteries in which this measure proved promptly effectual, as also in cases of aneurysm, angioma, air embolism and open pneumothorax. He questions whether there may not be some chemical action from the muscle in addition to its mechanical effect. The piece of muscle is usually taken from the vicinity, and sutured to close the opening or reenforce other tissues. It heals in place without disturbance and has always given good results to date.

Deutsche medizinische Wochenschrift, Berlin

May 12, 1921, 47, No. 19

- Attainable Goals of Specific Tuberculosis Treatment. Selter.—p. 525.
- *Induced Pathogenicity of Acid-Fast Saprophytes. J. Igersheimer and H. Schlossberger.—p. 526.
- *Acid-Fast Saprophytes Resembling Tubercle Bacilli. B. Lange.—p. 528.
- Droplet Infection in Tuberculosis. E. Hippke.—p. 528.
- Defense Reaction Toward Tubercle Bacilli in Patients with a Scrofulous Constitution. H. Jastrowitz.—p. 528.
- Diagnostic Cutaneous and Subcutaneous Tuberculin Reaction in Surgical Tuberculosis. E. Rüsch.—p. 529.
- Incidence of Occult Tuberculosis in Dortmund. Sander.—p. 532.
- Reasons for Occasional Apparently Negative Results from the Friedmann Treatment. F. F. Friedmann.—p. 533.
- Cure by Diathermy of Tuberculosis Cutis Verrucosa, After Negative Application of Friedmann Treatment. G. Poelchau.—p. 534.
- Present Status of the Problem of the Hereditary Transmission of Acquired Characters. J. Schaxel.—p. 535.
- Acute Intestinal Disorders in Infants. L. Langstein.—p. 536.

Studies on Tuberculosis.—Igersheimer and Schlossberger report experiments on the eyes of guinea-pigs to study the pathogenicity of pure cultures of acid-fast saprophytic bacteria. After a prolonged sojourn in the bodies of guinea-pigs, pure cultures were again prepared of the same bacteria, and their behavior compared with that of the primary strains and of genuine tubercle bacilli of the human type. Their experiments confirm that after several passages through animals, slightly pathogenic acid-fast bacilli of various kinds may become more pathogenic, until they exert on guinea-pigs a similar effect to tubercle bacilli. Whereas the primary strain produced on the eyes of guinea-pigs either no reaction or a nonspecific reaction with a retrogressive tendency, all the strains examined so far, resembling morphologically and culturally the human type and derived from apathogenic or only slightly pathogenic acid-fast bacilli, by passage through warm-blooded animals, produced a tuberculous involvement of the inoculated eye, which clinically and anatomicopathologically could not be distinguished from that produced by genuine virulent tubercle bacilli of the human or bovine type. Numerous necropsies proved that the infection of the eye was not a pseudotuberculosis but that, from the eye as its source, a tuberculous infection of the whole organism took place. The experiments, however, do not prove that these bacteria of the acid-fast group are identical with the genuine tubercle bacilli.

Acid-Fast Saprophytes Resembling Tubercle Bacilli.—Lange reports as the result of his experiments that he found that cultures of so-called trumpet bacilli and tubercle bacilli of turtles, and other cold-blooded animals, which were recultivated from induced foci in guinea-pigs and white mice, did not prove to be more virulent toward the said experimental animals than the primary strains. The further inoculation of healthy animals with virus from the pathologic foci, which contained numerous bacilli, did not result in an increased virulence of the bacteria.

Mitt. a. d. Grenzgeb. d. Med. u. Chir., Jena

1921, 33, No. 1-2

- *Origin and Structure of Gallstones. B. Naunyn.—p. 2.
- *Roentgenography of Large Intestine. J. Ziegler.—p. 55.
- *Chronic Spinal Serous Meningitis. E. Grossmann.—p. 66.
- Mill-Wheel Murmur in the Heart. W. Gundermann.—p. 78.
- The Pituitary with Thyroid Deficiency. W. Berblinger.—p. 92.
- Congenital Stenosis at the Cardia. C. Falkenheim.—p. 113.
- Origin and Treatment of Spontaneous Pneumothorax. A. Brunner.—p. 124.
- Differential Diagnosis of Tumors on Limbs. W. Sicloff.—p. 149.
- Chronic Paronychia. L. Kumer.—p. 160.
- *Strumitis. Martha Hagenbuch.—p. 181.

- *Occult Gastro-Intestinal Bleeding. H. Peiper.—p. 197.
Increased Pressure in Half of Pleura. S. Gräff.—p. 232.
Illumination of Field of Operation. J. Thiemann.—p. 245.

Origin and Structure of Gallstones.—Naunyn explains that after dissolving out all the cholesterin, etc., forming the calculus, a delicate framework of organic matter is left in every gallstone. He declares that there is no evidence to date that gallstones can form in an aseptic medium. They are liable to develop at any point in the biliary apparatus, and they consist mainly of cholesterin and bilirubinate. Four double colored plates show the minute structure of thirty-eight varieties of gallstones.

Roentgenography of the Large Intestine.—Ziegler discusses the influence on the shape and position of the large intestine exerted by other viscera and other organs, near and remote, as modifying the roentgen picture.

Spinal Serous Meningitis.—Grossmann comments on the almost certainty of success from operative treatment of chronic spinal serous meningitis, as illustrated in his three cases. In the older woman, paralysis of arms and legs subsided after the operation, done under local anesthesia. The circumscribed serous meningitis had developed after a trauma in one of the cases. In another case it seemed to be a complication of influenza. Nothing was found to explain the process in one case except that the woman's sister had presented hemoptysis.

Strumitis.—There was manifest goiter only in thirty-eight of the forty-seven cases of strumitis reported by Hagenbuch. Treatment was merely symptomatic, as a rule. In the rheumatismal form, salicylic medication proved a useful adjuvant, as also in some cases of vague origin. As soon as fluctuation is evident, the incision should be ample to allow for thorough drainage. She advises to excise suppurating cysts and encapsulated nodules. This is indicated also when the strumitis is still circumscribed.

Occult Gastro-Intestinal Hemorrhage.—Peiper obtained conflicting findings in regard to occult bleeding in fifteen cases of gastric or duodenal ulcer, in seven of gastric cancer, ten of cholecystitis, 6 of hypochlorhydria, and one of hydatid cyst in the liver. His conclusion is that occult bleeding is by no means pathognomonic for either cancer or ulcer.

Veröffentlichungen d. R. Koch-Stiftung, Leipzig

1921, 2, No. 3

- *Biology of the Tubercle Bacillus. G. Lockemann.—p. 105 and p. 114.
*Routes of Infection with Tuberculosis. J. Koch and B. Möllers.—p. 120.
Acid-Proof Saprophytes. B. Lange.—p. 134.
*Occurrence of Tubercle Bacilli in the Blood. E. Rumpf.—p. 163.
*Treatment of Surgical Tuberculosis with Roentgen Rays. K. Stromeyer.—p. 168.

Biology of the Tubercle Bacillus.—This volume of publications of the Robert Koch Endowment for Combating Tuberculosis opens with two reports by Lockemann on the way in which the growth of tubercle bacillus cultures is modified by various physical features of the culture mediums, and by addition of various chemicals.

Routes of Infection with Tuberculosis.—Koch and Möllers report experimental research which confirms that tubercle bacilli can be absorbed through the lymph glands and the adenoid tissue in the mouth. When the bacilli were injected directly into the small intestine, they were conveyed to the mesenteric glands through the chyle vessels, without inducing changes in the bowel walls themselves. Part of the bacilli settle in the mesenteric glands, while the rest are conveyed by the chyle farther and pass into the blood with it. There is no reason, they remark, why this same mechanism does not prevail in children as well as in the rabbits of their experiments. Tubercle bacilli introduced into the stomach seldom entailed general infection. Rabbits infected by way of the mouth and upper alimentary canal developed a more local infection, resembling the chronic pulmonary processes in man and tuberculous glandular disease.

Tubercle Bacilli in the Blood.—Rumpf was never able to obtain cultures of tubercle bacilli from the blood, and in only two of thirty-five rabbits inoculated with blood did tuberculosis develop. This was in the proportion of 8.5 per cent. of the known tuberculous.

Roentgen-Ray Treatment of Bone and Joint Tuberculosis.—Stromeyer has applied roentgen irradiation in 220 cases of surgical tuberculosis, and here analyzes the results in 119 of them traced to date. A complete cure was realized in 18 of the 20 cases of tuberculous glands in the neck, and another case was improved; another group of 18 cases are still under treatment and 11 are practically cured. This method of treatment therefore is without question, he says, the only treatment for tuberculous glands. Very satisfactory results were obtained also with bone and joint tuberculous processes, beyond anything yet realized otherwise. All were cured of the 5 wrist cases; 1 spondylitis; 1 sternum; 2 soft parts, and 4 peritonitis cases; and all but 1 of the 6 elbow and of the 14 hip-joint cases, but only 6 were cured and 2 improved of the 9 knee cases, and 2 of the 4 ankle cases. These figures do not include the 53 still under treatment, although they show already practically a cure in 21 instances. Instead of the one, two or three years required for heliotherapy, these results were realized with radiotherapy in months; only one knee process required a fourteen months' course. He accepts as demonstrated a specific action by the rays on tuberculous tissue, although it is not always amenable to this treatment, especially in adults. All but 9 of his patients were under 20.

Zeitschrift für Kinderheilkunde, Berlin

April 25, 1921, 29, No. 1-2

- *Breast Nursing by Sick Mother. Anne Moldenhauer.—p. 1.
*Intraperitoneal Instead of Subcutaneous Infusion. M. Weinberg.—p. 15.
Roentgenography of Child Heart. F. M. Groedel.—p. 36.
Calcium and Phosphoric Acid Metabolism Under Large Doses of Calcium and Sodium Phosphate. K. Blühdorn.—p. 43.
Research on Intestinal Bacteria. E. Moro.—p. 56.
Cultivation of Bacillus Butyricus with Adsorbent in Medium. A. Adam.—p. 59.
Cultivation of Bacillus Bifidus in Hematin. A. Adam.—p. 65.
*Blood Picture with Mongoloid Idiocy. G. Nadolny and M. Weinberg.—p. 68.
Conditional Babinski Reflex. F. Resek.—p. 85.
*Appetite Curve. Paula Panzer.—p. 90.
*Urine Test for Active Tuberculosis. O. H. Kotzulla.—p. 93.
*Birth Hemorrhages in the Newly Born. P. Schwartz.—p. 102.

Maternal Nursing During Sickness.—Moldenhauer has been making a special study of thirty lactating women with various diseases to determine the effect on the infants of nursing by the sick mother. In 6 cases of mastitis the infants continued to nurse except when the sucking caused the mother intolerable pain. The least affected breast usually secreted more to make up any deficiency, and not the slightest harm to the child could be detected in any instance, not even when the breast had been incised and the wound was suppurating freely. In 4 cases of aseptic operations for hernia, interval appendectomy or cholecystectomy, the infants took the breast as soon as the woman roused from the anesthetic, and no harm resulted for either child or mother, as also in 5 operations for septic processes. In 5 cases of multiple sclerosis, bulbar paralysis or neuropathy with tendency to suicide, no injury for mother or child resulted from the continuance of the breast nursing. In 10 cases of various internal infectious diseases none of the infants contracted the disease, but it seems wiser to forbid breast nursing with open tuberculosis or dysentery. Under other conditions there is no reason for taking the child from the breast. Even when the women were very sick the amount of milk secreted, although less than previously, still proved sufficient for mixed feeding of the infant, and as the women improved the milk production rapidly increased. In two cases of dysentery, the infant had been taken from the breast from fear of contagion and the women's condition was grave, but still it proved possible to keep up the secretion with the breast pump, a minimum of 100 gm. daily. Then six weeks later, with the aid of a vigorously sucking infant, the milk secretion was brought back to approximately normal, and the woman's own child was returned to her, confident that it was getting enough milk from her. One of the 30 women proved to have open tuberculosis and the child of 6 months was at once taken away and has shown no signs of tuberculosis. Disease in the mother therefore rarely calls for suspension of breast nursing. With skill and perseverance on the part of the physician and the attendant the maternal nursing can be maintained.

Intraperitoneal Infusion in Infants.—Weinberg has found intraperitoneal infusion a simple, harmless, and very effectual method for supplying water to the infant organism suffering from losses of fluids. With a needle 1.5 mm. in diameter, 100 c.c. of fluid can be infused in a minute or minute and a half. Under the age of 6 months he gives in this way from 100 to 150 c.c. If necessary the infusion can be repeated the same day. The amount of fluid infused must never be enough to distend the abdomen. Fully 60 per cent. of the infused fluid is absorbed in the first few hours. In twenty-four hours up to 300 c.c. are absorbed, and the procedure can be applied to infants of all ages, even the newly born. Ringer's solution, physiologic sodium chlorid solution or solutions of dextrose can be infused, and the fluid can be tinted or medicated. The pulse, respiration, weight and general condition show the benefit. In some cases it is prompt and striking; in any event it occurs within six hours. Disturbances of alimentary origin respond better than those of infectious nature. The indication for intraperitoneal infusion is absolute when the supply of fluids by the ordinary routes is impossible. Toxicosis in infants and even the condition known as decomposition may respond to this measure after failure of all others. It is simpler and easier, as well as more effectual, he declares in conclusion, compared with subcutaneous infusion. Five typical cases are described in detail to show its action.

The Blood Picture with Mongoloid Idiocy.—The tabulated findings show that the blood picture with mongoloid idiocy corresponds to that of normal children under 10.

The Appetite Curve in Infants.—Panzer has been recording the avidity with which infants take their food, and has thus obtained characteristic curves specifying the appetite, with corresponding curves to represent the movements of the child, as it is normally lively or apathetic. The chart of each infant thus has a record for appetite and movements in addition to the weight, temperature and food records.

Urine Reaction in Tuberculosis in Children.—Kotzulla has been applying the own urine test by Wildbolz' technic to fifty children, and has found that it throws light on the progressive nature of tuberculosis in a child beyond anything attainable by other means. It proved specific for active tuberculosis in the absence of nephritis and staphylococcuria. The passage of antigens into the blood from a proliferating but not yet clinically manifest tuberculous focus occurs earlier, and can be detected by this means more promptly than by any anatomic changes. He therefore endorses the Wildbolz technic as a valuable addition to our means for detection of an active tuberculous process. (The urine is evaporated to one tenth, and then is injected intradermally by the Mantoux technic. The test was described in THE JOURNAL Aug. 9, 1919, p. 456.)

Suction Hemorrhages During Delivery.—Schwartz explains that when a part of the child is born, the difference in the atmospheric pressure outside of the uterus acts like a vacuum glass, sucking the fluids in the body into the exposed portion. As a vacuum glass applied to the skin draws it up, with aspirated fluid, in the same way the blood is aspirated into the presenting head as it emerges into the air. Microscopic examination shows an excess of blood in almost all parts of the brain of the just delivered child, with here and there minute extravasation of blood. This is another specific birth injury to be counted with. The amount of the injury from this suction hemorrhage depends on the presentation and the duration of the expulsion period, but above all on the constitution of the child. He has found evidence of this *Ansaugungsschädigung* in twenty infants dying during or soon after delivery. The hemorrhages were found in both pia and brain substance, at widely scattered points.

Zentralblatt für Chirurgie, Leipzig

April 30, 1921, 48, No. 17

- *Operative Treatment of Jejunal Peptic Ulcer. E. Baum.—p. 586.
- Primary Suture or Drainage After Strumectomy? F. Lotsch.—p. 589.
- *Conservative Treatment of Chronic Ulcus Cruris. Ekstein.—p. 590.
- Surgeon's Table for Catgut and Silk. A. Jurasz.—p. 591.

Prevention and Operative Treatment of Jejunal Peptic Ulcer.—Baum states that, during recent months, he has operated on thirty-one gastric and duodenal ulcers by Billroth's

method I and four by Kocher's method. He was influenced not so much by the desire to remove the pylorus as a disturbing factor as he was to diminish the secretory gastric surface, and, above all, by implantation of the duodenum in the stomach, to approximate physiologic conditions. He is convinced that the immediate contact of the hyperacid stomach with the lower portions of the small intestine must, along with certain nervous factors, be regarded as the cause for peptic jejunal ulcers. Just as resection by Kocher's or Billroth's (first) method offers the sole protection against the formation of postoperative peptic jejunal ulcer after gastro-anastomosis, the radical cure of such an ulcer already formed demands that the jejunum be kept from coming in contact with the hyperacid gastric secretion. After removal of one gastro-enterostomy, a second should not be made by a technic exposing to recurrence, whether the pylorus is removed or retained. Baum gives reports of three successful cases of jejunal peptic ulcer in which he endeavored to establish physiologic conditions by the direct union of stomach and duodenum in place of performing gastrojejunostomy.

Conservative Treatment of Chronic Leg Ulcers.—Ekstein again touches on the conservative method that he has used for many years in treating hundreds of cases of chronic ulcus cruris. The localization, number and size of the ulcers do not affect the method of treatment. He has cured cases in which amputation had been advised, without recurrence and without confining the patients to bed or even interfering with their regular occupations. The lower leg is raised until the swelling has nearly died down. The ulcer is then cleansed with benzin and covered with iodoform gauze on which is a heavy coating of petrolatum containing 5 per cent. boric acid, following which careful bandaging of the leg, in an elevated position, from the metatarsus to the knee, with strips of gauze 10 cm. wide is done. Over this, covering the same area, a compressive moist starch bandage, 12 cm. wide, is applied. The leg is held high until this bandage is entirely dry. The patients are instructed to go on with their regular work and to report back when the bandage has become wet through and loose and is causing pain, the length of time before this takes place depending on the size of the ulcer and the amount of the secretion. Three or four such bandages at most are required to effect a complete cure of palm-sized ulcers, with callous edges, often penetrating the skin to the fascia. After healing, a tricot or elastic stocking should be worn, and strict orders should be given to cleanse the leg only with benzin or ether for the next three months or so.

Zentralblatt für Gynäkologie, Leipzig

April 23, 1921, 45, No. 16

- Interruption of Pregnancy in Mental Disease. E. Mayer.—p. 546.
- Mueller Method of Shoulder Extraction. A. Mueller.—p. 550.
- Granulomas. O. Frankl.—p. 556.
- Removing Secretion from Female Urethra. B. Ottow.—p. 559.
- Glass Pessaries. E. Opitz.—p. 560.
- Loss of Weight at End of Pregnancy. R. Benda.—p. 560.
- Dosage in Protein Therapy. R. Salomon and Voehl.—p. 562.
- "Does the Active Substance Derived from the Corpus Luteum or the Placenta Possess Sexual Specificity?" O. O. Fellner.—p. 568.

Zentralblatt für innere Medizin, Leipzig

May 7, 1921, 42, No. 18

- Significance of Peculiar Buccal Cavity Sound. E. Höller.—p. 369.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

March 19, 1921, 1, No. 12

- Sodium Silver Salvarsan. Z. van den Belt.—p. 1561.
- Smallpox at Arnheim 1919-1920. E. J. Buning.—p. 1570.
- Roentgen-Ray Treatment of Exophthalmic Goiter. C. Orbaan.—p. 1576.
- Iodin in Powder Form. K. Scheringa.—p. 1578.
- Amebic Liver Abscess in Holland. J. Enneking.—p. 1579.
- Tumor in Lung. J. van der Torren.—p. 1582.

Acta Chirurgica Scandinavica, Stockholm

March 7, 1921, 53, No. 4

- *Breaking up Adhesions for Pneumothorax Treatment. H. C. Jacobæus.—p. 293.
- *Lipoma in Umbilical Hernia. M. Ruben.—p. 339.
- *Operative Treatment of Hallux Valgus. H. Olivecrona.—p. 354.

Severing Adhesions Impeding Therapeutic Pneumothorax.—Jacobæus describes (in English) his experience with cauterization of bands and other adhesions in forty cases of pul-

monary tuberculosis in which artificial pneumothorax was indicated. There was never any serious hemorrhage in any instance from the cauterization, and only once loss of as much as 100 or 200 c.c. of blood. Pleural exudation followed, however, in 50 per cent. The exudate was harmlessly absorbed in a week or two in most of the cases, but in 8 per cent. it progressed to a serious tuberculous empyema which proved fatal in three of the cases. In 75 per cent. of the total forty cases the desired result was attained by breaking up the adhesions with the actual cautery, thus enabling effectual compression of the lung by the pneumothorax, which otherwise would have been impossible. A number of instructive roentgenograms are reproduced. Jacobæus first proclaimed the feasibility and the advantages of the procedure in 1913, and now, besides his own forty cases, Holmboe, Skärgård, Saugman and others have applied this method with gratifying results. The thoracoscope is introduced through a cannula, and an outline sketch of the bands seen is drawn to serve as a map. With this as a guide, the actual cautery is introduced through the cannula and the adhesions severed.

Lipoma in Hernia.—The lipoma had developed beneath the serosa of the transverse colon, and had become incarcerated in the sac of an umbilical hernia. This is the second case of the kind Ruben has encountered, and with these two he tabulates thirteen similar ones from the literature. (In English.)

Operative Treatment of Hallux Valgus.—Olivecrona gives the details of forty-four cases, and the outcome of the different technical procedures is compared. From this experience he deduces the indications for the Schöde, Mayo, Ludloff and Reverdin methods according to individual conditions. (The article is in German.)

Finska Läkaresällskapetets Handlingar, Helsingfors

March-April, 1921, 63, No. 3-4

*Early Work on Anatomy in Finland. R. Tigerstedt.—p. 95.

*Blindness from Wood Alcohol Poisoning. R. Rostedt.—p. 113.

*Treatment of Eclampsia. O. A. Boije.—p. 126.

Tuberculous Lymphoma in the Abdomen. J. C. Sjöblom.—p. 145.

Necessity for Training in Physical Therapy. D. Rancken.—p. 143.

Early Work on Anatomy in Finland.—Tigerstedt reproduces some engravings from an early Finnish work on anatomy, recalled to memory by the recent celebration by the University of Åbo of the two hundred and fiftieth anniversary of the organization of the chair of medicine.

Blindness from Wood Alcohol Poisoning.—Rostedt relates that since the complete prohibition of alcohol in Finland, cases of injury to the eyes from substitutes for brandy have totaled sixty. He says that this represents a new pathologic condition in Finland, and he protests that it cannot be called methyl alcohol poisoning as methyl alcohol alone is not so injurious as wood spirit. Franceschi has reported that he administered to himself 32 gm. of pure methyl alcohol daily for a period of nine months, thus a total of 9 kg., without appreciable injury. The toxic elements in wood alcohol are the fusel oil and other substances. In 50 per cent. of the sixty cases, blindness followed while amblyopia was pronounced in all. The visual disturbances developed about the third day in the majority, and then continued a progressive course for from two to four weeks, after which there was usually slight improvement but it was only transient as a rule.

Eclampsia.—Boije urges individualized treatment with active measures, if possible, and relates that the mortality in his sixty-seven cases was 8.9 per cent. for the mothers. The reduced mortality for the children was 11.1 per cent.

Hospitalstidende, Copenhagen

May 18, 1921, 64, No. 20

*Intracranial Aneurysm of the Carotid. F. Møller.—p. 305.

Negative Wassermann Reaction with Active Syphilis. J. Christiansen.—p. 315.

Intracranial Aneurysm of the Carotid.—It has generally been regarded as impossible to diagnose an intracranial carotid aneurysm during life, but Møller compares with a case personally observed several from the literature, and thus demonstrates that a special clinical picture is observed which can scarcely fail of recognition when once beheld. It begins

as a progressive paralysis of the oculomotor muscles of one eye, with impairment or even complete loss of vision in this eye. The papilla may be atrophied but there is no choked disk. Neuralgia and other sensory disturbances may be observed, with paresis of the third, fourth and sixth cerebral nerves and finally of the fifth nerve. The other cerebral nerves seem to be normal, and the eyeball does not protrude as a rule. Headache is a constant symptom, as also tinnitus. The condition may be stationary for years. In the six cases tabulated there had been an interval of from eight to eighteen years since the first symptom. The absence of cerebral disturbances further characterizes this clinical picture. Treatment as for syphilis should always be given a trial, as it is impossible to exclude syphilis as a factor without. Little if any benefit has been derived from prolonged pressure on the common carotid artery, and ligation of the artery within the skull is fraught with too much danger, but a ligature might be thrown around the artery outside the skull. This might protect against the otherwise inevitable danger of increase in size, and rupture. He urges that the ophthalmologist or the neurologist who first recognizes the affection should advise this treatment. Subcutaneous infusion of gelatin has been tried but without much result. This is worth a trial before resorting to other measures.

May 25, 1921, 64, No. 21

*Melena Neonatorum. S. Jørgensen.—p. 321.

Syphilis in the Third Generation. V. Askgaard.—p. 329.

Melena Neonatorum.—Jørgensen found at necropsy of an infant, less than one week old, that an ulceration in the duodenum near the pylorus had been probably responsible for the profuse hematemesis and melena. He reviews the various opinions in vogue in regard to the origin of melena, and calls attention to the fact that in some of the statistics the infants presented the condition known as decomposition. The ulceration had evidently developed before delivery, and it is a question whether the decomposition might not have been congenital, the ulceration in the bowel being the result of defective development of the elements of the mucous membrane at that point.

Ugeskrift for Læger, Copenhagen

May 19, 1921, 83, No. 20

*A Bilirubin Colorimeter. E. Meulengracht.—p. 655.

*Balantidium Colitis. P. H. Steen.—p. 662.

Bilirubin Colorimeter.—The apparatus is like Sahli's hemoglobinometer, bilirubin being practically the only yellow pigment in the plasma. The information derived may be important in diagnosing passage of small amounts of bile into the blood, and in all cases of dubious jaundice.

Balantidium Colitis.—Steen's patient was a boy of 5, and the discovery of the balantidium explained the rebellious "dysentery." It subsided after a barium contrast meal for roentgenoscopy, which seemed to cure the enteritis without further measures.

May 26, 1921, 83, No. 21

*Tuberculosis in Young Children. T. Oldenburg.—p. 683.

Pulmonary Tuberculosis in Young Children.—Oldenburg relates that of the 130 children under 4 years of age with pulmonary tuberculosis at the sanatorium in his charge, 53 per cent. were dismissed much improved or cured and 64 per cent. of the 105 with an interval since up to six years have been in average good health since; 20 per cent. died, and no information could be obtained in regard to 16 per cent. The proportion is thus quite large in which the antibody balance in the body seems to have kept within normal range. The antibody balance in young children is precarious, however, and any intercurrent infection or unhygienic mode of life is liable to upset the balance, and then the latent tuberculosis flares up anew, and each time it is harder to control. The main point in treatment of tuberculosis in young children is to minimize the opportunities for repeated and frequent new inoculations until the resisting powers are more stable. Gohn has published necropsy statistics showing a progressive form in 94 per cent. of the infants with pulmonary tuberculosis under the age of 6 months; 92 per cent., 6 months to a year; 66 per cent., from 1 to 2 years; 55 per cent., 3 to 4 years, and only 29 per cent., between 5 and 8.

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AUTOGENOUS BONE TRANSPLANTATION*

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In my discussion I shall attempt to present briefly my experience in autogenous bone transplantations. I have carefully reviewed, with the assistance of Dr. Pio Blanco, the records in the Mayo Clinic of 413 patients on whom bone transplantation had been performed during the eight years between Jan. 1, 1913, and Jan. 1, 1921. It would be confusing and tiresome to discuss in statistics alone, so I trust you will pardon me if my deductions at times seem to be dogmatic. As nearly as possible I have based deductions on accurate clinical information, not trusting merely to clinical impressions. It is my hope that the conclusions and the deductions reached from this experience and study will be of interest and possibly of some value to you. There is no need to review the literature, for that has been done thoroughly by others. I feel, however, that I should express my appreciation of the impetus given this subject by Dr. F. H. Albee and by the late Dr. J. B. Murphy.

The study of autogenous bone transplantation is so interesting that it is difficult to adhere closely to the subject and not to follow out the many leads suggested by the investigation, but I shall try to keep to the main facts.

One hundred and sixty-six of the 413 patients were suffering from tuberculosis of the spine and were subjected to the operation, with various slight modifications, as originated and advocated by Albee. Of the remaining 247 patients, all but a few were operated on for ununited fractures.

SPINAL TRANSPLANTS

The definite end-results of spinal transplantation are not easily determined. Contrary to conditions in the fracture group, we are dealing with a condition which, though it may be the disabling factor, is practically always a secondary manifestation of a focus elsewhere. The operation and subsequent mechanical treatment are only a part of the procedure. Therefore, conclusions in such a group are more or less unreliable. It is not possible to see all the patients, one, two or more years after operation, and many times inferences must be drawn from correspondence.

The data I have to offer with regard to end-results are based on 132 patients who could be traced out of a total of 141 patients operated on more than

eighteen months before. I have classified the disease as arrested or cured when the patients were free from pain and were able to resume their occupations, although not necessarily their original occupations. The postoperative complications of the entire group of 166 is available for study. There were only nine children in the series, since the operation is rarely advised for them.

Of the 132 patients concerning whom we were able to learn enough to warrant an opinion with regard to the end-results, there were sixty-six (50 per cent.) who may be considered cured, or with the disease arrested. Twenty-nine (21.99 per cent.) were improved, twenty-two (16.66 per cent.) were unimproved, and twelve (9.09 per cent.) died later. The exact cause of death in all instances could not be determined, but from correspondence with the patients' relatives and physicians, I should judge that the majority died of disseminated tuberculosis. Three (2.26 per cent.) died so soon after operation that their deaths must be regarded as postoperative mortalities, one dying of pulmonary embolism on the fourteenth day, and two of tuberculous meningitis in about the fourth week.

Only four (2.4 per cent.) of the 166 patients had postoperative infections, which is remarkable since all of the patients had had two incisions, one in the back and one in the leg. The legs were not infected, but in a few instances a hematoma developed which discharged bloody fluid and then healed. In at least two of the four patients who became infected, I believe that the cause was the breaking through into the wound of a tuberculous abscess. The graft was lost in two patients. In a few patients the devitalized skin over a prominent kyphos broke down; the exposure of the graft to the air caused a localized osteomyelitis. In two patients we later chiseled off the dead portion of the graft, which was followed by healing of the ulcer. This condition cannot rightfully be called an infection. In four patients who were not doing well, the roentgenograms disclosed the graft fractured over the kyphos, and in two we placed a graft on the opposite side of the spinous process. In a few cases we showed poor judgment in advising operation, failing to appreciate the poor condition of the patient. Generally speaking, draining sinuses no matter where they are situated, and pulmonary tuberculosis, unless quiescent, contraindicate surgery. A few of the grafts became loose and one end protruded against the skin because they were put in under tension. A bone graft should never be under tension. By taking the bone from the flat internal surface of the tibia, the graft can be sufficiently curved to fit almost any kyphos. I have found it advanta-

* Chairman's Address, read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

geous to hold the transplant against the denuded spinous processes with beef-bone screws, using 6-32 machine size screws carefully placed at some distance from the kyphos, for a screw hole through the transplant at the apex of the kyphos might lead to fracture of the graft. This procedure is not always possible, particularly when the site of operation is in the upper dorsal region, the structure and slant of the spinous processes making it difficult to place the screws (Table 1).

The operation is in no sense of the word radical, and the patient cannot be offered the advantage of a removal of a portion of the tuberculous tissue and débris, as is offered in a resection of the knee. It would be an interesting contribution to our knowledge if two groups of patients of like age and under the same surgical control could be studied, one group being operated on, the other not operated on, and all the patients confined to bed for equal periods, with the same type of brace. I have not, however, made such a study and can merely state that my opinion concerning this group of patients who are subjected to bone transplantation for tuberculosis of the spine is that the results are more favorable than in those not operated on; that, owing to the uncertainty of the fate of the bone graft in children I seldom advise the operation for them, and finally, that, as the theory of the operation is logical and it gives better control of the average patient, I shall continue to advise the operation in adults.

TRANSPLANTS FOR DELAYED UNION,
NONUNION, AND OTHER
CONDITIONS

Two hundred and forty-seven patients were operated on for ununited fractures, bony defects, and so forth, and in all fairness, I may say that as a group they are difficult to treat successfully. One hundred and thirty-nine of the 247 had been operated on elsewhere, from one to six attempts having been made to induce union. Fifty-nine had been infected; many had great masses of scar tissue, and the skin was adherent to the bone so that a slough would have followed any interference. In some the mistake was made of operative interference too soon after the cessation of discharge and the infection was stirred up again.

TRANSPLANTS FOR UNUNITED FRACTURES OF THE
LONG BONES

Patients with fracture of the tibia (102) formed the largest group. Fifty-five of these had been operated on before elsewhere. Two patients (1.9 per cent.) died from influenza. There were four (5.4 per cent.) infections in seventy-three clean cases, but the graft was not lost. There were nine (31 per cent.) infections in twenty-nine cases that were clean at the time of operation but had been infected previously. The bone graft was lost in four patients of this group. Seven patients were not traced. Thus, there are

ninety-five patients on whom to base our statistics of the end-results.

TABLE 1.—SPINAL AUTOGENOUS BONE TRANSPLANTS

Patients operated on previous to Jan. 1, 1921.....	166
Patients operated on previous to Jan. 1, 1920.....	141
Patients operated on previous to Jan. 1, 1920, traced.....	132
Cured (or disease arrested).....	66 (50.0 per cent.)
Improved.....	29 (21.9 per cent.)
Unimproved.....	22 (16.66 per cent.)
Operative deaths.....	3 (2.26 per cent.)
Later deaths.....	12 (9.09 per cent.)

One hundred and sixty-six patients each with two large incisions gave four (2.4 per cent.) infections. The graft was lost in two patients. Prominent kyphos may cause ulcer. Four patients fractured the graft and two were reoperated on. Occasional loosening of one end of the graft occurred, owing to tension. A curved graft and beef-bone screws should be used.

Eighty-five operations (89.4 per cent.) were successful; eight (8.8 per cent.) were failures. In order to secure the eighty-five cures, six patients were operated on twice; in other words, 101 operations were performed on the ninety-five patients.

In thirty-six patients, ten having been operated on elsewhere, bone transplantation was performed for ununited fractures of the femur. There was one operative death (2.07 per cent.). In thirty-four clean cases there were three (8.8 per cent.) infections; one graft was lost. Two cases, clean at the time of operation, but having been infected previously, suppurred and one graft was lost. Three patients were not traced; this leaves thirty-three patients on whom to base statistics of the end-results. Nineteen of these (57.5 per cent.) were cured, and thirteen (39.3 per cent.) were not cured. Three of the patients were operated on more than once, making thirty-six operations on the thirty-three patients, and, basing the statistics on the number of operations, 52.7 per cent. were cures. Twenty of the transplants were performed for old ununited fractures of the neck of the femur, with eleven successes and nine failures. Twelve were performed on the shaft, with eight successes and four failures.

Bone was transplanted to the radius in thirty-five patients, twenty-three having been operated on elsewhere; but as seven (20 per cent.) were not traced,

we were able to ascertain the end-results in only twenty-eight patients; the statistics are compiled from these. Twenty-two (78.5 per cent.) of the operations were successful; six (21.5 per cent.) were failures. One patient was operated on by us twice. In twenty-eight clean cases, not infected previously, there were five (17.9 per cent) infections, and two grafts were lost. Three (42.8 per cent.) of the seven cases previously infected suppurred, but only one graft was lost.

The humerus was operated on in thirty-four patients, and all but one were traced. Twenty-six of these patients had been operated on elsewhere, some of them three and four times. Twenty-seven of the operations were performed in clean fields without infec-

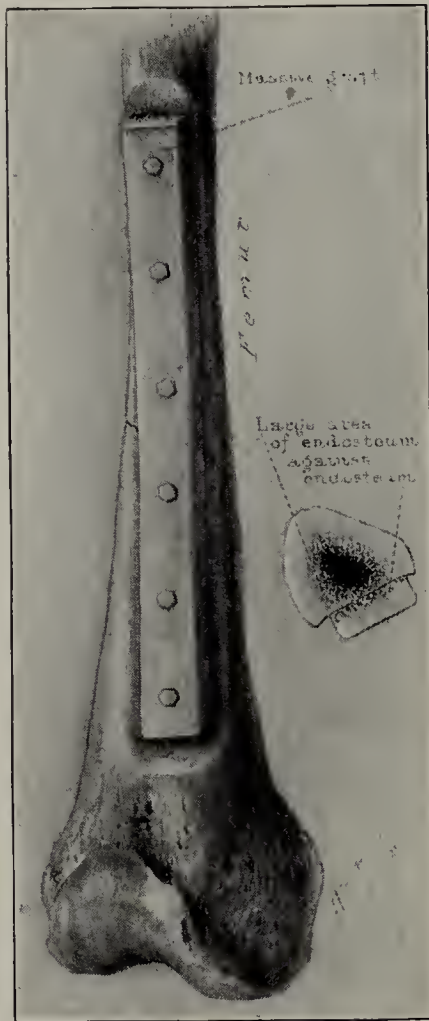


Fig. 1.—Massive autogenous graft applied to femur and held in place by six beef-bone screws. This graft gives abundant contact of endosteum to endosteum.

tion previously, and four (14 per cent.) became infected, but only one bone graft was lost. Seven cases were clean at the time of operation but had been infected previously. Four (57 per cent.) became infected, and four bone grafts were lost. There were twenty-three (69.6 per cent.) successes, and ten (30.03 per cent.) failures. One patient was not traced. Six patients were operated on more than once, making thirty-nine operations on thirty-three patients, with twenty-three successes (56.4 per cent.).

Transplantations to the ulna were performed on eighteen patients. Seventeen of the cases were clean and had not been infected previously, but two (11.7 per cent.) became infected and in one the graft was lost. One infection developed in a patient who had been infected previously, but the graft was not lost. Two of the patients in this series were not traced, thus leaving sixteen for purposes of estimating end-results. Thirteen (81.2 per cent.) of the operations were successful; three (18.7 per cent.) were failures.

Autogenous grafts were used in nine patients who came to the clinic with nonunion following resection of the knee. Only six of these could be traced; all (100 per cent.) had union. One patient was infected and lost sight of. A bone graft was used in the patella in two instances; one patient could not be traced; the other obtained a good result. A graft was used in the nose once, and in the sacro-iliac joint once. Nine patients with ununited fractures of the jaw were operated on. All were traced; union resulted in seven (77.7 per cent.). One became infected but the wound healed later; one died of an intercurrent affection (Tables 2 and 3).

In the entire group of 247 patients with ununited fractures, 223 were traced. Basing end-results on these, it is found that 177 patients (79.3 per cent.) were successfully treated; forty-two (18.8 per cent.) were not cured. Eighteen of the patients were operated on twice, making 241 operations on 223 patients, with a resulting cure of 177 (73.4 per cent.). An attempt to study the failures by percentages is not enlightening, since the causes of failure are many and diversified. Infection is a prominent cause of failure, but does not necessarily mean failure. Faulty technic, poor coaptation of the fragments to each other and to the graft, poor external fixation, and lack of cooperation on the part of the patient may all tend to put undue stress on the graft and cause its fracture. In not a few instances when this has happened in my experience, union eventually occurred under proper fixation and control. Osteoporosis of the fragments is an unfavorable condition and should be overcome if possible. More and more I am advising patients with nonunion and osteoporosis to remove all casts or splints and use the part in order to get the bones in better condition to receive the transplant. It is almost a certainty that union will be obtained with the bone graft in a pseudarthrosis of many years' standing when the bone

TABLE 2.—AUTOGENOUS BONE TRANSPLANTS FOR UNUNITED FRACTURES

	Traced	Operations	Success	Failure	Death
Tibia.....	95	101	85	8	2
Femur.....	33	36	19	13	1
Radius.....	28	...	22	6	..
Humerus.....	33	39	23	10	..
Ulna.....	16	...	13	3	..
Ununited knees.....	6	...	6	..	..
Jaw.....	9	...	7	1	1
Patella.....	1	...	1	..	..
Nose.....	1	...	1	..	..
Sacro-iliac.....	1	...	0	1	..
Total.....	223	...	177	42	4

There were 247 cases in all, but only 223 were traced, with 177 (79.3 per cent.) successes, and forty-two (18.8 per cent.) failures. There were four (1.7 per cent.) deaths, three due to influenza; one due to a cerebral embolus in a femur case. Tibia, 101 operations on ninety-five patients, giving 84.1 per cent. successes. Femur, thirty-six operations on thirty-three patients, 52.7 per cent. successes. Humerus, thirty-nine operations on thirty-three patients, 56.4 per cent. successes.

ends are of the eburnated type. This study, therefore, enables me to say that the most favorable bones to deal with in treating ununited fractures are the tibia, ulna, radius, humerus and femur, respectively. The percentage of infections in these cases, contrary to the infections in the spinal graft cases, is high, and this should be explained. In the 247 cases there were thirty-nine (15.7 per cent.) infections following our operation. It is only fair, however, to divide these cases into two groups: those in which there had been no infection previously and those in which there had been infection. In 201 cases, twenty (9.9 per cent.) clean cases, not infected previously but often having much scar tissue, were infected, whereas in the forty-six cases infected previously, nineteen (41.3 per cent.) were infected. This rate could be excused possibly in the cases infected previously, but cannot be so readily excused in the clean cases. There are certain extenuating circumstances. Most of the operations were difficult and prolonged, which means that tissues were handled, traumatized, exposed and often dried more than is proper. The technic is often somewhat difficult of application, particularly when previous operations have produced much scar tissue, and one of the fragments is short and near a joint. These are, I think, the main causes of the high percentage of infection, for the rate of suppuration in the easily conducted and



Fig. 2.—Intramedullary autogenous graft. No contact of endosteum to endosteum. In this situation the graft is a foreign body and will be absorbed.

short operations on the spine is quite low and will compare with any series of clean cases in the entire field of surgery. In the general surgical cases in the Mayo Clinic, Sistrunk has found that the average of infection in clean cases¹ is about 10 per cent. Our technic has not absolutely prevented the introduction of the gloved hand into the wound, but so far as was practical the actual handling of the tissues was done with instruments. I am quite sure that the percentage of infections in the same type of cases would be much higher if the autogenous bone graft were abandoned and beef bone or metal substituted. Metal is irritating to the tissues, and beef bone is not as readily tolerated

1. These include all cases clean before operation and retroperitoneal cases not drained.

as an autogenous graft. Infection in not a few cases developed because of breaking down of the scar tissue in the deep structures, and occasionally because the skin sloughed. The possibility of a hematogenous infection should also be considered. The traumatizing of the tissues incident to the operation causes them to be devitalized and therefore susceptible to infection.

The manner in which the bone graft is used is also of prime importance. In our earlier work the intramedullary plug was used with indifferent success. The inlay graft is as nearly as is possible an anatomic approximation of tissues which appeals to one as being a surgically sound procedure. In a certain percentage of cases, however, in which the operation had been satisfactory in every respect and the postoperative fixation was as nearly perfect as possible, the graft broke, usually about the fifth to the eighth week. I think we are nearly all agreed that the bone transplant, at least in great part, is absorbed and replaced by new bone. During this period of absorption and replacement there is a period when the graft itself is weakened by the absorption, and the new bone deposited is too soft and fresh to be of any real support. At this time a slight stress will cause fracture of the graft. If the massive graft is used, the very size of the graft gives a margin of safety not given by either the intramedullary or the inlay graft. Also, the cancellous or endosteal tissue is the richest in osteoblasts. By denuding the fragments and exposing the layer of cancellous tissue, and applying the bone graft with its cancellous tissue to that of the fragments, large surfaces rich in osteoblasts are brought together. I believe that with the technic of firmly holding the transplant to the fragments with beef-bone screws, a large proportion of the transplant functions and lives without being absorbed and replaced by new bone.

I am certain that our results have been improved by using the massive graft and clamping it to the fragments by aid of beef-bone screws, and where there is sufficient muscle and soft tissue comfortably to cover it I shall continue to use it. The size of the massive graft in the tibia increases the tension on the skin, and may cause a necrosis of the skin and the death of the graft because of exposure. I prefer the inlay graft from the opposite leg if the bone is osteoporotic; if not, I use the sliding inlay reversible method.

SUMMARY

The cases studied comprised 413 patients subjected to the operation of transplantation of bone. One hundred and sixty-six of the patients were operated on according to the method of Albee for tuberculosis of the spine, and 247 were operated on for ununited fractures, bony defects, etc. One hundred and thirty-two patients with tuberculosis of the spine operated on more than eighteen months before have been definitely followed. Sixty-six (50 per cent.) may be regarded as cured or as having the disease arrested; twenty-nine (22 per cent.) were improved; twenty-two (16.66 per

TABLE 3.—AUTOGENOUS BONE TRANSPLANTS FOR UNUNITED FRACTURES

	Clean Cases	Infected		Previously Infected	Infected		Graft Lost
		Number	Per Cent.		Number	Per Cent.	
Tibia.....	73	4	5.4	29	9	31.0	4
Femur.....	34	3	8.8	2	2	100.0	2
Radius.....	28	5	17.8	7	3	42.8	3
Humerus.....	27	4	14.8	7	4	57.1	5
Ulna.....	17	2	11.7	1	1	100.0	1
Ununited knees..	9	1	11.1	..	..	....	..
Jaw.....	9	1	11.1	..	..	....	..
Patella.....	2	..	....	..	..	....	..
Nose.....	1	..	....	..	..	....	..
Sacro-iliac.....	1	..	....	..	..	....	..
Total.....	201	20	9.9	46	19	41.3	15(6%)

There were thirty-nine (15.7 per cent.) infections in the entire 247 cases. In the 201 cases in which there had not been any previous infection there were twenty (9.9 per cent.) infections. In the forty-six cases in which there had been previous infection, there were nineteen (41.3 per cent.) infections.

cent.) were unimproved; twelve (9 per cent.) died later, probably of disseminated tuberculosis; three (2.26 per cent.) died so soon after the operation that their deaths must be classed as operative mortalities. The operation is advised only in adults. Four (2.4 per cent.) developed infection in the wound in the spine; there were no infections in wounds of the leg. Two grafts were lost.

Two hundred and twenty-three of the 247 patients operated on for ununited fractures, etc., were traced. In 177 (79.3 per cent.) the operations were successful, and forty-two (18.8 per cent.) were failures. Four (1.7 per cent.) of the patients died. Two hundred and forty-one operations were necessary to obtain these successes; thus, the 73.4 per cent. successes are based on the number of operations rather than on the number of patients. In contrast to the spinal cases, which were better than the average in any group of clean cases, the percentage of infections ran high. Thirty-nine (15.7 per cent.) of the 247 patients developed infections. Two hundred and one had clean wounds. Many of them had been operated on before without suppuration, but often with considerable scarring; twenty (9.9 per cent.) of these became infected. Forty-six patients had been infected previously, although apparently the wounds were clean at the time of operation, and in nineteen (41.3 per cent.) suppuration followed surgical

interference. These infections caused the loss of the graft in fifteen cases (6 per cent.), and in almost all the persistence of the nonunion. The technic used in the spinal transplants was used in the fracture transplants. In the first group the percentage of infections is considerably below and in the second, above normal. I believe, therefore, that the cause of the infections rest on the type of case rather than the technic. Possibly a two stage operation would lower the percentage of infections.

The percentage of successes in operations on the various long bones was: tibia, 89.4; ulna, 81.2; radius, 78.4; humerus, 69.6; femur, 57.5. The massive graft with beef-bone screws to hold it in place has given better results than either the intramedullary or the inlay graft

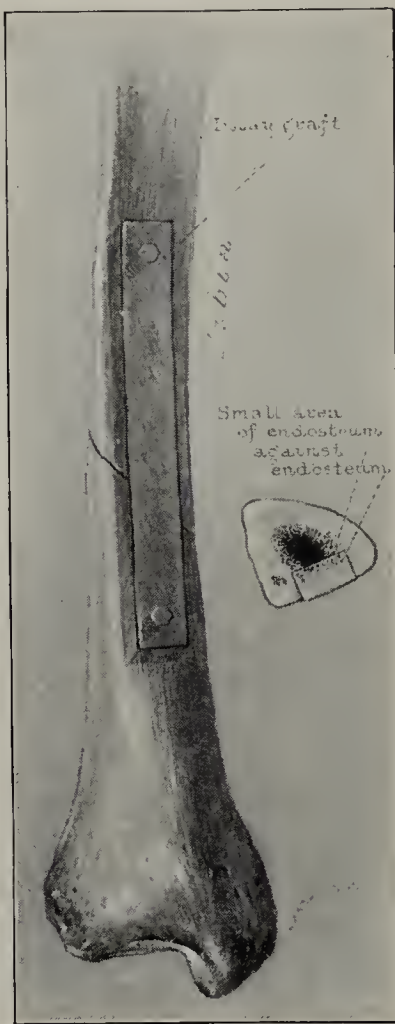


Fig. 3.—Inlay autogenous graft applied to the tibia. Contact of endosteum to endosteum over a limited area. Two beef-bone screws are used to steady the graft.

DEFECTIVE DIET AS A CAUSE OF
STERILITY

A STUDY BASED ON FEEDING EXPERIMENTS WITH
RATS *

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The application of the term sterility to most, or all, infertile matings has led to much confusion of thought. In most of them, the failure of reproduction is, in fact, the result of decreased fertility rather than of actual sterility on the part of the two individuals concerned.

Actual sterility of individuals, of course, exists. There are cases dependent on anatomic malformations and other pathologic conditions in which the individual may be pronounced sterile even when mated with a fertile partner, until the local condition has been remedied; but these actual sterilities of anatomic or pathologic origin probably constitute but a small proportion of the infertile matings in either the human or other species.

TABLE 1.—COMPOSITION OF DEFICIENCY DIETS *					
Diet Low in Fat Soluble Vitamin			Diet Low in Calcium		
Rolled oats.....	40.0		Whole wheat.....	67.5	
Gelatin.....	10.0		Casein.....	15.0	
Casein.....	5.0		Whole milk powder.....	10.0	
Salt mixture (McCollum).....	3.7		Sodium chlorid.....	1.0	
Dextrin.....	40.3		Inert substance.....	1.5	
Cod liver oil.....	1.0		Cod liver oil.....	5.0	
Diet Low in Proteins			Double Deficiency (War) Diet		
Wheat.....	70.0		Wheat.....	60.0	
Salt mixture (McCollum).....	3.7		Sodium chlorid.....	1.0	
Dextrine.....	21.3		Inert substance.....	1.5	
Cod liver oil.....	5.0		Dextrine.....	32.5	
			Cod liver oil.....	5.0	

* It will be seen that each diet in this table contains an ample supply of all essential elements with the exception of the one for which it is designed to be deficient.

There are certainly a large number of infertile matings which are purely functional and due to physiologic alterations in general or local conditions. Such physiologic alterations moreover often coexist in the sterilities of pathologic origin and when unrecognized, and consequently unremedied, undoubtedly explain a large proportion of the continued infertilities after operation.

EXPERIMENTAL WORK

Evidence to this effect which had accumulated in the course of our clinical work led us to plan, in 1919, an experimental study of this subject, and the production of infertility by partial dietary deprivation in essential substances proved to be the most practical method. This work is still in progress and is to be repeated with numbers large enough to be of final evidential value and fit for complete statistical treatment; but the results obtained from the smaller numbers seem now to warrant a provisional report.

As we have already described the experimental work in detail in a paper read before the American Gynecological Society last week, and as limitation of space prevented our taking up there the application of our conclusions to the treatment of human infer-

tility, we wish in this article to give a summary of the experimental work, together with our conclusions, and then to proceed to their application to the human race, and to the corroborative evidence derived from our clinical experience. The article on the experimental work will be published in the *American Journal of Obstetrics and Gynecology*, and will supply the arguments in favor of our conclusions which limitation of space forbids our introducing here.

TABLE 2.—CHEMICAL ANALYSIS OF DIETS *					
	Stock Diet	Low Fat Soluble Vitamin	Low Calcium	Low Protein	Double Deficiency or War Diet
Protein.....	18.0	19.6	23.4	8.4	7.1
Fat.....	10.1	3.8	6.7	6.5	6.3
Carbohydrate.....	55.3	63.1	53.6	69.5	72.3
Salts.....	4.7	4.5	2.6	5.0	2.1
Fiber.....	0.9	0.9	2.7	1.3	2.6
Moisture.....	11.0	8.1	11.0	9.3	9.6

* By comparing the various diets as to chemical constituents it will be noted that they are all adequate except for the designated deficiencies.

We used in this work a strain of albino rats which has been produced by Dr. Helen D. King¹ of the Wistar Institute. They had been inbred at the time we obtained them for thirty-four generations by brother and sister matings with selection for strength and health. Although well and strong they were of slightly diminished fertility as compared with Dr. Castle's heterogenetic strain, which was frequently used for rematings in testing individual fertilities. More than 90 per cent. of the matings of Dr. Castle's rats were fertile, while only 65 per cent. of matings from Dr. King's strain produced young when the rats were fed on the stock diet of Dr. Castle's laboratory. This figure of 65 per cent. is then the standard mating fertility for the check rats in our experiments which were on the stock diet of the laboratory.

We subjected rats of this strain to three deprivation diets, one of which was low in the fat soluble vitamin, one was low in calcium, and the third low in proteins. All these diets were given in unlimited quantity and were ample and similar in all other respects (Tables 1 and 2). These deficiencies were chosen as being

TABLE 3.—RESULTS OF MATINGS ON VARIOUS DIETS (KING × KING RATS) *				
Diets	Number of Matings	Number of Positive Matings	Percent- age of Mating Fertility	Percent- age of Individual Fertility
Stock diet.....	23	15	0.65	0.81
Low fat soluble vitamin diet				
Proved.....	8	4	0.50	0.70
Unproved.....	13	4	0.31	0.55
Low calcium diet				
Proved.....	0	0		
Unproved.....	7	1	0.14	0.37
Low protein diet				
Proved.....	0	0		
Unproved.....	5	0		
Double deficiency diet (low in calcium and protein)				
Proved.....	3	0		
Unproved.....	5	0		

* This table shows the result of matings in which both partners were King rats and both were on the indicated diet.

those which are most often present in persons belonging to the well fed classes in the United States. To them we added a fourth diet which was deficient in both calcium and proteins. This diet gives an approximate representation of the most important deficiencies in the war and postwar diets from which portions of Europe have been, and still are, suffering, and is therefore of interest at the moment.

* This work was aided by a grant from the Elizabeth Thompson Science Fund.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. King, Helen D.: J. Exper. Zool. 26: 335, 1918; 27: 1, 1919; 27: 29, 1919.

These diets reduced the mating fertilities of our rats from the normal 65 per cent. to 55, 31 and 14 per cent., respectively, in the several classes of deficiency diets as shown in the column headed Mating Fertilities in Table 3. It delayed the appearance of fertility in rats raised on these diets and lowered its degree as shown in the curves which are reproduced for each class in Figure 1. These results were produced, as is shown in Table 4, by a mere decrease in the percentage of the deficient element, not by its absence, and without any other change in the life conditions of the rats.

The production of so much infertility by so slight a change is surprising; but it is explained by the probability which our work already makes evident, that many sterile matings result from very slight decreases in the individual fertility of the two animals concerned, as is apparent by reference to the columns headed Average Individual Fertility in Tables 3 and 5.

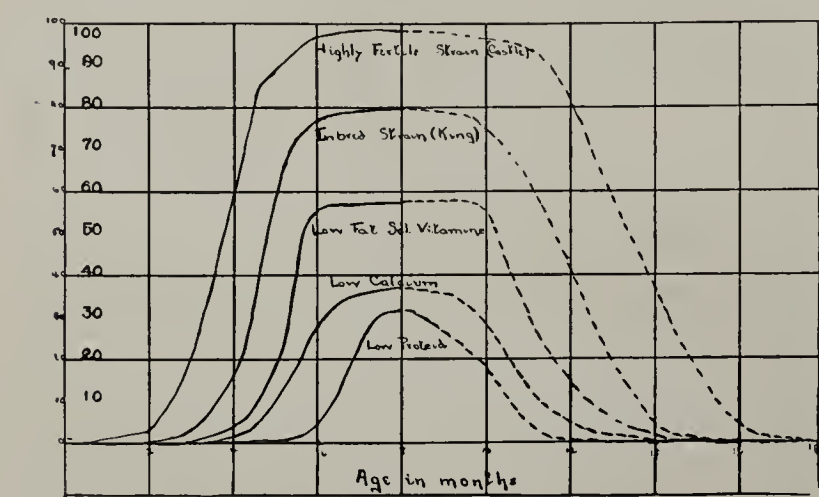


Fig. 1.—This chart combines percentage of fertility with the age at which reproduction first occurred for Castle rats, for King rats and for rats on the three single deficiency diets. The dotted half of each curve does not represent actual observations, but conforms roughly with the sexual life of these animals. The sharp rise corresponds to puberty and the sharp fall to the cessation of sexual activity. Note that the effect of deficient diet is to shorten and depress each curve as a whole.

The fertilities of individual rats were then obtained by repeated matings and by rematings with Castle rats of known fertility. When the indexes for all the matings were placed in a column in the order of their fertilities, it was found that reproduction did not occur when the calculated fertility of the matings was below 45 per cent.

TABLE 4.—VITAL ANALYSIS OF DIETS*

	Stock Diet (Ample in All Elements)	Low Fat Soluble Vitamin	Low Calcium	Low Protein	Double Deficiency (Low in Calc. and Protein)
Protein.....	18.0	19.6	23.4	8.4	7.1
Fat soluble vitamin	5.0†	1.0†	5.0†	5.0†	5.0†
Calcium.....	1.8	1.88	0.03	1.88	0.03

* The amount of the fat soluble vitamin cannot be determined by chemical analysis. The figures given represent the amount of the vitamin containing substance.
† Estimated

This result² is given in Table 6, in which for simplicity only a small number of representative matings are introduced. In this method of estimation it was assumed that the fertility of a mating may be represented as the product of the individual fertilities of the two animals, as, for instance, $0.8 \times 0.8 = 0.64$, which is the mating fertility of the King rats on our stock diet, or $0.6 \times 0.6 = 0.36$ which would be negative

2. The result was obtained from rats on stock diet and will be retested with those on deficiency diets, though we have seen no reason to doubt its applicability.

mating. A mating fertility of 0.45 was found to be the "threshold for reproduction," below which young could not be expected and above which their arrival would be predicted.³

The threshold was not only approximately accurate when the rats used were of equally decreased fertility, but also held true when a rat of lowered fertility was mated to one of higher or full fertility (e. g., $1.0 \times 0.5 = 0.50 =$ reproduction, $0.8 \times 0.4 = 0.32 =$ a sterile mating, etc.).

TABLE 5.—RESULTS OF REMATINGS ON VARIOUS DIETS (KING \times CASTLE RATS)*

Diets	Number of Matings	Number of Positive Matings	Percent-age of Mating Fertility	Percent-age of Individual Fertility
Stock diet.....	10	7	0.70	0.70
Low fat soluble vitamin diet				
Proved.....	0	0		
Unproved.....	20	9	0.45	0.45
Low calcium diet				
Proved.....	0	0		
Unproved.....	19	6	0.30	0.30
Low protein diet				
Proved.....	0	0		
Unproved.....	12	6	0.50	0.50
Double deficiency diet (low in calcium and protein)				
Proved.....	0	0	0	0
Unproved.....	0	0	0	0

* This table gives the results of remating rats from the negative matings of Table 3 with Castle rats of known fertility. Since such Castle rats are of practically 100 per cent. fertility the index of average individual fertility of their King rat partners is the same as the index of mating fertility. It will be seen that the individual fertilities of rats on the deficiency diets are so low as to have insured sterile matings with partners of the same grade (Table 6).

TABLE 6.—SCHEMATIC CHART OF FERTILITY*

Individual Fertility	Mating Fertility, per Cent.
1.0×1.0	1.00 or 100
0.9×0.9	0.81 or 81
0.8×0.8	0.64 or 64
0.7×0.7	0.49 or 49
Threshold for	
Reproduction	
0.6×0.6	0.36 or 36
0.5×0.5	0.25 or 25
0.4×0.4	0.16 or 16
0.3×0.3	0.09 or 9
0.2×0.2	0.04 or 4
0.1×0.1	0.01 or 1

* The figures in this table vary from those actually obtained from the matings only in being restricted to even tenths for the sake of clearness. The establishment of 45 per cent. as the threshold for reproduction must, of course, be regarded merely as an approximation until larger numbers have been employed.

Repeated experiments showed moreover that if rats whose individual fertility had been decreased to, for instance, 0.6 were mated, their mating was sterile and remained sterile so long as these rats were kept together; but that if these rats with individual fertilities of 0.6 were each remated with highly fertile rats from Dr. Castle's strain the matings would both prove fertile.

These results frequently prove most illuminating when we come to compare them with problems which arise in the infertilities of the human race.

Another feature of the experimental work which is most interesting and important is the very slight change in the general condition of the rats which was produced by the single deficiency diets in spite of the great decreases in the fertility of their matings. This is shown in the illustrations of representative individuals from the several classes (Fig. 2 A, B and C) and by the individual weight curves shown in Figures 3 and 4. This also proves important when compared with clinical observations.

3. In fact, study of all the matings made revealed that there were but two exceptions to this rule—in one case, young were produced in a mating with an index of 0.40, and in one mating with an index of 0.49, no young were produced, but these were the only exceptions out of thirty-three matings.

In Figure 2 *D*, a pair of rats which were brought to maturity on the double deficiency diet (the war diet) are shown. Their small size and poor condition is very evident when compared with the photographs of rats on the other diets. The individual weight curves are also evidence of this. This marked change of condition was attended by great loss of fertility, all their matings with each other proving sterile. We have obtained European statistics which show a corresponding decrease in human fertility in the countries of central Europe, notably in Austria, but lack of space forbids the reproduction of these statistics in this paper.

It seemed possible that the mechanism by which these infertilities were produced might be elucidated by study of the testicles and ovaries of the comparatively infertile rats, to which end we made serial sections of many of these organs. We intend to continue this study.

The work of Robinson⁴ on prenatal death makes it probable that certain ova⁵ contain within themselves conditions which make complete development impossible; but these conditions may, or may not, be morphologically visible.

Figures 5 and 6 are sections from the organs of rats on the single deficiency diets. We exhibit them with the statement that when compared with sections from normal animals (Figs. 7 and 8) they show no anatomic changes which have been demonstrated under the methods so far employed.

Figures 9 and 10 are sections of ovaries of rats on the double deficiency diet with their more extreme infertility. These ovaries do show several peculiar conditions which must be studied further, notably ova contained in unruptured graafian follicles which are composed of four cells. This section (Fig. 10) is to be compared with a normal ovum under high power (Fig. 11). These may be ova which have undergone premature segmentation; they may represent the development of four ova in a single follicle. We are uncertain what they represent and can at present make no statement about them except that they are plainly abnormal.

One further observation must be noted before we turn to the consideration of human infertility. We have been unable to find any mention of the birth of macerated fetuses in the literature, and Professor Castle has seen no such instance in the many years during which his laboratory has contained large numbers of rats on stock diet. But in matings on our single deficiency diets four such deliveries occurred and there were two more in eight deliveries in which young rats who had been reared on the war diet were subsequently placed on ample diet and bred to Dr. Castle's rats. This fact corresponds to a single but suggestive clinical observation which will herewith be reported.

HUMAN INFERTILITY

It is always unsafe to reason from one species to another, and the difficulties are increased when the organic constitution and life conditions of the one species are widely different from those of the other. Moreover the experimental methods which are easily utilized in rats and which give us their individual indexes cannot be applied to the infertilities of the

human race; but if clinical observations are found to yield results comparable to those of the experimental work each supports and reinforces the other. The life conditions of the human race are much more complex than those of laboratory rats. Human diet is much more varied and many factors other than diet enter into the maintenance of a state of general good condition. In the well fed classes in this country the food placed upon the table is usually sufficient in all the essential elements, but peculiarities of taste or mistaken dietary theories not infrequently lead to the choice of a diet which is insufficient in one or the other of the vital elements.

The history of a couple who were referred to us in 1919 offers a parallel to the miscarriages observed in our rats on deficiency diets.

The husband was normal in every way and thoroughly fertile. The wife was a large, well nourished woman in ordinarily good health, but reported herself as lacking in energy and

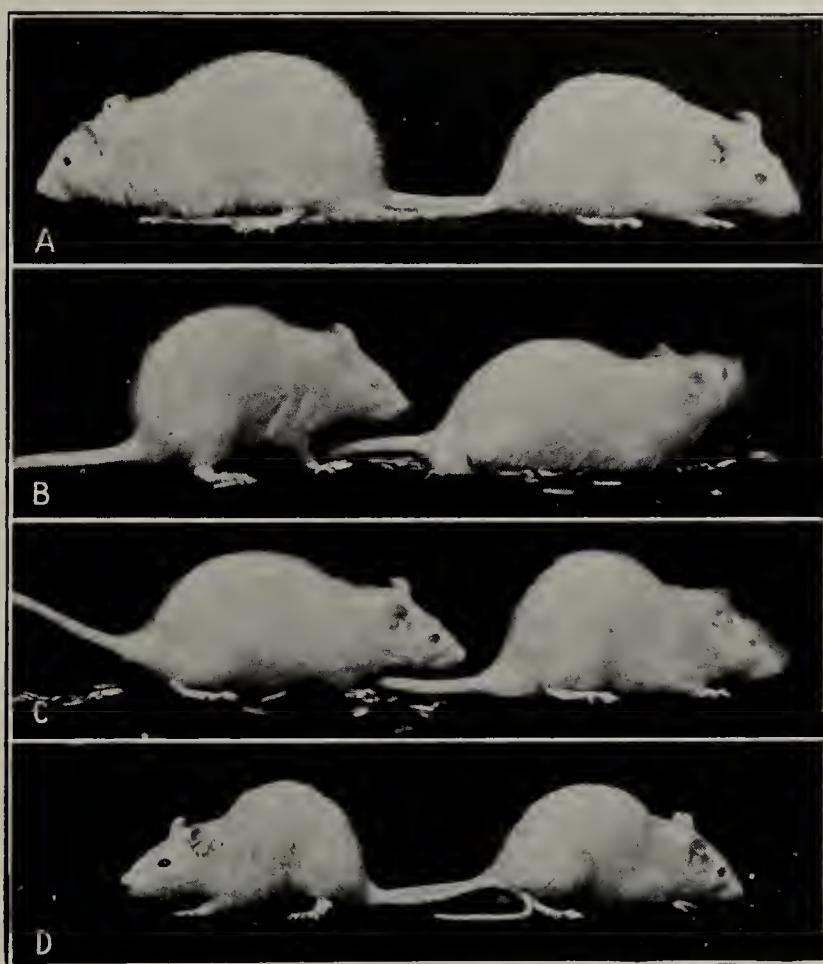


Fig. 2.—*A*, rats fed on stock diet; *B*, rats fed on low fat soluble vitamin diet; *C*, rats fed on low calcium diet, and *D*, rats fed on double deficiency or war diet.

constantly tired, perhaps in a condition quite comparable to that of the single deficiency rats. They had been married seven years. Ten months after marriage, she was delivered of a full term child which was alive at the beginning of labor, but died during an operative extraction. During the succeeding six years she had five pregnancies which resulted in five early miscarriages. These people were in the habit of maintaining a very ample table, and a deficiency in diet seemed absurd; but since an exhaustive examination failed to reveal any other cause for the habit of abortion, an inquiry was instituted.

It was found that during her first pregnancy (which went to term) she had eaten everything, but that finding herself growing stout soon after the birth of the child she had then begun to restrict her diet. On analysis it proved that she had been living for the six years during which she had miscarried repeatedly, on a diet which was very deficient in calcium. She was at once put on large doses of calcium, her diet was rearranged to include foods rich in calcium and after a reasonable interval the medicinal calcium was discontinued.

4. Robinson, Arthur: *Edinburgh M. J.* 26:137 (March) 1921.

5. Probably also certain spermatozoa.

She went into her seventh pregnancy shortly afterward and without any other treatment was delivered at term of a healthy child.

No single case proves anything, but when this is considered in connection with the experimental work in rats and with similar results obtained by Steenbock⁶ in swine and cattle it suggests the question whether

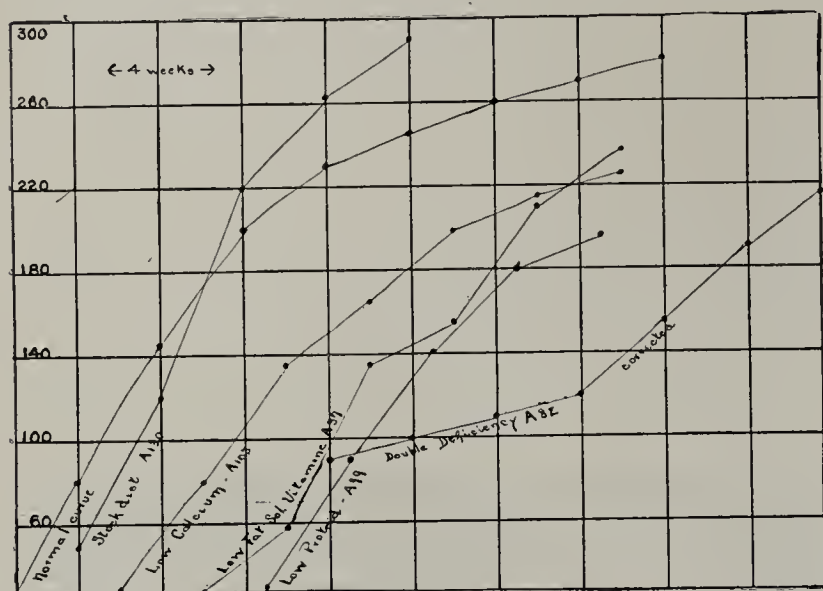


Fig. 3.—Weight curves for male rats.

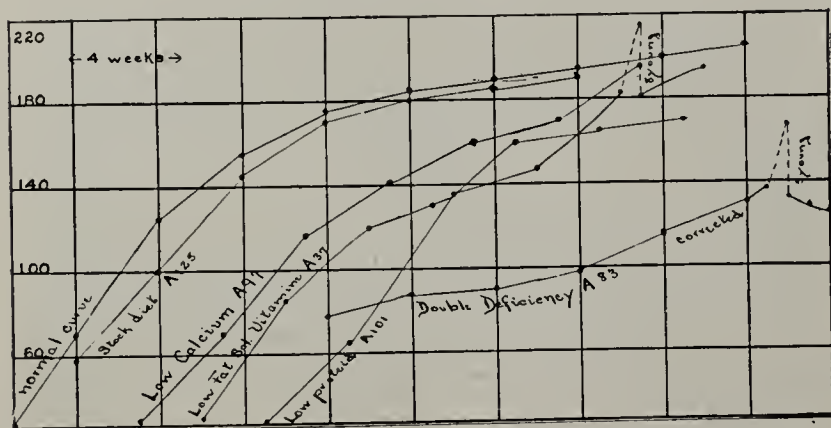


Fig. 4.—Weight curves for female rats

dietary deficiencies may not be worthy of consideration in other cases of habitual abortion in the human race.

In laboratory animals the importance of individual peculiarities has been but little, if at all, investigated. In human beings individuality is a very important factor. We have seen a number of cases of infertility in young athletes who have abandoned training and gone into sedentary business life. It seems probable that such men acquire or possess a necessity for the ingestion of a large amount of proteins and the exercise which is necessary to carry them off, and that with a change in habit they fail in fertility.

In March, 1920, a young couple were referred to us from New York for analysis of their case. They had been married four years, and pregnancy had occurred shortly after marriage but had terminated in a miscarriage at three months. There had been no further pregnancies. The wife appeared to us to be probably fertile, the husband's semen had been examined several times by a well trained physician and considered normal because the field always contained spermatozoa in active motion. On more careful examination we found that their numbers were far below the normal, the percentage of motility was small and the character of motility was poor. The heads of most of them contained an abnormally small amount of chromatin. From our experience with similar cases we believed him to be decidedly infertile. He had been

a well known college oarsman, and had rowed for five years, eating during a large portion of each year the enormous supply of proteins of a training table. He had then entered a professional school, had changed suddenly to a sedentary life and to very hard mental work. He had married in the first year of this regimen, and though he had promptly impregnated his wife, the pregnancy was unsuccessful (remember the miscarriages in the rats) and no further impregnation occurred. It proved on inquiry that he was at the time of his visit thinking of devoting the next six months to a graduate course which would mean easy work with ample time for exercise. He was also at the time under pressure to join a crew which was then training for a race a few months later. On our recommendation he decided to adopt this plan of three months' training with only moderate intellectual work and to return at the end of the three months for reexamination of his semen. The case fails in completeness from the fact that the second visit proved unnecessary as the wife found herself pregnant at the end of two months and a half. We have recently heard that she was successfully delivered at term.

In the human race nervous overstrain plays an important part in loss of good condition. This appears to be equally true in both sexes, but can be more accurately observed in the male by examination of the semen.

In December last, we were consulted by a couple who had been married five years without a pregnancy. The wife had been operated upon for local abnormalities but without result, and their physician was confident that the persistent infertility was due to defective fertility on the husband's side. He was leading a sedentary life with very heavy business responsibilities. He was about 18 pounds under the preferable weight of the insurance tables and had a low diastolic blood pressure. He was pale and decidedly nervous in manner and appearance. His testicles were very soft and decidedly small, a fact which we have noted repeatedly in cases of lowered fertility both in the human race and in the rats. Secretion obtained by massage of the vesicles and prostate was extremely watery.

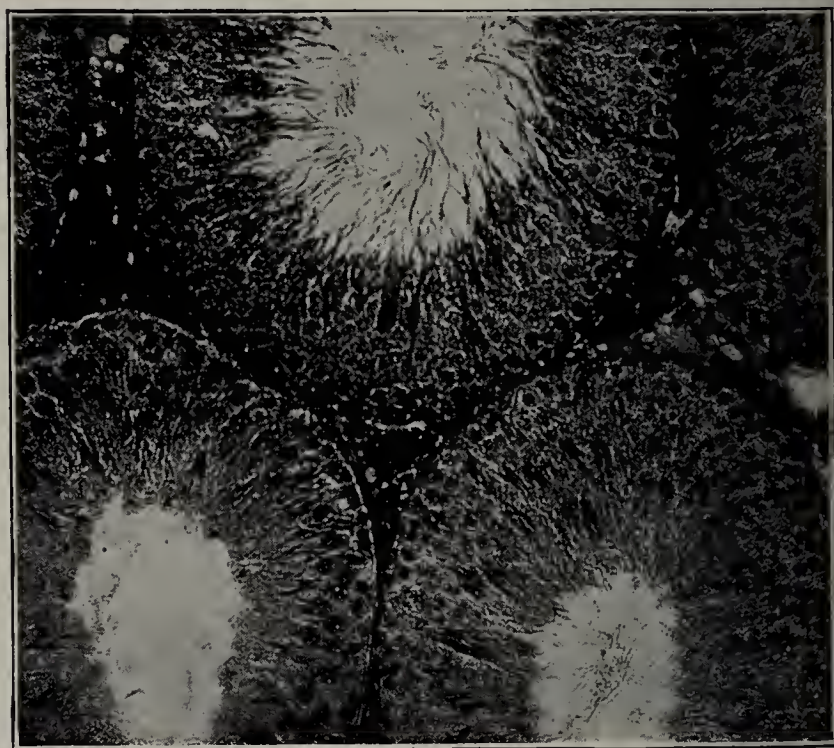


Fig. 5.—Section of testis from rat made sterile by low fat soluble vitamin diet; X 500.

It contained a few leukocytes and not even a normal amount of prostatic salts. Examination of his semen revealed almost no spermatozoa, and those mostly still. He looked well except for his evident nervousness. He was advised to absent himself from business, to live in the open air, to go into light training under the advice of a professional trainer and to play golf and tennis in increasing amount as his condition improved. This advice was strictly carried out under extremely favorable circumstances. Four months later his

6. Hart, E. B., and Steenbock, H.: J. Biol. Chem. 39: 209 (Sept.) 1919. Steenbock and Humphrey: Research Bull. 49, Wisconsin Experiment Station.

semen was reexamined by his physician and the report sent us showed that numerically there were from 75 to 100 spermatozoa in a high power field—a very fair number. We should judge from the report that their motility was good, and no abnormality was detected. No pregnancy has as yet occurred, but so great an improvement in a short time is fair testimony that his previous seminal condition was purely functional and the result of an overstrained nervous condition.



Fig. 6.—Section of ovary from rat made sterile by low calcium diet; $\times 300$.

In human beings normal assimilation of the food ingested seems to be as important as the mere choice of food eaten, constipation is always important, and we have seen three cases in which deterioration of general health from intestinal retention was apparently the sole cause of infertility.

March 6, 1919, we were consulted by a young couple who were becoming worried because they had been married for ten months without pregnancy. The husband was in excellent health, the wife considered herself well but admitted that she was "run down." Her complexion was pale and pasty looking, she had been for some months troubled with persistent acne, she complained of backache and a sensation of weight in the pelvis.

On the table a satisfactory examination was prevented by the fact that an enormously overloaded sigmoid occupied almost the entire pelvis. Under liquid petrolatum, forced catharsis and increased ingestion of water the bowels were gradually emptied and at the end of a month were moving regularly under mild catharsis. The vagina and cervix had been considerably congested, evidently from obstructed pelvic circulation, and she had for some weeks been instructed to use vaginal suppositories of boroglycerin at night. At the end of eight weeks she was in greatly improved general health and they were to report after her impending period for a complete sterility examination. This period failed to appear, she proved to be pregnant and was delivered of a living child at term.

A decision that a given infertility is dependent on anatomic cause and demands operation should not lead to neglect of accessory constitutional conditions.

In September, 1913, we examined a husband and wife who had been married three and one-half years without a pregnancy. Examination revealed that the husband was thoroughly fertile, but the wife had an anteversion of a much underdeveloped cervix. The cervical mucus was retained, inspissated and sticky. All the spermatozoa found in the cervix were entangled and unable to progress. The uterus was

in right lateral version and there was a cystic right ovary. She was suffering from severe dysmenorrhea and sense of pelvic weight. Operation was recommended, and both a plastic and an abdominal operation were performed. Good results were obtained with an excellent convalescence. The dysmenorrhea and bearing down sensation were relieved and general health improved, but no pregnancy resulted. Two years later reexamination showed that the cervix was patulous, the secretions normal and that the spermatozoa penetrated well, abundant numbers being found even at the fundus in post-coital examination. Everything local looked normal but pregnancy had not occurred. The patient, though improved in general health, was nearly 20 pounds under the insurance weight, tired easily and was still pale and nervous. She was in health, but in poor condition. She was put on a regulated diet designed to increase weight, in combination with regulated exercise. Under this regimen she gained 10 pounds in two months, and went away to continue the treatment. A year later she reported that she was six months' pregnant and she was subsequently delivered at term.

This patient was treated before our attention was called to the specific effects of diet, but is selected in illustration of our belief that many of our failures in past years were due to neglect of constitutional ill health in cases in which local abnormalities of etiologic importance had been relieved by minor or operative treatment.

COMMENT

The necessity for brevity forbids the report of further cases, but these have been selected as typical instances.

That many individual infertilities are functional rather than due to anatomic or pathologic causes; that very moderate decrease of fertility in both individuals may produce a completely infertile mating; and that, as was fully proved in our breeding experiments, two rats that are infertile to each other may both be fertile

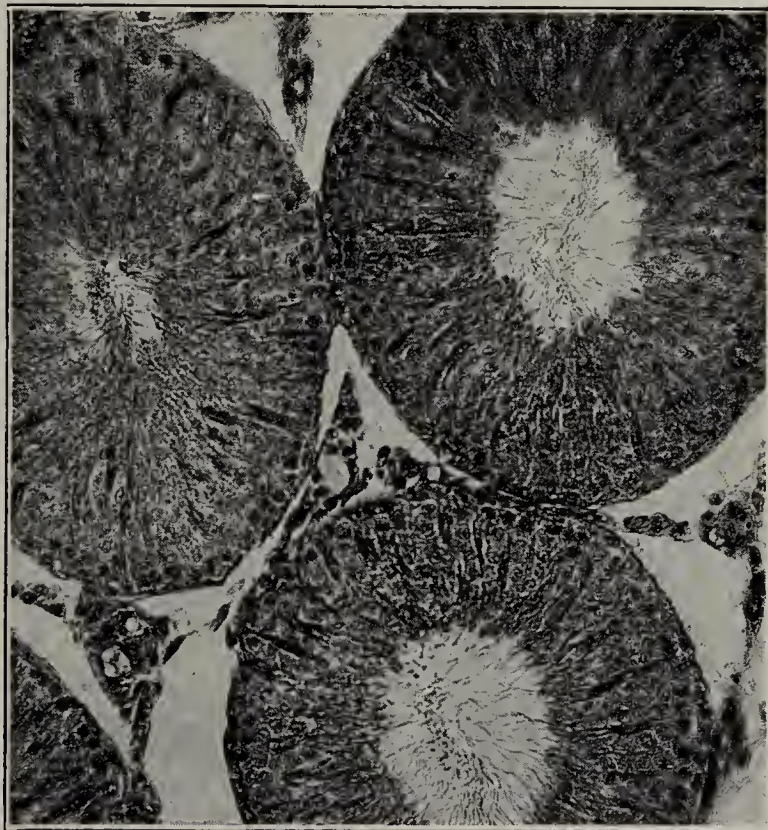


Fig. 7.—Section of normal testis; $\times 500$.

to other individuals, not because of obscure incompatibilities, but merely because of a decreased percentage of fertility in each, are points worthy of much consideration.⁷

321 Dartmouth Street.

7. For the effect of diet on reproduction on which this paper was based see McCollum, E. V.: *The Newer Knowledge of Nutrition*, New York, the Macmillan Company, 1918. Osborne and Mendel: *J. Biol. Chem.* **35**, 1918; **41**, 1920; *Science* **45**: 294, 1917; *J. Biol. Chem.* **23**: 439, 1915; **20**: 351, 1915.

ABSTRACT OF DISCUSSION

DR. EDWARD REYNOLDS, Boston: This experimental work grew out of our clinical experience, and its results have thrown much light on subsequent clinical experience. The most interesting point seems to be the probability that merely decreased fertility on each side of a union may result in a permanently sterile mating, although each partner would be fertile to a new partner of high fertility. That deficient diet produces sterility does not rest on our experiments, but has been shown especially by many investigators for many species of animals. That decreased diet in degree insufficient to produce any noticeable ill health will produce a decreased fertility of individuals in a degree to make them infertile to each other, we think we have established. Turning to the human side, it is impossible in the more complicated human life to obtain the same accurate view, but as one's experience grows large, as cases accumulate, the weight of cumulative evidence grows strong. As time goes on we feel more and more convinced of the importance of the functional element in sterility, more especially when it is coincident with the anatomic or pathologic cause. And just as slight decrease in fertility from moderate deficiencies in the vital elements of diet produces infertile unions, so we are convinced that local alterations in the organs, insufficient to produce conspicuous ill health, do produce decreased fertility which results in a sterile union. Our present view of sterility in the human race is that each case demands extended and accurate analysis of each partner, general and local, and it should be conducted not on the principle of determining causes of ill health, but it should be a search for the lesser causes which decrease fertility to the point of producing sterile unions.

DR. W. BLAIR BELL, Liverpool, England: Fifteen years ago I called attention to the importance of the calcium metabolism in the reproductive function. I conducted a series of experiments on hens. I was able to tell when these hens laid eggs, when they did not lay them at all, and when they were going to lay them, simply by an examination of the calcium in the blood. I then pursued this question in regard to women. I showed that by an examination of the systemic blood one could exactly prognosticate their condition and ability in regard to menstruation. I have pursued these studies clinically ever since. I have for many years treated



Fig. 8.—Section of normal ovary; $\times 300$.

these cases of habitual abortion and some cases of sterility with calcium, with very good effects, on the whole. A woman must have a very active calcium supply in order to part with 800 gm. to her fetus in nine months. In some cases she draws on her teeth and bones to supply the deficiency of the blood. After the child is born, she requires a very high calcium content of the blood to carry on the function of

lactation. This important matter must be worked out farther if we are to prognosticate what leads to the deficiency. We are now in possession of methods whereby we can watch this calcium content very closely.

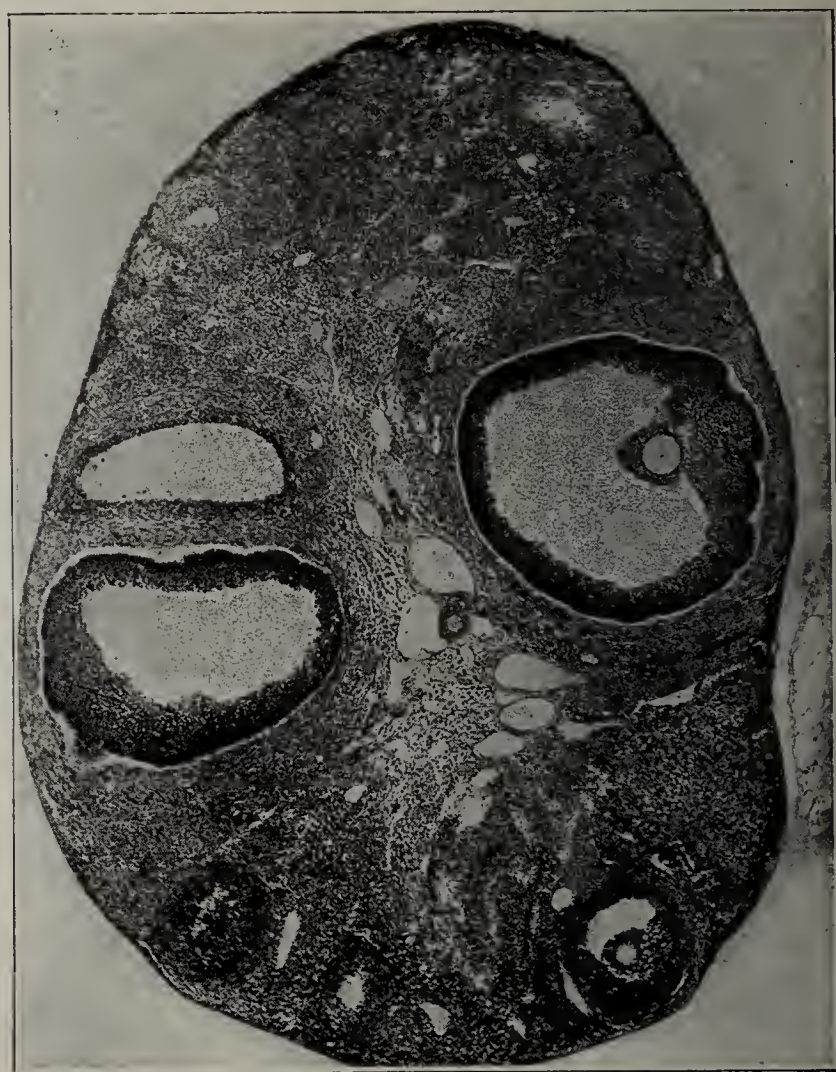


Fig. 9.—Section of ovary from rat made sterile by war diet; $\times 300$.

DR. ALBERT J. OCHSNER, Chicago: Those of us who are experienced practical farmers will be able to recall many instances in the breeding of domestic animals to which all of these principles that have been brought out by this excellent paper will apply. Every one of these principles has its definite application in our everyday work in breeding farm animals. Unfortunately, those facts that the practical farmer knows and uses in his work are not always applied scientifically to the human being, and are not proved as they are in this case. Some years ago when the breeding of pure cattle became an important part of the progressive farmer's business in this country, it was found that a large proportion of the highest type of cows were sterile; and it was found that a farmer owning a large herd of these animals virtually had to choose between destroying these animals as beef cattle, receiving for them almost nothing, or go out of the breeding business. So the veterinarians conducting the experimental stations made a careful study and found that the sterility in these animals depended to a large extent on the fact that the graafian follicles in the ovary had remained unruptured; that is, they remained stationary. Whenever these graafian follicles were ruptured, almost immediately the cow became fertile. Some years ago my brother, who is also a practical farmer like myself, applied this method of treatment to the human being, and since that time we have applied it in a large number of cases of sterility which were not due to the other ordinary and most common causes, and we have found that it is quite as effective in the human being as it is in animals. Under general or spinal anesthesia two fingers are placed in the rectum, and with these the ovary is pressed against the hand on the abdomen with sufficient force to rupture the follicle.

DR. EMIL NOVAK, Baltimore: The influence of diet on the function of reproduction was evidenced, on a huge scale, in

the wave of amenorrhea (Kriegsamenorrhöe) which swept over the continental countries, especially Germany and Austria, during the recent war. This effect on menstruation was produced by a combination of the dietetic privations and the psychic factors associated with war conditions. As for the general subject of sterility, I have been impressed by the frequency with which the cause is to be sought in tubal obstruction. I have repeatedly encountered cases in which such measures as cervical dilatation or the use of cervical pessaries have been carried out, and in which the real cause of the sterility proved to be a chronic inflammatory tubal disease. These cases are sometimes difficult of diagnosis, as the tubes may show little or no enlargement on bimanual examination. On the other hand, there is a very clearly defined group of cases in which sterility is the result of developmental defects of the uterus. These instances of genital hypoplasia are often observed in women who otherwise are perfectly healthy and well developed. The cause of such uterine hypoplasia is undoubtedly to be sought in the endocrine system, although the exact nature of the disturbance cannot be stated. Dr. Bell has done much work along the lines of calcium metabolism as related to the physiology of the female reproductive organs. My own feeling has been that such calcium fluctuations are merely a manifestation of a more deeply underlying endocrine change. Dr. Ochsner's reference to the production of sterility in cattle by corpus luteum cysts is interesting, and is, of course, known to all farmers and veterinarians. I do not believe that the same phenomenon takes place very frequently in human beings, although corpus luteum cysts are relatively common. They not infrequently cause amenorrhea, though usually of short duration. The question is sometimes asked as to why, if the corpus luteum causes menstruation, the persistent corpus luteum, in the form of a corpus luteum cyst, should inhibit menstruation. There is nothing paradoxical in this fact, if we remember that the corpus luteum, while it is essential to menstruation, does not actually cause



Fig. 10.—Section of ovary from rat made sterile by war diet; $\times 500$. Four cells in the follicle may be noted.

the hemorrhage. It merely causes the preparatory or premenstrual hypertrophy in the endometrium. The actual menstrual hemorrhage is a catabolic or destructive process occurring in the endometrium when pregnancy does not supervene, its immediate cause probably being the death of the ovum thrown off at the preceding ovulation.

Dr. DONALD MACOMBER, Boston: A possible explanation of the high occurrence of sterility in pure bred animals, as mentioned by Dr. Ochsner, is probably the fact that they are largely inbred. The strain which we used in our experiments

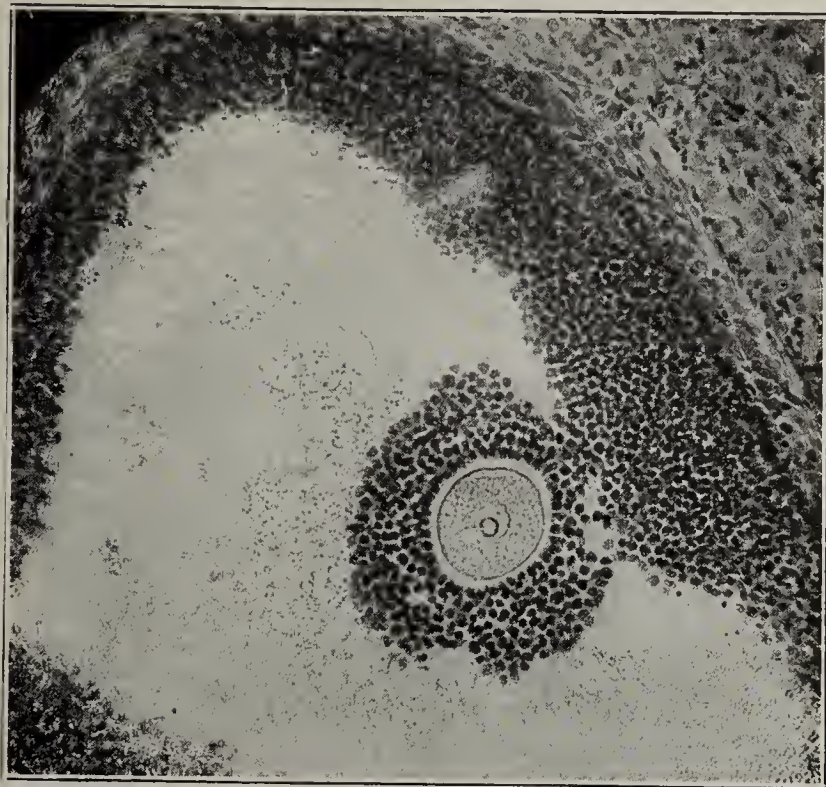


Fig. 11.—Section of normal ovary; $\times 500$.

had been inbred brother and sister matings for thirty-four generations. It showed a percentage of fertility of sixty-five as compared with ninety-six, which was the percentage of Dr. Castle's heterogenic stock. Dr. Ochsner and Dr. Novak spoke of the procedure common with veterinaries of rupturing cysts in the ovary. Dr. Reynolds has long practiced it in human beings. One must differentiate between retained graafian follicles which have undergone a certain degeneration and corpora lutea which instead of being absorbed persist and occasionally become cystic. The sterility of cattle, which is relieved by rupturing cysts in the ovary, is usually due to the presence of these cystic corpora lutea. In human beings it is not unusual to find them associated with underdeveloped ante flexed uteri. These patients are almost all of the slender, underdeveloped type, and often complain of dysmenorrhea. Removal of the corpora lutea often results in a return of ovarian function with relief of sterility. When the ovaries contain many small retained follicles, the interference with normal function is largely due to the increased tension. Puncturing these cysts by the mere mechanical relief of pressure often causes such ovaries to function normally. Dr. Novak spoke of the effect of the war diet in Europe. We have certain statistics for Austria which show that the birth rate has fallen more than 50 per cent. since before the war in spite of a slight increase in the marriage rate. Dr. Taylor of Pennsylvania reported that the diet of a large part of the population of Austria at present is one which is largely deficient in milk, butter and eggs. These foods carry most of the calcium of the food and are at the same time the chief sources for the fat soluble vitamin. Our experience has shown us that when two deficiencies are combined, the effect is much greater than when only a single deficiency is involved.

Dyspepsia Cures.—Harm occurs in all the dyspepsia cures. The relief that seems so magical could in most cases be gained without the "cure cures," from a few swallows of milk, toast or cracker, but even then the thorough examination is essential to real success, and putting this off on account of simulated relief may make all the difference between real recovery and a painful and fatal illness.—G. Dock, *J. Missouri M. A.* 18:84, 1921.

A NEW METHOD OF TREATING RECENT FRACTURE OF THE OS CALCIS

DAVID C. STRAUS, M.D.

CHICAGO

Fracture of the os calcis is a rather common type, comprising approximately 2 per cent. of all fractures. In the great majority of cases it is due to a fall from a height, the patient landing on his feet, on some hard substance, such as the ground. When the foot strikes the ground, the os calcis is suddenly held rigid while the weight of the body is transmitted to the astragalus, which acts as a wedge. The tuberosity of the os calcis is forced upward by the impact. As a result, the line of fracture usually extends downward from the concave articular facet beneath the wedge-shaped articular surface of the astragalus. Not only



Fig. 1.—Most common type of fracture of os calcis: flattening of longitudinal arch of foot and typical upward displacement of tuberosity of os calcis.

is the posterior fragment of the os calcis driven upward by the impact at the time of fracture, but it is held in this position by the constant tone of the Achilles tendon. The latter presents the chief obstacle to reduction. The longitudinal arch of the foot gives way at the time of fracture, with a resulting traumatic flat-foot (Fig. 1). Any logical form of treatment must be directed to overcome these two deformities.¹

I have recently evolved the following method:

The patient is placed on a Hawley table so that traction can be made with the patient held stationary. A general ether anesthesia is employed. Subcutaneous tenotomy of the Achilles tendon is performed. A long Steinmann pin of the latest model, which screws together at its center, is used. This is sterilized with the two halves unscrewed. Before the two halves are screwed together, the threaded ends are dipped in sterile oil. After the pin has been screwed together, one

of the sharp ends is held by placing it in the metal handle used to introduce the pin. After the upper surface of the body of the os calcis immediately in front of the Achilles tendon on the medial side of the foot has been palpated, the Steinmann pin is pushed through the skin, from the medial to the lateral surface of the heel, so as to avoid striking the posterior tibial vessels, and so as to lie immediately above the body of the os calcis and immediately anterior to the Achilles tendon. The pin extends an equal distance beyond

each side of the foot (Fig. 2).

The handle is now removed. Several squares of sterile gauze are forced over the pointed ends of the pin and are bound firmly against the skin by means of a sterile

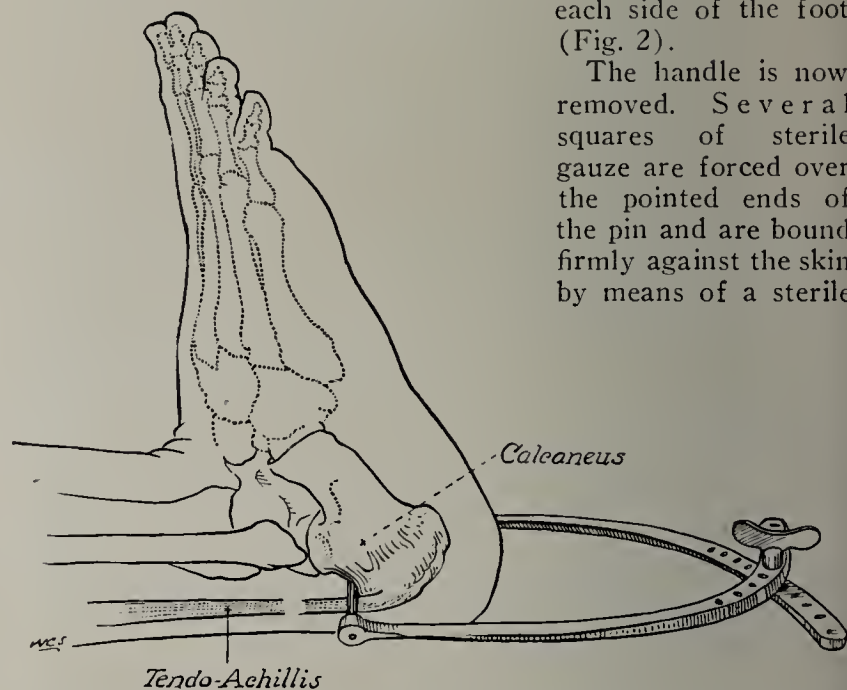


Fig. 2.—Diagram to show point of insertion of Steinmann pin and method of application of calipers. The Achilles tendon is divided before the Steinmann pin is inserted.

gauze bandage, to guard against the possibility of infection when the plaster cast is applied.

The Steinmann caliper is now applied to the pin, and downward traction is effected by an assistant who stands beyond

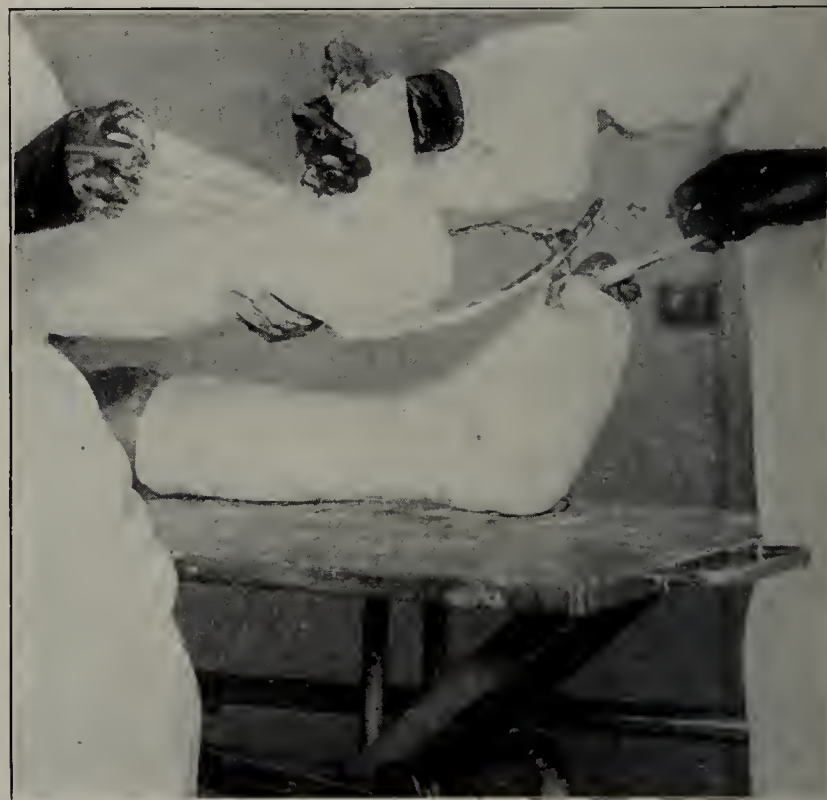


Fig. 3.—Manner of maintaining downward traction of posterior fragment while the cast is being applied. Ordinarily the operator has two assistants, one of whom maintains the downward traction on the posterior fragment, as shown, while the second supports the leg, the operator applying the plaster bandage. After the plaster bandage has been applied, the operator uses the orthopedic block to maintain upward pressure under the instep and make any necessary correction in the position of the foot.

the end of the table (Fig. 3). The reduction is then made in the usual manner. Any impaction present is broken up. The posterior fragment is drawn strongly downward, while the anterior portion of the foot is forced downward and

1. A brief summary of and reference to the more important recent articles on the subject may be found in the chapter on fractures in Keen's Surgery 7:441, 1921, contributed by Dr. Eisendrath and the author.

strongly inverted, while counterpressure upward is made against the anterior fragment of the os calcis and the arch of the foot, by means of an orthopedic block. The block also aids in correcting the median displacement of the astragalus. The foot is held in the corrected position, and sheet wadding is applied from the knee to the toes. A plaster-of-Paris cast is applied, reaching from the tuberosity of the tibia to the heads of the metatarsal bones (Fig. 3). While waiting for the cast to set, continuous traction downward is



Fig. 4.—Same case as shown in Figure 1 after reduction, with cast applied and set, and pin removed.

maintained. This constitutes the great advantage of this method. While this downward traction is being maintained, upward pressure on the anterior fragment and the instep is maintained by use of the orthopedic block, care being taken to hold the astragalus in its proper position. This position is maintained until the plaster has set. The Steinmann pin is now unscrewed and each half is removed. Since the two portions of the pin are removed from within outward, there is no danger of infection. This is further guarded against by injecting, with a medicine dropper, a few drops of tincture of iodine through the holes in the plaster cast left by the removal of the pin.

The cast is left on for four weeks. It is then removed and passive motion is begun, together with massage and hot foot-baths, daily. The patient is not allowed to bear any weight on the foot till the end of ten weeks. He is then fitted with an arch support, and begins to walk with the aid of crutches.

The chief advantage of this method is that it permits continuous downward traction of the posterior fragment and upward pressure of the arch, with the foot held in the proper position, during the entire time necessary for the plaster cast to be applied and to set.

30 North Michigan Avenue.

Radium in Cancer.—The report of Dr. Harvey R. Gaylord, director of the Gratiwick Cancer Laboratory in Buffalo, to the state legislature shows encouraging results from the state's purchase of \$250,000 worth of radium. Of 537 cases treated, many apparently hopeless, 358 showed marked improvement. The effectiveness of the remedy, according to Dr. Gaylord, is due to a sufficient quantity of radium for a given purpose and improved technic in its application. The laboratory will soon install a roentgen-ray apparatus with higher penetrative power than used heretofore.

CARCINOMA DEVELOPING ON GASTRIC ULCER *

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ROCHESTER, MINN.

Cancer continues to take its deadly toll from human life. In this country more than 80,000 die yearly from the disease; nearly a million lives have been thus sacrificed in the last decade. Cancer is the dread disease of middle life and of old age, made so by the prolonged suffering which accompanies it. The dread is far worse than the brief period of fear in times of pestilence, or of fear of sudden death from cardiac disease. Whether the increase in the disease is real from some defect in advancing civilization, or whether it is more apparent because of increased knowledge from closer observation, and more accurate statistical reports is a question. The work of the Committee on Cancer Research of the American Medical Association and various commissions composed of interested investigators has done much to educate the public concerning the condition, its treatment, and especially its prevention. Members of the medical profession are paying greater attention to the relief of recurring chronic local inflammation and to the removal of sources of local irritation, believed to be concerned in the development of cancer. Through these influences, a greater number of patients appear for operation earlier, at a time when the disease is curable. Cancers, from the standpoint of heredity, while they are interesting in lower life, are fewer than the general law of averages in man.

HISTORICAL

A review of the literature concerning cancer is exceedingly interesting from a historical standpoint and calls to mind that old saying, "There is nothing new under the sun." The earliest records concerned only the treatment of the disease. In Egypt, India and Persia the condition was recognized 1500 B. C., when



Fig. 1.—Carcinoma, 3 mm. in diameter, on the border of a gastric ulcer, 2.5 cm. by 2 cm. by 0.5 cm. in diameter.

the Egyptians applied arsenic paste in its treatment, a remedy used internally many centuries later. Hippocrates excised cancer with the cautery more than four hundred years B. C., a method still in use as a general destroyer of carcinomatous tissues. Celsus at

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

the time of the birth of Christ employed the knife for the clean dissection of cancer, and vessels were ligated to check the growth of inoperable tumors, a method revived a few years ago by the late Dr. Dawburn of New York. In the second century, Leonides used the knife and cautery in clean dissections. From that time little was added to the treatment of cancer until the recent development of serum therapy, endocrine therapy, roentgen-treatment and radium emanations. From what has been accomplished in the brief period of their use, especially by radium, I predict the possibility of surgery becoming an adjunct to these methods instead of the major method of treatment.

ETIOLOGY

From the point of view of etiology, Galen, in the second century, considered that the body consisted of solids and four fluids, blood, mucus, yellow bile, and black bile. He believed that the concentration of the latter was the cause of cancer, a theory which held sway for many centuries, when it was refuted by Paracelsus who substituted that of a local concentration of mineral salts as an exciting cause of the disease. If we substitute cholesterol for mineral salts we have a modern point of view for special stimulus of cell growth. The seventeenth century witnessed the development of the lymph theory of cancer, in which the lymph node involvement was given some prominence. The acid theory, namely, acid as a stimulus to cell growth, which is under discussion at the present time, was advanced in Germany at an early period by Helmont and by Ettmüller.

In a consideration of this theory, it should be appreciated that in the normal acid areas of the body occur the greatest number of cancers; thus, in the organ of highest acidity, the stomach, are probably one third of the cancers of men, and more than one fifth of the cancers of women. In the large bowel are many cancers as compared with the few in the alkaline small bowel. In the urinary bladder, tumors are common, as they are in the uterine cervix, which is bathed by fluids of increased acidity during the ten years preceding and following the climacteric. Within the tissues subject to normal degeneration, such as the uterus and the mammary gland, the acids formed by lipid degeneration, a well known chemical process, may be a possible local factor to stimulate cell growth. In this connection the work of Loeb in pathogenesis is of interest. He immersed the unfertilized eggs of sea urchins in sea water acidulated to 1 per cent. with various acids, of which butyric acid was the most active, and then returned the eggs to sea water for development, and a goodly percentage of the eggs became fertilized and hatched.

The general use of the microscope, from its development in 1592, made possible a minute study of the disease, and education advanced rapidly as the printing press recorded hypotheses and facts. The influence of coal smoke impregnated with sulphur has been extensively investigated in several districts of England and also in our own country as a possible external factor

increasing the development of cancer. In 1775 Pott described the first occupational cause of cancer, the work of the chimney sweep. Several instances of such development have been noted since then. The influence of fluids bathing cells in cancer environment was recorded by Maunvir in 1820; he asserted that the cells arise from morbid fluids which bathe them. While this is now refuted for cancer, it is believed by some, including myself, that a change, not necessarily morbid, in the fluid bathing the embryo, is a possible cause of congenital or embryologic malformation. Malformations of the nervous system in fresh water frogs were studied by Loeb by developing their fertilized eggs in 0.6 and 0.7 per cent. solutions of salt water.

PROGRESS IN INVESTIGATION

The importance of recurring local inflammation as a field for cancer development was appreciated by Broussais. Recamier investigated infiltration, and used the word metastasis in describing growths arising from parent tumors. Virchow developed an accepted foundation for the study of cancers and other tumors. He stated, in 1860, that all cells come from preceding cells,

but he made the mistake of believing that connective tissue changes into epithelium, a theory which was opposed by Ramek. The cell changes from the normal through stages of involution with impairment of nutrition and loss of functional capacity, as seen in cancer, were described by Thiersch. Waldeyer advocated the theory of connective tissue isolation of a few epithelial cells, either internal or external, as the origin of cancer, which harmonizes with Thiersch's theory of nutritional changes, and was also strongly supported by Ribbert, and showed that it harmonizes with the origin of cancer of the stomach in isolated cells separated in the snare of connective tissue in a chronically inflamed field. He also demonstrated the founda-

tion of secondary tumors as a continuous growth through blood and lymph vessels as well as transmission by cell emboli.

Clinical observations concerning such distribution of cancer of the stomach show that approximately 20 per cent., or more, of such cancers are confined to the stomach until the death of the patient from obstruction, perforation and peritonitis. In these cases there is no clinical evidence of metastasis in the lymph glands, liver, and distant or adjacent viscera. They compose a group favorable for operation with increased prospect of permanence of cure, except as the operation is modified by the extent of the involvement or the high location of the disease.

Ewing in his excellent work on malignant disease, in discussing glandular involvement in gastric cancer, quotes Verse as finding accidentally, at necropsy, twelve cases of early cancer of the stomach without glandular involvement, and Cuneo as finding lymphatic invasion at necropsy in eight cases of gastric cancer, but in thirteen gastrectomies only two. The theory of tumor development from misplaced embryonal cells, known as Cohnheim's theory, became obsolete following Waldeyer's work, although the statement of Durante,

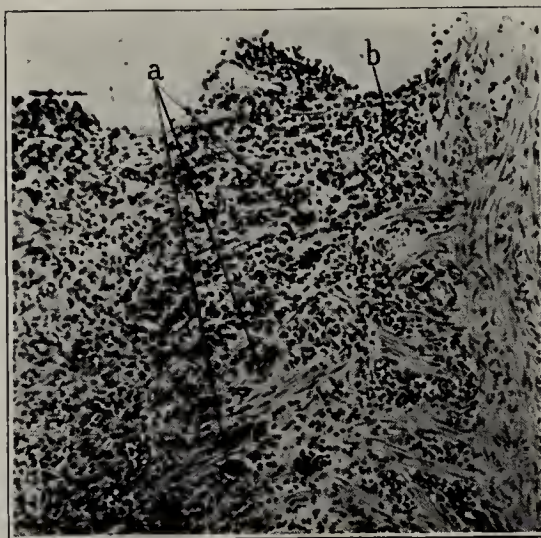


Fig. 2.—Low power photomicrograph of (a) carcinoma on the border of the ulcer, associated with (b) marked lymphocytic infiltration and fibrosis.

made in 1874, that all tumors arise from embryonic cells or immature cells and that tumor cells have some relation to sex cells is generally acceptable. In plant life nothing more is required to stimulate local areas into normal tissue growth than extensive cell destruction; the injury or loss of epithelium itself is apparently one of the greatest stimulations to activity of reproduction of marginal cells, for example, callus development and normal repair of injury. The theories of bacterial and parasitic causes of cancer development as originally advocated have not been proved. I believe that the chemical action of bacteria and not their mere presence should be considered as an irritative agent of connective tissue formation and a possible source of chemical stimulation, such as toxin or other product of their activity. The specific bacterial agent of several diseases has been discovered within but a few years after many years of search.

Clinical observations show that the previously traumatized epithelial areas are much more susceptible than normal epithelial areas to the development of cancer: for example, cancer of the uterine cervix, following laceration; cancer of the lip in areas of chronic irritation from a fissure or herpes; cancer of the tongue or cheek from a broken tooth as an irritant; the degeneration of scar tissue; cancer of the gallbladder, which is associated with gallstones in more than 85 per cent. of cases; and ulcer of the stomach, in the larger number of which with a diameter of 2 cm. or more, according to MacCarty and Broders, the margins are involved by cancer. W. J. Mayo, in 1915, called attention to the hot foods and drinks taken as civilization developed, a change from the food intake of primitive people, the degree of heat often being greater than epithelium can stand. He explains the fact that fewer women have gastric cancers, since in serving the members of their household their food becomes cooled before it is taken. There is but little difference of opinion with regard to external cancer of the breast or lip. The clinician, the surgeon, and the pathologist see them in approximately the same stages, and they see 63 per cent. of cancers of the lip developing on areas of previously repeated or chronic inflammations without comment.

In discussing cancer of the stomach originating on ulcer, it is probably best to drop the percentage basis, since pathologists obtain material for examination at necropsy, of late gross lesions from which the patient died, or of material removed surgically, and are dependent largely on the point of view of the local clinicians and surgeons with regard to the excision of the ulcer or its destruction, regardless of whether a gastro-enterostomy, or a pyloric operation is performed. The removal of ulcers by cautery (Balfour) has largely replaced excision, hence it is more difficult for pathologists to secure early specimens for examination, and instead of discussing the real problem of a possible source of cancer of the stomach, time is wasted on the discussion of the percentage of cancers of the stomach that might develop in this manner, often with their judg-

ment based on seeing the conditions in the late stages. The modern cytobiologist has wonderfully advanced the use of the microscope in the study of the single cell, and thus with extensive experience, is often able to diagnose cancer on the evidence of a single cell or a few cells, this, however, by immediate examination of frozen fresh tissue.

In the period of evolutionary life, when two or more types of cells became grouped to develop multicellular life and live a community existence, was the control over the cell a community control or an individual cell control? If it were a community control, then Cohnheim's theory of misplaced embryonal cells as a cause of the origin of cancer would be worthy of serious consideration. If it is possible that the cell is controlled by some granule within the cell, it might be exhausted or fail to appear in both parts of a cell division when exhausted by a chronic stimulus to division. I believe a biologic cause of cancer is exhausted epithelial areas induced by age, chronic traumatism, or irritation; an activating agent would be the environment, such as acid, especially butyric, one of the combined acids of the stomach and a product of lipid changes.

THE DEVELOPMENT OF CANCER

MacCarty says:

Insofar as cancer (a migratory hyperplasia) is concerned, my observations have revealed a biologic reaction which is malignant only insofar as it destroys the communistic organization of cells.

The three fundamental biologic reactions to destruction (hypertrophy, hyperplasia, migration) have been found to occur not only in relation to the specific tissue of the breast, but also in relation to the specific tissues of the prostatic gland, skin, hair follicles, stomach, lymphatic glands, blood, bone, cartilage, and connective tissue. In all these chronic destruction (the biological etiological factor in cancer) of the specific tissues, calls forth hypertrophy, hyperplasia, and sometimes migration of the reserve cells.

Although these reactions may seem new in reference to human pathology, they are well known to biologists who have made a study of reaction to destruction. In fact, many biologists are of the opinion that exposure of living matter to destructive factors has led to adaptive potentialities that are the factors of safety in the structure and functions of all forms of life; nature has been just as efficient in her defensive preparation in the construction of the human body.

It may be stated as a biologic law that hypertrophy, hyperplasia, and migration are stimulated primarily by destruction. These phenomena are the effects of which destruction is the cause.

In nature the specific agent of destruction is rarely if ever anticipated. In the mammary gland and stomach destruction is the main factor, as it is with the other tissues which have been studied.

The reactionary cells of the three conditions described are apparently normal cells which answer the structural description of normal cells as found any place in nature. Their relation to the communistic organization of cells is their principal abnormal or pathologic characteristic.

It has been observed that nature provides for the regeneration of human tissues in two ways, which might be called direct and indirect, the former consisting of division of specific tissue cells, and the latter of the division of reserve cells which are set aside for the purpose of regeneration of specific

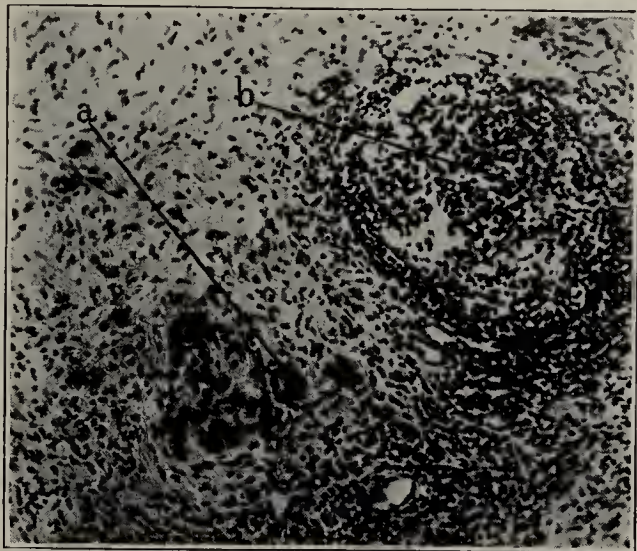


Fig. 3.—Low power photomicrograph of an area of (a) carcinoma lying near a lymph follicle, in border of ulcer.

tissues by the process of multiplication, specialization and differentiation. Direct regeneration of tissue represents the most primitive form of reproduction and doubtless occurs in the reproduction of endothelial tissues and perhaps some others, the reserve cells of which have not been seen. Indirect regeneration is seen in such specific tissues as those represented by squamous cells of the skin, secretory cells of the sebaceous, sweat and mammary glands, fibrous connective tissues, lymphocytes, erythrocytes, osteocytes, chondrocytes and glandular cells of the prostate, all of which specific tissues possess reserve cells which have been seen. During chronic destruction of these tissues the reserve cells react in a definite manner with a certain sequence characteristic of the behavior of living cells throughout nature. They become hypertrophic, hyperplastic, and migratory. In the light of biology these may be interpreted as hyperactivity against antagonistic things or forces; increase of mass action against such antagonists, and attempt at change of environment, all of which are defensive reactions and constitute the essential means of self-preservation.

The exact starting point of cancer of the stomach is, and probably will remain, unknown; but the early cancers which have been observed in this organ have been seen in the mucosa in the borders of chronic ulcers (Fig. 1).

One finds simple chronic gastric ulcers in which there are no signs of cancer; one also finds similar ulcers in which the normal columnar cells of the gastric tubules are partially or completely replaced by spheroidal or ovoidal undifferentiated cells, the cells being intratubular. One also sees similar ulcers in which the ovoidal or spheroidal cells are also extratubular and hence in the stroma (Figs. 2, 3 and 4).

Williams states that 60 per cent. of cancers of the stomach occur at the pylorus, where only 12 per cent. of ulcers occur. Welch reports 36.5 per cent. of ulcers just above the pylorus, where 12 per cent. of cancers occur. This shows the greater influence of trauma on fewer ulcers in the more active areas of the stomach. In considering the influence of environment, practically five ulcers occur in the acid-reducing first portion of the duodenum to one in the stomach. At the Mayo Clinic during the years 1919 and 1920, 3,463 duodenal and gastric ulcers were diagnosed. Of these 1,673 were operated on. Fifty-eight patients had both gastric and duodenal ulcers, 1,352 had duodenal ulcer alone, and 263 had gastric ulcer alone. The percentage of mistakes in diagnosis, as shown by operation, is exceedingly small. The duodenum is resistant to cancer. The few cancers in this region occur as a rule in adenomas, or in a duct entrance, rarely in ulcer. The influence of the duodenal secretion which passes into the stomach through the gastro-enterostomy opening to some extent lowers the acid and changes the environment by overcoming retention. This possibly has some effect in checking the effects of irritation of ulcer or even the activity of cancer. Bamberger's statement, that of 1,025 patients who had gastro-enterostomies and who were observed for some time, only twenty-two developed cancer, should apply only to gastric ulcer. If more than eight hundred duodenal ulcers are withdrawn from this number, the twenty-two patients will be equivalent to approximately one in six.

In order to emphasize the greater danger from gastric than from duodenal ulcer the data from Hunter's report are summarized.

OPERATIVE RESULTS

In Hunter's investigation in behalf of the New York Life Insurance Company to determine a basis for insurance following operation for gastro-enterostomy for ulcer, the results of 2,431 consecutive gastro-enterostomies performed during several years at our clinic were studied. All but 108 patients were traced, twenty-two of whom had had ulcers of the stomach. Five hundred and twenty-one patients with ulcer of the stomach were under observation for an average of three and six-tenths years. The mortality was 17 per cent; the first year it was four and one-third times the death rate in a like group in the general population; the rate diminished during the remainder of the period. One thousand, six hundred and fifty-one patients with duodenal ulcer were under observation for an average of three and four-tenths years; the mortality was 5 per cent., which is approximately that of the normal death rate of an equal number of

persons in the general population of the same average age. Ninety-one persons with gastric and duodenal ulcers were under observation for an average period of three and eight-tenths years; the mortality was 15 per cent. It is impossible to state the exact cause of death in this group of cases as the patients die at their homes and definite reports are rarely obtained.

There is a tendency to belittle the dangers of ulcer of the stomach. The condition occurs less frequently than duodenal ulcer, but is more serious. As a rule, ulcers of the stomach or the duodenum are not operated on early, but only after a complaint of some years' duration. A wide variation in the sensitiveness of

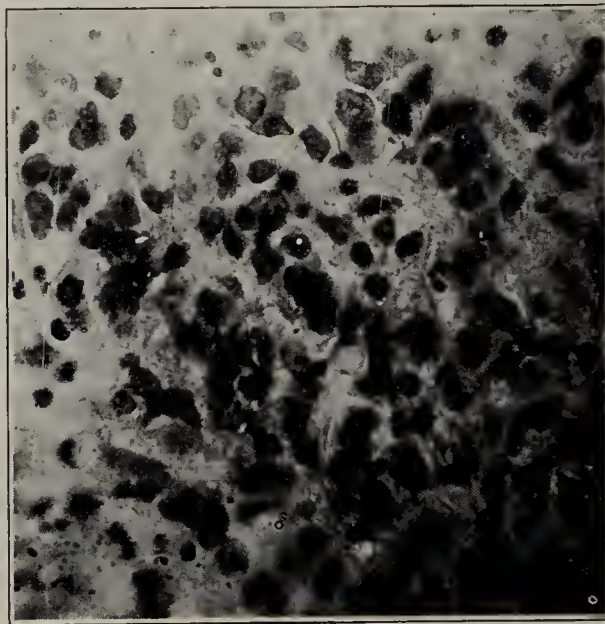


Fig. 4.—High power photomicrograph of the carcinomatous area shown in Figure 3.

the abdomen exists in various persons; some with little trouble complain bitterly. Often patients appear for a general examination because of loss of appetite, loss of weight and strength with increase in pallor and are found to have extensive cancer of the stomach without distress or appreciable bleeding. In 1919 and 1920, at the Mayo Clinic a diagnosis of cancer of the stomach was made in 1,529 cases. In approximately 54 per cent., the condition was considered inoperable because of the extent of the disease, metastasis, complications, and so forth. In 162 an exploratory operation only was performed. In seventy-four gastro-enterostomy was performed for the relief of obstruction as a palliative operation. Two hundred and twenty-three patients were subjected to the radical operation of resection of the stomach. More could have been done for many of the patients had the condition been recognized earlier.

It will take years of observation to estimate fairly accurately the percentage of cancers which have occurred on ulcer, even if from one in twelve to one in six are thus developed. I believe the percentage is higher. Concerning cancer in general, it seems

probable that we have sufficient data to show that several causes contribute to its development, and that irritation, partial destruction, and environment play the most important parts. In this type of cancer some degree of protection can be given to the individual if the disease is recognized early and is relieved.

The exact starting point of cancer of the stomach is unknown and probably will remain unknown, but the early cancers in this organ have been seen in the mucosa in the borders of chronic ulcers.

Simple chronic gastric ulcers in which there are no signs of cancer are found. Similar ulcers in which the normal columnar cells of the gastric tubules are partially or completely replaced by spheroidal or ovoidal undifferentiated cells, the cells being intratubular, are also found, as are ulcers in which the ovoidal or spheroidal cells are also extratubular and hence in the stroma.

PROPHYLAXIS AND SERUM THERAPY OF YELLOW FEVER*

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NEW YORK

Experimental transmission of yellow fever to animals and the isolation of *Leptospira icteroides* was accomplished in Guayaquil in 1918,¹ and repeated confirmations have since been made. During December, 1919, and January, 1920, Noguchi and Kligler, working in Merida, Yucatan, succeeded in transmitting yellow fever to guinea-pigs and isolating *Leptospira icteroides*,² and again in northern Peru later in 1920.³ In the summer of the same year, in Vera Cruz, Perez-Grovas⁴ and his co-workers were able to produce experimental yellow fever and obtain cultures of *Leptospira icteroides*.

The latest confirmation (January, 1921) comes from Le Blanc of the Rockefeller Institute, who has also successfully transmitted the disease from a patient in Vera Cruz to guinea-pigs and has obtained a culture of *Leptospira icteroides*. The cultures obtained by Perez-Grovas and by Le Blanc have been sent to me, and I have found them to be identical with other strains of *Leptospira icteroides*. Gastiaboru,⁵ of the Instituto de Higiene of Lima, transmitted yellow fever to guinea-pigs from cases occurring during an epidemic in Piura, Peru, in 1919. Stimson,⁶ of the U. S. Public Health Service, had demonstrated in 1907 the presence of a spiral organism, now identified as *Leptospira icteroides*, in a preparation, stained by the Levaditi method, of the kidney from a yellow fever patient dying during the epidemic in New Orleans in 1905.

The symptoms and lesions produced in animals by the inoculation of *Leptospira icteroides*⁷ closely parallel those of human yellow fever, and comprise mainly jaundice, hemorrhages and intense acute nephritis. In the guinea-pig the degree of hemorrhage is very marked in the lungs and on the serous surfaces of the stomach and intestines, while minute hemorrhages of various dimensions occur almost constantly from the mucosa into the gastric cavity or intestinal canal. In young dogs the hemorrhages of the lungs are generally slight, but the hemorrhages from the mucosa of the gastro-intestinal tract, producing so called "black vomit" and melena, make the picture almost identical with that of yellow fever in human beings. The lesions produced in the marmoset, the only species of monkey which has so far been found to be susceptible to experimental infection with *Leptospira icteroides*, are intermediary between those of the guinea-pig and those of the dog. While the distribution and degree of hemorrhage in the different species of animals varies, the more or less pronounced fatty degeneration of the parenchymatous cells of liver and kidney is always present.

The specific immunity reaction for *Leptospira icteroides* demonstrated with the serums of yellow fever convalescents in Guayaquil,⁸ Merida,² and Peru³ constitutes further proof of the etiologic relation of this organism to yellow fever. The existence of this property in convalescent serum led to a study of the possibility of preparing a specific immune serum for the treatment of yellow fever and to a consideration of the effect of the inoculation of killed cultures of *Leptospira icteroides* as a means of protection against the disease.

SERUM TREATMENT OF YELLOW FEVER

The Serum Treatment of Animals Experimentally Infected.—Preliminary therapeutic experiments with an immune serum,⁹ prepared in the horse, in experimental yellow fever in guinea-pigs showed that the serum had definite value in checking the progress of the infection and that it was capable, when administered during the period of incubation, of completely preventing the development of the disease. Moreover, when used in the early stages of infection it modified the course of the disease and prevented a fatal outcome. At a later stage, however, when jaundice and nephritis had been present from two to three days and the animal was near collapse, the serum had no perceptible beneficial effect.

The strength of the serum was such that, when injected simultaneously in a quantity as small as 0.001 c.c., it had the power to neutralize 5,000 minimum lethal doses of *Leptospira icteroides*, that is, 1 c.c. of the serum was capable of neutralizing 5,000,000 minimum lethal doses. It was found that infection could be prevented when 0.1 c.c. of the serum was injected at any time during the period of incubation (i. e., within seventy-two hours after inoculation). After onset of fever, that is, ninety-six hours after inoculation, the same amount of serum either arrested the progress of the infection or modified its course to that of a nonfatal infection. On the other hand, as much as 1 or 2 c.c. of the serum failed to prevent fatal termination of the disease when administered after the animals had reached the stage of intense jaundice, descending tem-

* From the Laboratories of the Rockefeller Institute for Medical Research.

1. Noguchi, Hideyo: Etiology of Yellow Fever, Papers I-XII, J. Exper. Med. **29**: 547-596 (June) 1919; **30**: 1-29 (July) 1919; **30**: 87-93 (Aug.) 1919; **30**: 401-410 (Oct.) 1919; **31**: 135-168 (Feb.) 1910; **32**: 381-400 (Oct.) 1920.

2. Noguchi, Hideyo, and Kligler, I. J.: Experimental Studies on Yellow Fever Occurring in Merida, Yucatan, J. Exper. Med. **32**: 601 (Nov.) 1920; Immunological Studies with a Strain of *Leptospira* Isolated from a case of Yellow Fever in Merida, Yucatan, *ibid.* **32**: 627 (Nov.) 1920.

3. Noguchi, Hideyo, and Kligler, I. J.: Experimental Studies on Yellow Fever in Northern Peru, J. Exper. Med. **33**: 239 (Feb.) 1921; Immunology of the Peruvian Strains of *Leptospira icteroides*, *ibid.* **33**: 253 (Feb.) 1921.

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5. Gastiaboru: Personal communication to the author.

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7. Noguchi, Hideyo: Symptomatology and Pathological Findings in Animals Experimentally Infected, J. Exper. Med. **29**: 547 (June) 1919.

8. Noguchi, Hideyo: Properties of Blood Serum of Yellow Fever Patients in Relation to *Leptospira Icteroides*, J. Exper. Med. **30**: 9 (July) 1919.

9. Noguchi, Hideyo: Serum Treatment of Animals Infected with *Leptospira Icteroides*, J. Exper. Med. **31**: 159 (Feb.) 1920.

perature, hemorrhages and nephritis, and were nearing collapse.

Serum Treatment of Yellow Fever in Man.—The serum was first tried in the treatment of human yellow fever in September, 1919, when an American marine on the U. S. S. *Chicago*, off Honduras, was treated by Dr. W. Lyster and Gen. T. C. Pareja. The next patient treated was the Mexican minister to Nicaragua, also by Drs. Lyster and Pareja. The results in these two cases were regarded by Lyster and Pareja, as well as by General Gorgas, who was also present, as definitely indicative of the value of the serum, and led to the treatment of other cases. The total number of treated cases up to Dec. 31, 1920, is 170 (Table 1).

During a small epidemic occurring near Los Amates, Guatemala, in July, 1920, the serum was employed by Dr. Vaughn in four cases, in three of them on or before the third day of illness, in the other later. The three patients treated early all recovered, the other died. In Salvador, forty-two patients were treated with serum by Dr. Bailey, fourteen on or before the third day of illness. Three of the fourteen, however, received a quantity of serum which, Dr. Bailey states, was "too small to have any material effect" (20 c.c. in the course of the third and fourth days). These three patients died; the other eleven all recovered.¹⁰ Twenty-eight patients were treated later than the fourth day of illness, and in these cases the usual high mortality rate of yellow fever (46 per cent. in this instance) was apparently unaffected by the use of the serum. In Mérida, eight cases have been treated by Drs. Hernandez, Lara and Villamil, who report four recoveries among four cases treated with serum before the third day and four deaths among those treated later. In Vera Cruz, in 1920, sixteen cases were treated with serum on or before the third day without any mortality, while three patients treated after the third day all died.

TABLE 1.—ANALYSIS OF ONE HUNDRED AND SEVENTY CASES OF YELLOW FEVER TREATED WITH ANTI-ICTEROIDES SERUM

	Treated on or Before 3d Day			Treated After 4th Day		
	Total	Recovered	Died	Total	Recovered	Died
Group 1:						
Salvador, 1920.....	14	11	3*	28	15	13
Guatemala, 1920.....	3	3	0	1	0	1
Honduras, 1919.....	1	1	0	..	..	..
Mexico, 1920						
Mérida.....	4	4	0	4	0	4
Vera Cruz.....	16	16	0	3	0	3
Gutierrez Zamora..	17	17	0	1	0	1
Peru, 1920	4	3	1†	..	..	..
Total, Group 1....	59	55	4 (6.7%)	37	15	22 (59%)
Group 2:						
Tuxpan, Mexico, 1920	36	27	9 (25%)	38	21	17 (45%)
Total, both groups..	95	82	13 (13.6%)	75	36	39 (52%)

* Total of 20 c.c. in two days, begun on the third day, undoubtedly too small to have any material effect (Dr. Bailey).
† Patient subjected to forced journey during first two days of illness; disease extremely severe; patient exhausted, with severe nephritis, when admitted to the hospital.

In Gutierrez Zamora, Mexico, eighteen patients were treated with the serum. All recovered except one patient who did not receive serum until the end of the fourth day of illness. In the same town there were three cases seen before the third day of illness but not treated with serum; these three patients died. In Peru, four cases were treated early in the disease, with one death. This last case was exceptional, however, in that

10. It has been recommended that when there is no danger of anaphylaxis, 60 c.c. of serum be given intravenously at the earliest opportunity.

the boy had been brought through a tropical desert after onset (a journey of thirty-six hours) and had severe nephritis when admitted to the hospital. In Tuxpan, Mexico (Table 1, Group 2) seventy-four cases were treated with serum, thirty-six on or before the third day. The results reported from Tuxpan are the least favorable of all those reported—nine deaths and

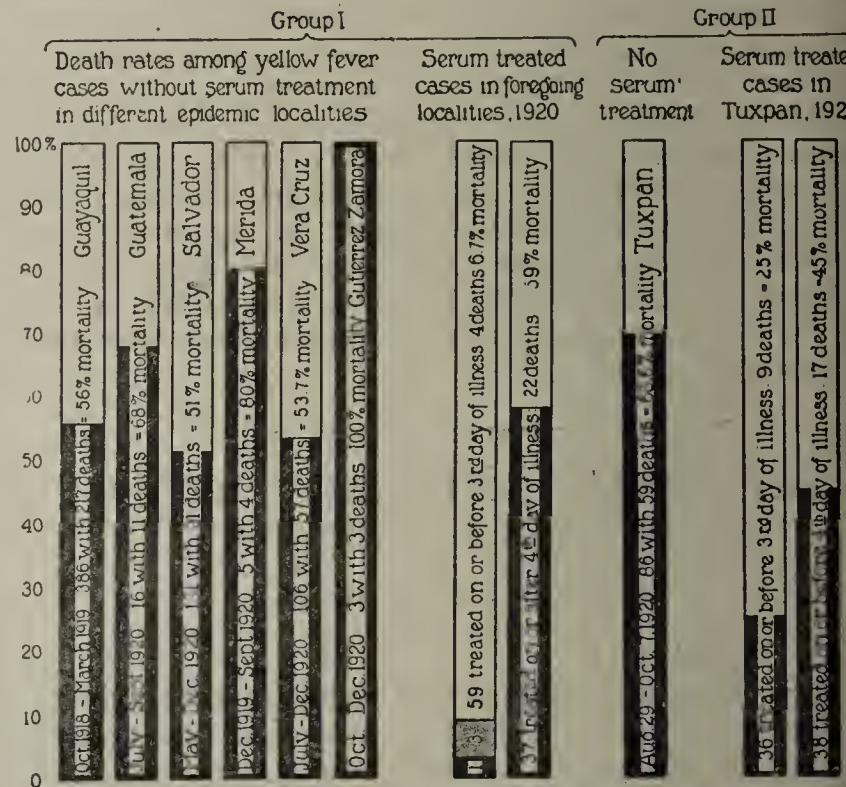


Chart 1.—Death rates among yellow fever patients with and without serum treatment.

twenty-seven recoveries (25 per cent. mortality). The remaining thirty-eight cases were treated later than the third day, with twenty-one recoveries and seventeen deaths (45 per cent. mortality).

An examination of the results of serum treatment in various localities shows a general agreement among them: the earlier serum is given, the lower the mortality. Exclusive of the Tuxpan series, fifty-nine patients were treated on or before the third day; of these, fifty-five recovered and four died. It has already been explained that in three of the four cases in which death occurred, the total amount of serum administered during a period of two days was 20 c.c.; the fourth case is that of the Peruvian boy who was subjected to a long journey after the onset of fever. The total mortality in this series was, therefore, 6.7 per cent. In Tuxpan the mortality among cases treated early was 25 per cent. (seventeen were treated on the third day alone, with 19 per cent. mortality), while the death rate of later treated cases was 45 per cent. The reduction in mortality among cases treated on or before the third day is undeniable. On the other hand, the serum does not seem to exhibit any beneficial effect on the course of the disease when given after the fourth day of illness.

For comparison there are given in Table 2 the death rates of cases not treated with serum during the various epidemics. They vary according to the number of cases included in the statistics—the fewer the cases, the less reliable the percentages. The lowest rate was in Salvador (51 per cent.), the highest in Merida (80 per cent.) and Gutierrez Zamora (100 per cent.). Comparison of the mortality rates among these untreated cases with those of cases treated with serum on or before the third day brings out a great difference in favor of the treated cases which is difficult to explain on the ground of acci-

ental coincidence. Apparently the serum actually helped to cut the infection short before it had caused irreparable injury to the organs, particularly the kidneys. Once such injuries have been done, however, as is usually the case in severe yellow fever by the fourth day of illness, an antimicrobial serum cannot be expected to effect any restoration. In certain of these

TABLE 2.—DEATH RATES IN VARIOUS LOCALITIES AMONG YELLOW FEVER CASES NOT TREATED WITH SERUM

	Cases	Deaths	Mortality Percentage
Guayaquil, Oct., 1918-Mar., 1919.....	386	217	56.0
Guatemala, July-Sept., 1920.....	16	11	68.0
Salvador, May-Dec., 1920.....	181	91	51.0
Merida, Dec., 1919-Sept., 1920.....	5	4	80.0
San Cruz, July-Dec., 1920.....	106	57	53.7
Santerres Zamora, 1920.....	3	3	100.0
Tuxpan, Aug. 29-Oct. 7, 1920.....	86	59	68.8
Total.....	783	442	56.4

ases, however, a marked improvement has been reported to have occurred after the administration of serum, owing probably to the fact that parenchymatous disorganization was proceeding slowly.

VACCINATION AGAINST YELLOW FEVER
Vaccination of Experimentally Infected Animals.—Early experiments showed that the injection of killed cultures of *Leptospira icteroides* into susceptible animals conferred on them a state of immunity which rendered them resistant to subsequent inoculation with virulent cultures.¹¹ The duration of this immunity has been found to be at least five to six months; the maximum duration is yet to be determined.

Vaccination of Human Beings.—The absence of any ill effects following the injection of killed cultures into animals led to the application of a similar procedure to human beings. The results of the early experiments in Guayaquil have already been reported.¹¹ The potency of the vaccine available at that time was rather low

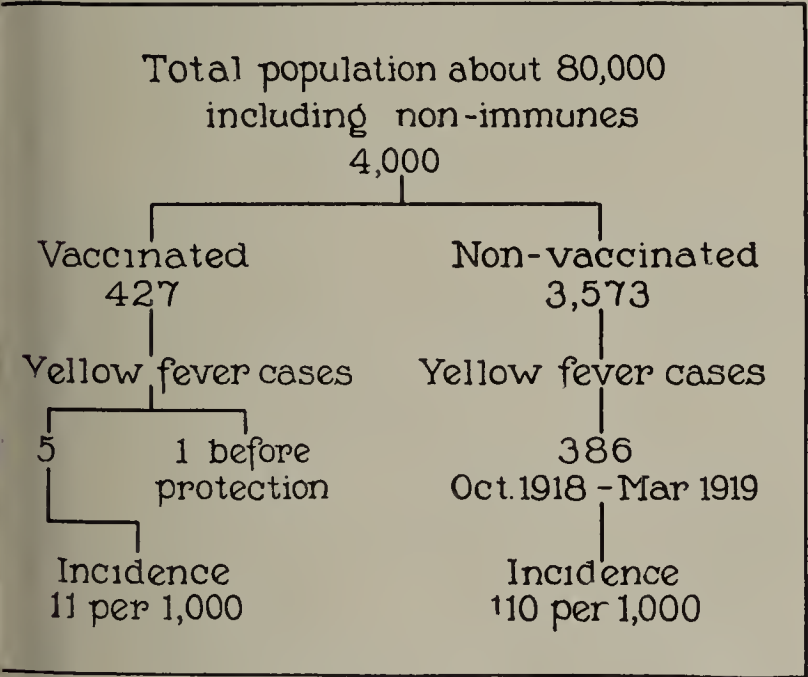


Chart 2.—Yellow fever vaccination, Guayaquil, Ecuador, 1918, 1919.
2,000,000 leptospiras per cubic centimeter, as compared with 2,000,000,000, which represents the concentration of the preparation now used), yet its protective effect was undeniable. No cases of yellow fever developed among those persons who received 2 c.c. of vaccine. The number of nonimmunes in Guayaquil was not definitely known, but a liberal estimate would place

11. Noguchi, Hideyo, and Pareja, Wenceslao: Prophylactic Inoculation against Yellow Fever, J. A. M. A. 76: 96 (Jan. 8) 1921.

it at about 4,000. Of these, 427 were vaccinated, of whom five later contracted yellow fever—a morbidity rate of 11 per thousand. During the same period (October, 1918, to March, 1919) there were 386 cases of yellow fever among the unvaccinated, a rate of incidence of 110 per thousand (386:3,577) (Chart 2).

The strength of the vaccine, as already noted, has since been greatly increased, and preparations of many times the concentration of that used in Guayaquil have been employed by Lyster, Bailey and Vaughn in Guatemala and Salvador, Vasconcelos. Casasús, Lynn and others, in Mexico, and by the department of health of Peru. The additional number of persons vaccinated is about 7,500. The vaccine has been given in two subcutaneous injections of 2 c.c. each, when possible, although, as the table shows, circumstances often prevented the administration of the second injection. The results of all vaccinations to Dec. 31, 1920, are summarized in Table 3.

TABLE 3.—VACCINATION AGAINST YELLOW FEVER IN MAN

	Number Vaccinated	Number Receiving Two Injections
Guayaquil, 1918-1919	427	.....
U. S. S. Chicago, 1919.....	75	75
Marines and others, 1919.....	250	250
Amapala, 1919	175	175
Salvador, 1920	3,607	138
Guatemala, 1920	1,383	592
Tuxpan, Mexico, 1920.....	2,000	2,000
Tambogrande, Peru, 1920.....	47	.....
Total	7,964	3,230

The incidence of yellow fever among the vaccinated may be considered in two groups: (a) those in whom the disease developed within a comparatively short time—from one to ten days after the time of the last inoculation, and (b) those in whom infection took place one month or longer after vaccination. Since the longest incubation period in yellow fever in man, as experimentally determined by the French Yellow Fever Commission in Brazil, is twelve days, and the average from three to six days, the group of vaccinated individuals under Group a, that is, those who contracted yellow fever within from one to ten days after vaccination, must be excluded from a consideration of the protective effect of the vaccination. On the other hand, the occurrence of yellow fever among vaccinated persons after the lapse of one month or longer would indicate inefficacy of vaccination as a prophylactic measure. As the statistics given in Table 3 show, 4,230 persons received two inoculations of the vaccine; among these all the cases which occurred fall in the a group. There were eighteen such cases, all of which showed the symptoms of yellow fever within from one to ten days after the last inoculation. The remaining 3,734 persons received only one injection of vaccine; among the number, five typical cases of yellow fever (Guayaquil, 1918-1919¹¹) and five in which the symptoms were suspicious (Dr. Bailey's report from Salvador, 1920) arose in from one to three months. It has already been noted that the vaccine employed in Guayaquil was several hundredfold less strong than that used later in Central America and Mexico. In addition to these ten cases there were also, in the single vaccination group, eight persons in whom yellow fever developed within from two to ten days after vaccination (one in Guayaquil, five in Salvador, one in Guatemala, and one in Tambogrande, Peru).

The epidemic of yellow fever in Salvador broke out in May, 1920. Vaccination was begun in August, and

up to Dec. 31, 1920, 3,607 persons in the infected areas had been vaccinated, 138 of whom had received two injections of vaccine. The total number of non-immunes in the ten infected districts was, according to Dr. Bailey's estimate, 113,000. Among those who received two injections of the vaccine, no case of yellow fever occurred. In the group receiving a single injection

fever occurred among vaccinated persons after the lapse of two weeks following vaccination, while the epidemic had remained unabated in intensity, as shown by the incidence among the unvaccinated during the same period, seems to indicate a definite protective effect of vaccination (Chart 5).

In the small town of Tambogrande, in northern Peru, with 500 inhabitants, two isolated cases of yellow fever occurred. Forty-seven persons in the neighborhood of the primary focus were subsequently vaccinated (Dr. Valcárcel). Within two weeks after vaccination, eighteen new cases arose among the villagers; one of these persons had been vaccinated, but only ten days previous to the onset of disease.

Yellow Fever Vaccination Salvador, 1920

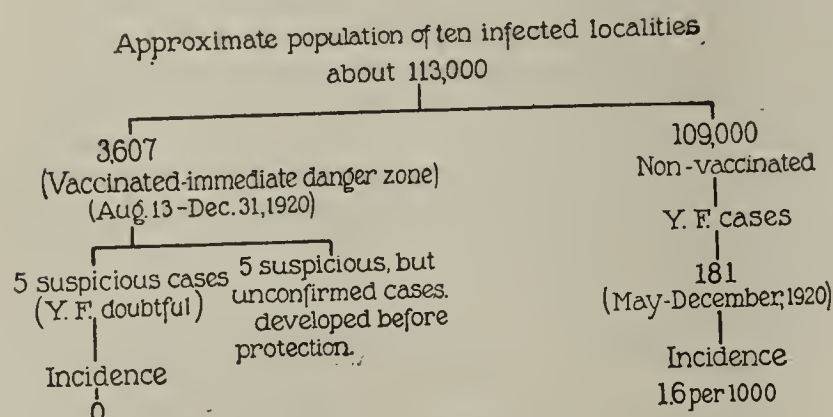


Chart 3.—Yellow fever vaccination, Salvador, 1920.

tion, however, there occurred, within ten days after vaccination, as already mentioned, five cases which Dr. Bailey regarded as suspicious of yellow fever, and, still later, five more suspicious cases. Of the latter patients, three died and came to necropsy, but the diagnosis of yellow fever was not definitely confirmed. During the same period 181 cases of yellow fever occurred among the nonvaccinated population (Chart 3).

In Guatemala, in the small town of Los Amates, with about 660 inhabitants, there were twelve cases of yellow fever from June to August, 1920. Vaccination was begun in August, and 617 vaccinations were carried out between August 20 and August 30. No case of yellow fever developed among the vaccinated, and only one among the few left unvaccinated at Los Amates. The remainder of the nonimmune population was vaccinated, September 18, after which date no further case occurred. At Virginia one case of yellow fever was discovered, September 7, and the entire population (350) was vaccinated, September 26-27. No further case occurred. In Quirigua and Puerto Barrios, although no cases of yellow fever had occurred, 105 persons were vaccinated. No case of yellow fever developed. The total number of vaccinations in Guatemala was 1,383, and 138 persons received two injections (Chart 4).

In Tuxpan, Mexico, with about 6,000 inhabitants, eighty-six cases of yellow fever occurred during a period of thirty-nine days from Aug. 20 to Oct. 7, 1920, a morbidity rate of 14 per thousand. Vaccination was begun, October 7, and during the subsequent twenty-nine days (October 7 to November 5) 2,000 non-immune persons were vaccinated, among whom seventeen contracted yellow fever within from one to ten days after vaccination. No other cases developed among the vaccinated during the epidemic period, which ceased in December, 1920. On the other hand, during a period of eighty-five days (October 7 to December 31) ninety-five cases occurred among the unvaccinated group, forty-five of them between October 7 and November 21, and twenty-one between November 22 and December 31. Hence the morbidity rate among the 4,000 vaccinated during the period of eighty-five days was 28 per thousand. The fact that no cases of yellow

COMMENT

It is understood that vaccination constituted only a part of the campaign against yellow fever, and in all these localities it was carried out simultaneously with the antistegomyia campaign. Just what part the vaccination played in checking the further spread of the disease is therefore not easily estimated; but one fact stands out, namely, that practically all persons vaccinated escaped yellow fever, notwithstanding the opportunities for infection to which both vaccinated and unvaccinated were alike exposed under otherwise identical conditions, as shown by the fact that during the period of ten days following vaccination before the protective effect of the vaccine could have developed, the number of victims of yellow fever among vaccinated and unvaccinated was equally great. Vaccination, which protects the nonimmune person from infection, is a valuable weapon in itself, but it does not supplant the method of elimination of yellow fever by the antistegomyia campaign.

SUMMARY

The transmission of yellow fever from man to guinea-pigs and the isolation of *Leptospira icteroides* have been repeatedly accomplished by various workers in the course of different epidemics; in Guayaquil by Noguchi (1918); in Merida and Peru by Noguchi and

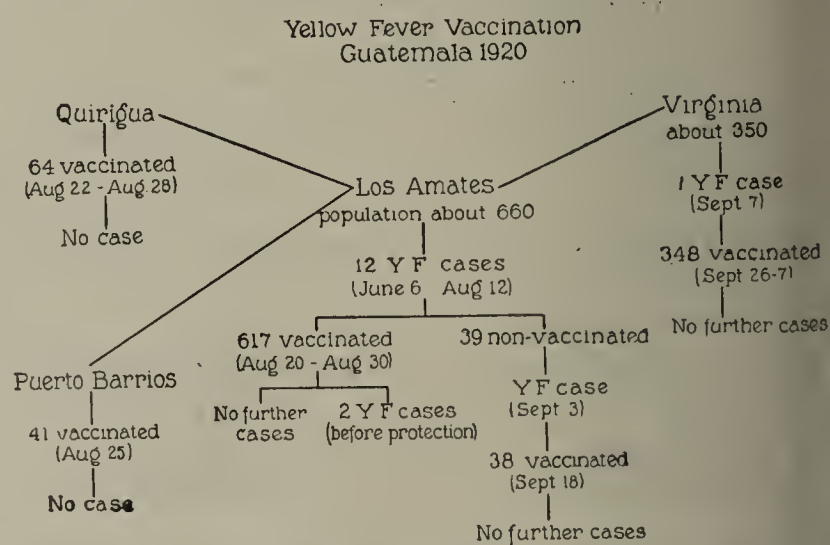


Chart 4.—Yellow fever vaccination, Guatemala, 1920.

Kligler (1919-1920); in Piura by Gastiaboru (1919) in Vera Cruz by Perez-Grovas (1920) and by Le Blan (1921).

Anti-icteroides serum reduces the mortality in yellow fever when used on or before the third day of the disease. Of 170 cases, ninety-five have been treated on or before the third day, with thirteen deaths (13.6 per cent. mortality), while the average death rate of untreated patients during these epidemics has been 56.

per cent. (442 deaths among 783 cases not treated with serum). On the other hand, treatment with serum after the fourth day has no appreciable effect, since there were thirty-nine deaths among seventy-five cases (52 per cent. mortality).

Prophylactic inoculation by means of the injection of 2 c.c. of the killed culture of *Leptospira icteroides* (containing at least 2,000,000,000 organisms per cubic centimeter) is of definite protective value. Among 3,230 persons vaccinated twice, no case of yellow fever developed, while 278 cases occurred among the non-vaccinated (Guatemala, Salvador, Tuxpan) notwith-

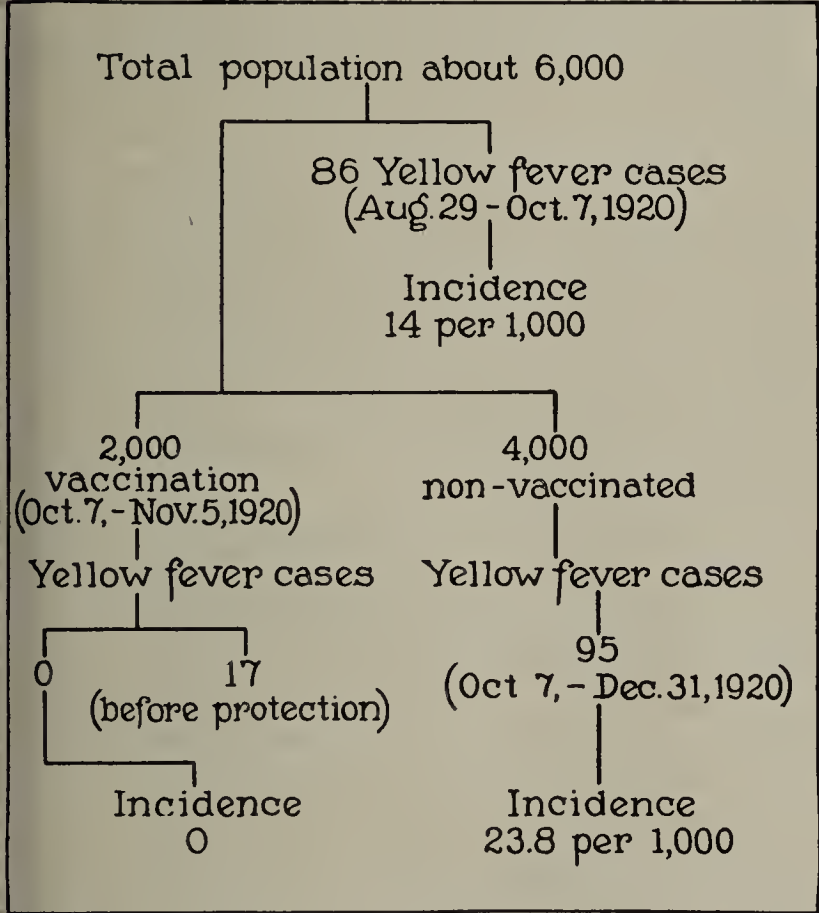


Chart 5.—Yellow fever vaccination, Tuxpan, Mexico, 1920.

standing the fact that both groups of individuals were equally exposed to infection. Among 4,307 persons receiving only a single inoculation of the vaccine, only five suspicious cases (Salvador) developed.

The protection resulting from vaccination does not become effective until about ten days after the last injection, as shown by the frequent case incidence occurring among the vaccinated population within from one to ten days after they were vaccinated. There were twenty-three such cases among 7,537 persons who were vaccinated with the standard vaccine.

NOTE.—The records of vaccination and serum treatment presented here comprise the work of a number of observers. For statistics from Central America I am indebted first to Dr. Theodore C. Lyster and Dr. Wenceslao Pareja, and then to Dr. Charles A. Bailey (Salvador) and Dr. Emmett I. Vaughn¹² (Guatemala); for the records of Mexican cases to Dr. A. B. Vasconcelos¹³ and Dr. Graham Casasús of the Consejo Superior de Salubridad, and to Dr. Diego Hernandez of the Junta de la Sanidad de Yucatan; also to Dr. T. J. Blanc of the staff of the Rockefeller Institute, who has been working in Vera Cruz; the Tuxpan statistics were furnished by Dr. W. J. Lynn and Dr. Guadarrama; the work in Ecuador and Peru was done with the cooperation and assistance of the Ecuadorean and Peruvian health authorities.

12. Dr. Lyster and his associates are intending to present their own experiences in a paper to be prepared by them.
13. Dr. Vasconcelos's details regarding results in Mexico are soon to appear in print.

SUBJECTIVE SIGNS IN DIAGNOSIS *

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This paper is designed to show that subjective sensations of patients have a validity not inferior to the facts which are denominated objective in contradistinction. It is customary to deride what is called subjective, i. e., what we learn by the revelations of the patient about himself even when elicited by examination. By ignoring these data failure is courted, of which scores of examples could be adduced. The reason of this derision of the subjective is largely a confusion on the part of the examiner between the actual subjective feelings of the patient and a very different phenomenon, viz., the interpretation the patient places on these feelings, which is very often extremely erroneous, as all of us know.

But patients are not the only sinners in this respect, for the history of medicine is crammed with fallacious interpretations of objective signs, such as the appearance of a bacillus, the nature of a chemical reaction, the significance of a pathologic process. Even today the fallacious interpretation of the Wassermann reaction still occasionally occurs. It is only yesterday that there was an almost general refusal to think of tabes as syphilitic, although the objective pathologic appearance of the spinal roots were unequivocally so. Even now, in many minds, a special validity is implicitly attributed to signs requiring laboratory procedures, as against signs ascertainable at the bedside without chemicals or registering apparatus.

There is a tendency in our profession toward besetments. In the main the inductive process is put to sleep. Thus, when a medical man finds a microbe amid the facts, it grows and grows till it becomes the macrocosm of his consciousness. In another man a chemical reaction is all dominant. In a third, it is the registering apparatus which impedes his thinking. To the three slaves of the objective must be added that acolyte of the psyche, who is allied to these objectivists through an acquired faculty of discerning abstruse psychologic reactions in his patients. To paraphrase an ancient proverb, "He cannot see the wood because of the rabbits in it." He is no different from the first three physicians; for, although the signs he deals with are called subjective, yet to him they are just as much objective data as a reflex, a chemical reaction, a difference of percussion, etc. And they are indeed objective, the error not being one of clinical fact but one of the clinician's interpretation by besetment by one who is intoxicated by the exuberance of his own "psychosity."

In what are called the psychoneuroses, of course, it is in the subjective aspects that entire reliance has to be placed; for in these individuals there is to be found nothing but what the patient himself reveals. However, nowadays, only the most reactionary dare deny the pragmatic power of the psychotherapist to bring well-being to the thousands of people who are sociologically inefficient and personally miserable

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* In medical nomenclature the sign is taken as a manifestation elicited by the examiner, and of which the subject does not complain. A symptom is looked on as that of which the patient is conscious and can complain, and the word "subjective" is used in contrast to the word "objective" to mean that which, while felt by a subject, cannot be directly verified by an examiner, while objective is looked on as verifiable. According to these definitions, the title "Subjective Signs" is a contradiction in terms.

because of sufferings entirely without the signs regarded as objective. It is quite true that to this thesis there are still objectors who continue to present trite facts illustrating the principle that an undetected disturbance of the body may produce discommoding psychologic symptoms which may be regarded erroneously as psychogenic, which symptoms disappear as soon as the disorder of the body is rectified. Such an instance was that of the psychasthenic forester whose growing inability to deal with his official subordinates might have been attributed to prolonged absence from his family and the anxieties contingent thereupon. Having, however, an adequate acquaintance with psychasthenic characters, I did not fall into this error, but fell into another by attributing the state to the kind of physical inadequacy induced by the poor adaptation to the sedentary life in an office after being years in the field. The real interpretation was revealed by the extraction of an inflamed tooth, after which immediate relief occurred. Such instances might be multiplied indefinitely; and it is to facts of this nature that must be attributed the prevalence of the treatment of neurotic states by such empiric procedures as oophorectomy, turbinectomy, tenotomy or refractive corrections, suspension of the colon, manipulation of the spine or orthopedic adjustment, all of which are good in their right place, but very bad when applied empirically without an adequate diagnosis, the lack of which is so often due to the ignoring by the physician of subjective signs.

FALLACY OF ATTRIBUTION TO ORGAN

In neurology proper, perhaps the most conspicuous example of the exceeding value of subjective signs is furnished by the sensation of numbness, more especially when this is intermittent and widespread. These are the very qualities to which it has been the fashion to attribute fallaciousness and to regard as the products of imagination, hysteria. In reality, these attributes indicate oscillation in the physical state, at the period when changes are so impalpable as to escape diagnosis by our present objective methods, a state which reveals itself solely by these subjective signs. I refer to the incipency of the changes in the spinal cord concomitant with the disorder known as pernicious anemia. Many of these patients present for years numbness or tingling in the fingers or toes without any suspicion arising of blood changes, and possibly without the objective signs which we require in establishing disease of the spinal cord. I have yet to see a case, however, in which these were absent when it came to examination, but I have never seen a case which has not had a long history of the subjective signs of which I speak, long anteceding my examination. For example:

A man, aged 61, referred by Dr. Thompson. Two years ago, numbness of thumb and toe after dancing, followed by girdle sensation and gradual numbing of hands a year and a half ago. Progressive difficulty in walking. Great weakness. Examination: reflexes feeble, Achilles and arms absent. Left cremaster absent. Left abdominal feeble. Plantar flexion fair. Pupils active. Prick felt. Deep pain diminished in L. quadriceps, and R. hamstrings and calf, and L. radius. Vibration absent below L. 5; diminished in lumbar spine. Spacing fair. Finger to finger slow and inaccurate. Speech thickened. Diagnosis: spinal sclerosis from pernicious anemia. Blood count confirmed this. Treatment has improved him.

In another case numb feelings in the fingers had existed for over six months without any significance being attached to them. But in this case even when difficulty in walking occurred no suspicions were

aroused and a fantastical diagnosis of arterial constriction was supposed to account for the incapacity. Examination quickly revealed the sclerosis of the spinal cord and led to a diagnosis of an idiopathic anemia. In still another case even a young neurologist attributed to hysteria a patient's relation of paresthesiae characteristic of alterations of structure. Examination quickly showed a sclerotic spinal cord.¹

Paresthesias at the roots of the limbs characterize lesions in the thalamic region. They are frequent in encephalitis and have again been adjudged hysterical in cases without paralyses, especially if emotional disturbances are prominent. This error is avoided by clinicians who do not ignore subjective signs.

In some cases of arteriosclerosis, tingling and numbness occur also. Never must they be adjudged as hysterical.

SENSATIONS PROVOKED BY EXAMINER

In investigating these, too, the patient's own account has to be relied on, so that fundamentally this method is no less subjective. For instance, the Tinel tingling sign can be relied on only in an honest subject. It is an error to suppose that it is confined to nerve section. I am at present observing its progress in a patient with sciatica of the external popliteal nerve incurred during pregnancy.

An equally reliable sign to that of Tinel is another subjective difference of sensation experienced by the patient when the skin is stroked over an area the nerve supply of which may not seem otherwise impaired at all. Patients themselves can map out areas in this way with great exactitude. The sign is found in mild cases of meralgia paraesthetica or other forms of neurodermatitis.

Hyperalgesia is nowadays sufficiently esteemed as a sign as regards the skin; but local hyperalgesia of muscle, an equally valuable sign, receives inadequate recognition even by neurologists. In a mild case of polyneuritis, diagnosis was recently missed and the patient permitted to visit an osteopath, even though preceding diphtheria should have aroused suspicion. The earliest sign in this case was musculotendinous hyperalgesia.

But muscular hyperalgesia is even more often important in disease of the viscera. Every surgeon knows this of appendicitis and cholecystitis. It is less known regarding pulmonary inflammations. Difference in the tenderness of thoracic muscles corresponding to the spinal segment from which arises the sympathetic ramus going to inflamed areas is inadequately utilized by internists as a sign. A segmental hemihyperalgesia of this kind is a very frequent phenomenon and it may affect the cutaneous segmental distribution as well as the muscular or articular nerve supply.

These sensory signs referred from viscera are of a quite different character to the sensory symptoms caused in the course of emotional disturbances and sometimes objectivated by patients to the viscera in which they seem to be felt. Nowadays it has come to be realized, particularly concerning the stomach and sometimes the heart, that the symptom the patient emphasizes is a consequence of an emotional reaction, of which it is really a part.

It is very important to compel patients to give us a clear introspection of sensations of this kind. They may be differentiated by the absence of the peripheral

1. Williams, T. A.: The Causes of Emotivity, and Their Management, J. A. M. A. 75: 523 (Aug. 21) 1920.

hyperalgesia which occurs from direct visceral irritation. In these cases, of course, the problem is one of psycho-diagnosis and not of neurologic investigation. In both cases, however, clinical power comes only from a due appreciation of the subjective signs; and this demands of the patient precise observation, which is not so rare as some clinicians believe, along with its clear expression, which tends much more often to be clouded by conventional fallacies of nomenclature gathered by report from the body of constantly shifting popular knowledge of hygiene and symptomatology. The clinician who knows what he is about will easily direct the patient away from interpretations and set him upon recounting his observations as naively as possible.

The enumeration of occasions for the use of subjective signs would extend beyond the limits of a short paper, but attention must be drawn to two more in particular because of the frequency with which they are ignored to the detriment of patients.

I refer to the characters of recurrent headache, particularly as to situation and kind. As to headache, it is not rare for patients who have suffered for years to fail to mention it at all to a doctor, so accustomed are they to regard it as a part of themselves or insusceptible of cure. This fallacy depends on the prevalent medical doctrine that migraine is a hereditary fatality irremediable by medical art. While the tendency is hereditary, the pathogen can be modified, the patients vastly relieved by attenuation of the severity of the headache and by great lengthening of the interval between attacks, which from weekly or almost daily ensue every few months or when infraction of prophylactic rules is indulged.

As to pituitary headache, the subjective recital of its location is often the most important angle fact in its diagnosis.

Of one other subjective sign, a word must be said—of vertigo. This is too often regarded as trifling by physicians, and the patient is neglected in consequence. Its importance was manifested in a recent striking case only because it reached the point of disorientation, so that the man was almost incapable of finding his way in the automobile. The physician regarded it at first as a psychosis, but an examination quickly showed vestibular and oculomotor signs which indicate a lesion, which was then placed in the subthalamic region. The pathogen syphilis was detected and the patient vastly improved by treatment, solely because the subjective sign which led to a diagnosis incommoded him so intensely.

Countless are the cases of vertigo indicative of cerebral arteriosclerosis, neoplasm and syphilitic endarteritis when diagnosis is reached only after irreparable damage has occurred because adequate significance is not attached to the condition by clinicians who habitually fail to take account of subjective signs.

Teaching Unit of Tuberculosis.—A proper teaching unit should afford the fullest facilities for theoretical and practical instruction in all aspects of the tuberculosis problem. And these facilities should be available not only for the student, but also for the practitioner of medicine. To the latter they should be available in the form of short, carefully planned, intensive, postgraduate courses, to which every inducement should be given for his attendance. Now that the treatment of tuberculosis is so rapidly being taken over by the state it would be a sound and wise policy if these postgraduate courses were not only available free of all cost, but also that the graduate student were boarded and lodged free of expense.—H. Gauvain, *Brit. J. Tuberc.* 15:3, 1921.

THE SERIAL QUANTITATIVE METHOD OF CULTURE IN THE STUDY OF RESPIRATORY DISEASE *

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BALTIMORE

Of all the regions of the body, none offer more difficulties to bacteriologic study than do the upper air passages. After more than thirty years of investigation the cause of the large and ever present group of infections included under the designation of colds, grip and influenza is still unknown, and even the significance of the various organisms found in association with these conditions is but little understood. Yet this is not surprising when one considers the conditions existing in the upper air passages—a region of great anatomic complexity occupied by a profuse normal flora which is constantly modified by the entry and exit of extraneous organisms. A more detailed analysis of the difficulties presented by respiratory bacteriology shows that they may be grouped under several heads.

DIFFICULTIES

Technical.—The initial collection of representatives of all varieties of organisms present in the upper air passages is by no means simple. Even with the most careful swabbing many areas must be neglected, and organisms lurking in tonsil crypts, crevices of the mucous membrane, in the sinuses and in the deeper nasal passages may be passed over. The crudity of the swab method may be readily demonstrated by making cultures from the same individual at brief intervals, using a technic as nearly as possible constant, and seeing the difference in the proportions of the bacteria obtained. But even if all varieties of organisms present adhere to the swab in their true proportions, distorted results may be obtained owing to the technicalities of mediums and of plating. The usual plate culture from the throat shows a more or less confluent mass of growth from which the various kinds of bacteria are isolated with considerable difficulty. Under the best of conditions slowly growing and delicate organisms may be largely or entirely overgrown by the more hardy flora, and bacteria present in only small numbers must often be overlooked. This fact is readily illustrated by comparing the number of pneumococcus carriers demonstrable by culture and by the more delicate method of mouse inoculation.

Interpretative.—With the actual results of the culture before him, the examiner faces the problem of interpretation, which is by no means simple. One must decide in the case of each organism whether it is a normal inhabitant, or whether it is being carried without having any special pathologic significance, or whether it bears a definite relation to present or recent disease.

CRITICISMS OF METHODS IN GENERAL USE IN STUDYING RESPIRATORY DISEASE

Even a superficial examination of the literature on respiratory diseases makes it clear that various workers have obtained quite contrary results. In the case of colds, for example, a wide variety of organisms¹

* From the Biological Division of the Medical Clinic, Johns Hopkins University and Hospital.

1. Bloomfield, A. L.: Variations in the Bacterial Flora of the Upper Air Passages During the Course of Common Colds, *Bull. Johns Hopkins Hosp.*, to be published.

have been incriminated, such as *Micrococcus catarrhalis*, staphylococci, streptococci of various sorts, and influenza bacilli. In attempting to explain these contradictions, the following points may be suggested: (1) Differences in the manner of collecting material. Here we find that the methods, while in the main similar, differ in detail. Some workers have swabbed various areas in the upper air passages, others have used expectorated material or nasal washings. (2) Differences in mediums. Wide variations in results may follow the use of different mediums. The remarkable discrepancies in the reported incidence of influenza bacilli in the throat are clearly due to this cause. (3) Variations in technic of plating. This is a point of special importance. The usual method of rubbing or streaking the swab over the surface of the plate yields a confluent growth in which one or another

in one culture may be different from that of thousands of colonies of this organism recovered repeatedly from the same individual over a long period of time. To see whether the problem could in any way be simplified, we have employed a serial quantitative method of culture in normal individuals and in cases of respiratory disease the results of which we wish to outline now.

Methods.—A cotton swab is passed systematically over the soft palate, both tonsils, and the posterior pharyngeal wall as high as one can reach. This swab is then rubbed over the surface of the plate of medium. With a bent glass rod the organisms are spread uniformly over the surface of the plate. The same rod, with whatever bacteria adhere to it, is then rubbed over a second and a third plate. In this way a discrete growth of colonies is obtained which allows

TABLE 1.—PROTOCOL OF NORMAL PERSON (CASE 9, ER.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	Hemolytic Streptococcus	Pneumococcus	Influenza Bacillus	Staphylococcus Albus	Meningococcus	
Mar. 4	∞	∞	0	0				
Mar. 9	∞	50	0	0	0	0	0	A gram-positive diphtheroid, many colonies
Mar. 16	∞	∞	Alpha type, many colonies	Type IV, many colonies	0	0	0	A coarse, gram-positive coccus, many colonies
Mar. 25	∞	∞	Alpha type, many colonies	0	100	0	0	
Apr. 5	∞	∞	0	0	A few	0	0	
Apr. 13	∞	∞	0	0	0	0	0	Several hundred colonies of a gram-negative bacillus; large gray colonies, with hemolysis
Apr. 16	50	Many	0	0	0	0	0	Many colonies of a coarse, gram-positive coccus, not <i>S. albus</i>
Apr. 20	∞	∞	0	0	Many	3	0	50 colonies of same gram-negative bacillus as found in culture of April 13
Apr. 25	∞	∞	0	0	Many	0	0	

* The normal flora is present. In addition, influenza bacilli and other bacteria were transiently present. A mild pharyngitis lasting two days preceded the appearance of the alpha hemolytic streptococcus recovered on March 16 and March 25.

TABLE 2.—PROTOCOL OF A CASE IN WHICH THERE WAS A SIMPLE RESPIRATORY INFECTION (CASE 1, SL.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	B. Influenzae	Hemolytic Streptococcus	Pneumococcus	Comment	Clinical Notes
Jan. 4	∞ At least two varieties	∞	100 colonies (hemolytic)	0	0	Many colonies of a minute, gram-positive organism; a few colonies of <i>S. albus</i>	Cold began, January 2; nose occluded, throat raw; tonsils removed; nasal and pharyngeal mucous membranes reddened
Jan. 7	∞	∞	Many colonies (hemolytic)	0	0	.....	Convalescent
Jan. 10	∞	∞	0	0	0	A few colonies of <i>S. albus</i>	Well

* Clinically, the case was one of an uncomplicated cold. The members of the normal flora—nonhemolytic streptococcus and gram-negative cocci—were present in large numbers in all the cultures. *Staphylococcus albus* was present in small numbers in the first and third cultures. In the first culture there were many colonies of a minute, gram-positive organism. Hemolytic influenza bacilli were present in the first two cultures. Our impression of the bacteriology of this case is that we are dealing with the normal flora plus transient insignificant organisms, such as one finds in healthy controls.

organism may appear to predominate to the practical exclusion of others. (4) The number of cultures made. In most of the reported work, single cultures have been made. Thus, one obtains at best only a cross-section view of conditions, without being able to say anything about the sequence of events. (5) Special interest in one or another organism. Most observers have been interested in the special relation of a particular organism to some disease condition. This attitude has often led to unjustifiable etiologic assumptions, as will be shown below.

THE SERIAL QUANTITATIVE METHOD

In considering the methods outlined above, two outstanding deficiencies are apparent: first, the lack of data as to the relative numbers of organisms present, and, second, the fact that as a rule only single cultures are made. It seems, for example, that the significance of a single colony of *Staphylococcus albus* recovered

accurate quantitative estimation of the number of organisms present, as well as easy fishing of colonies for further study. In our work both rabbit-blood agar and oleate hemoglobin agar have been used. These mediums are suitable for all of the usual organisms found in the throat—staphylococci, streptococci (both hemolytic and nonhemolytic), influenza bacilli, hemolytic influenza bacilli, diphtheroids, the gram-negative cocci, and others. Cultures are taken at frequent intervals from the same individual during the course of the disease or during the period of study and the results compared qualitatively and quantitatively.

RESULTS

1. *Healthy (Normal) Individuals.*—A series was studied² by this method to determine, if possible, the

2. Bloomfield, A. L.: The Significance of the Bacteria Found in the Throats of Healthy People, *Bull. Johns Hopkins Hosp.* 22: 33 (Feb.) 1921.

normal constant flora of the throat. It seemed that with this as a background the findings in disease could be much more readily interpreted. It was found that the organisms recovered from the throats of healthy persons by this method fall into two groups: (1) A true normal flora constantly present in all people over long periods of time consisting of the gram-negative cocci, and nonhemolytic streptococci. To this perhaps may be added certain diphtheroids. The exact status of the influenza bacillus and the pneumococcus is still in doubt, but these organisms cannot yet be regarded

out the true relation of this organism to the basic flora.

2. *Respiratory Infections.*—A series of cases of common colds was studied in a similar way.¹ In simple, uncomplicated cases, as illustrated by Table 2, the findings were essentially those which are obtained in normal people. It has been possible, therefore, reasonably to conclude that none of the ordinary pathogens which have been regarded as the cause of colds are really the primary cause, but that some other infectious agent must be sought. This fact could not have

TABLE 3.—PROTOCOL IN A COLD COMPLICATED BY TRACHEITIS (CASE 8, BL.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	B. Influenzae	Hemolytic Streptococcus	Pneumo-coccus	Comment	Clinical Notes
Dec. 21	∞	∞	0	0	0	Several hundred colonies of a coarse, gram-positive coccus; 15 colonies of a yellow staphylococcus	Third day of cold; nose stuffy, throat raw; malaise and chilliness; for one day, tracheitis with thick, green, purulent sputum
Dec. 29	∞	∞	0	0	0	A few colonies of a coarse, gram-positive coccus; 15 colonies of a yellow staphylococcus	Practically well; throat still a little raw; slight cough with mucoid sputum
Jan. 8	∞	∞	0	0	0	Many colonies of a yellow staphylococcus	Well; still very slight throat catarrh
Sputum culture Dec. 21	0	0	0	0	∞	Many colonies of a coarse, gram-positive coccus	

* Clinically, the case is one of a cold complicated by a severe tracheitis. The normal flora was constantly present. Two organisms which are not normally present in the throat were obtained—a yellow staphylococcus, and a coarse, gram-positive coccus. From the sputum a pneumococcus was obtained in almost pure culture. This organism was clearly associated with the tracheitis.

TABLE 4.—PROTOCOL IN A CASE OF ACUTE FOLLICULAR TONSILLITIS (CASE BA.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	B. Influenzae	Hemolytic Streptococcus	Pneumo-coccus	Clinical Notes
Jan. 20	0	∞	0	∞ (B. type)	0	Onset, January 20: high fever; sore; huge red tonsils, covered with exudate
Jan. 21	Many	∞	0	∞ (B. type)	0	Condition unchanged
Jan. 24	∞	∞	Many colonies (hemolytic)	A few colonies (B. type)	0	To normal; tonsils still large and red, but no exudate
Jan. 29	Many	∞	Many colonies (hemolytic)	Many (B. type)	0	Feels well; tonsils still a little large, but perfectly clean and pale
Feb. 10	∞	∞	0	0	0	Well

* This case shows predominance of hemolytic streptococcus during active stage of disease, with disappearance later and return of normal flora

TABLE 5.—PROTOCOL IN A CASE OF ACUTE FOLLICULAR TONSILLITIS (CASE SP.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	Hemolytic Streptococcus	B. Influenzae	Pneumo-coccus	Clinical Notes
Jan. 11	0	Many	∞ (B. type)	0	0	Onset January 11, with sore throat and fever (to 101); on examination: large swollen tonsils with exudate
Jan. 13	0	20 colonies	∞ (B. type)	0	0	Tonsils still large and red, patches subsiding
Jan. 15	0	Many colonies	∞ (B. type)	0	0	Temperature normal; throat clear
Jan. 17	Many colonies	Many colonies	Many colonies (B. type)	0	0	Well
Jan. 19	A few	40 colonies	∞ (B. type)	....	
Jan. 25	∞	∞	Many colonies (B. type)	0	0	
Feb. 1	Many	∞	(B. type)	A few colonies (hemolytic)	0	

* Same general findings as in previous case. Flora at first practically replaced by hemolytic streptococcus, gradually returning as streptococcus decreases. Convalescent carrier state persisting during period of observation.

as members of the normal flora in the strict sense, although they are frequently harbored by healthy people. (2) A transient flora consisting of both pathogenic and nonpathogenic bacteria which are present normally for only a short time in the same individual. This group is discussed more at length below. An illustrative protocol will serve to emphasize these points (Table 1). It will be seen that the subject constantly harbored gram-negative cocci and nonhemolytic streptococci. Other organisms were present merely as transients. Had only a single culture been made, for example on March 16, much stress might have been placed on the hemolytic streptococcus recovered on that day, whereas the series of cultures brings

been demonstrated without serial quantitative cultures. On the other hand, in cases of colds featured by a clinical complication, such as bronchitis, or a sinus infection, it was often possible to show that a particular organism was the cause of the complication because of its coincident advent and disappearance (Table 3).

3. *Tonsillitis.*—The method was then applied to cases of acute follicular tonsillitis (Tables 4, 5, 6 and 7). In this disease we have an entirely different picture featured by the presence of B hemolytic streptococci, which persist during the active stage of the disease and for a variable length of time thereafter. In two cases, observations were obtained shortly before

the onset of the disease at a time when the hemolytic streptococci were not yet present. Study of these cases by this method brings out, therefore, the important fact that the occurrence of B hemolytic streptococci when persistently present indicates present or past infection with this organism. Proof of a chronic carrier state except under these conditions is still lacking. A case of scarlet fever and one of influenza were also studied illustrating the relation of the streptococcus to the throat flora in those diseases.

COMMENT

It is apparent from the foregoing observations that the significance of the presence of a given organism in the throat may vary under various conditions. In the light

of the upper air passage usually afforded a very unfavorable environment for the colonization and growth of extraneous bacteria, as they were promptly washed away by the secretions.³ It appeared that a focus of diseased tissue usually was necessary for such organisms to breed in, and that from such a focus they were discharged over the free surfaces. The question naturally arose as to whether there was a true normal mouth flora—namely, bacteria which live out their whole life history on the free mucous surfaces of the upper air passages, requiring no disease to aid them in colonizing. Study of the flora of clinically normal throats, as pointed out above, showed that certain varieties of bacteria were constantly present in large numbers. Working with aerobic methods,

TABLE 6.—PROTOCOL IN A CASE OF ACUTE FOLLICULAR TONSILLITIS (CASE WA.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	Hemolytic Streptococcus	B. Influenzae	Pneumo-coccus	Comment	Clinical Notes
Jan. 11	A few	Many	∞ (B. type)	A few colonies (hemolytic)	0	.....	Onset, January 9, with chill and fever (102°); no sore throat until January 11; examined January 11: red throat; large tonsils with exudate
Jan. 13	A few	Many	∞ (B. type)	30 colonies (hemolytic)	0	.....	Tonsils still large and red; patches subsiding
Jan. 15	Many	....	∞ (B. type)	A few colonies (hemolytic)	0	.....	Throat clear; no patches; tonsils look normal
Jan. 17	Many	....	A few colonies (B. type)	0	0	.....	Well
Jan. 20	A few	....	A few colonies (B. type)	0	0	.....	Well
Jan. 25	A few	....	A few colonies (B. type)	0	0		
Feb. 1	Many	....	20 colonies (B. type)	0	0		
Feb. 8	....	....	Many colonies (B. type)	0	0	A few colonies of a small gram-positive diphtheroid	

* The striking feature is the presence of an extraneous organism (B. hemolytic streptococcus) associated with the tonsillitis. During the active stage of the disease this organism practically replaced the normal flora. The patient continued to carry it during the period of observation, although in somewhat smaller numbers, with coincident increase in normal flora.

TABLE 7.—PROTOCOL IN A CASE OF ACUTE FOLLICULAR TONSILLITIS (CASE F.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	Hemolytic Streptococcus	B. Influenzae	Pneumo-coccus	Comment	Clinical Notes
Mar. 12	Many	∞	∞	A few (hemolytic)	0	A few colonies of a coarse gram-positive diphtheroid	Just over a mild follicular tonsillitis; today throat looks a little red and he complains of soreness
Mar. 14	Many	∞	∞	2 colonies (hemolytic)	0	A few colonies of a gram-positive diphtheroid	Well
Mar. 16	Many	Many	∞	0	0	A few colonies of a gram-positive diphtheroid; 1 colony S. aureus	
Mar. 18	Many	∞	∞	0	0	1 colony S. albus	
Mar. 29	Many	Many	Several hundred colonies	0	0	6 colonies of a gram-negative spore-bearing bacillus; 6 colonies S. albus	

* Culture made on March 4 showed no hemolytic streptococcus but innumerable hemolytic influenza bacilli. With onset of tonsillitis the streptococcus became the dominating organism, a carrier state persisting.

of present knowledge, one or another of the following explanations may apply:

- A. The organism may be a member of the constant normal throat flora.
- B. The organism may be a member of the normal flora of some other part of the body (skin, intestine) which has been introduced into the throat.
- C. The organism may be an extraneous one which has been introduced into the throat.
- D. The organism may have become established in a local focus of disease in the upper air passages.
- E. The organism may be one which is the cause of and is associated with the presence of an acute disease.

A. The organism may be a member of the normal constant throat flora.

In previous papers evidence was brought to show that the free surfaces of the normal mucous membranes

such organisms were found to belong to the groups of gram-negative cocci and nonhemolytic streptococci. These organisms are present so uniformly and in such large numbers that, until evidence is brought to the contrary, we are inclined to believe that the free surfaces of the normal mucous membranes afford them a suitable habitat and that no focus of disease as an accessory factor is necessary in explanation of their presence. Anaerobic or other special methods may reveal still other organisms to be members of the normal flora.

B. The organism may be a member of the normal flora of some other part of the body (skin, intestine, etc.) which has been introduced into the throat.

Extension of bacteriologic study to the various regions of the body has revealed, in each, certain

3. Bloomfield, A. L.: The Upper Air Passages as an Environment for Bacterial Growth, Am. Rev. Tuberc. 4: 247 (June) 1920.

organisms which are more or less constantly present. The general nature of the intestinal flora is well known, and the presence of the white staphylococcus on the skin, and of diphtheroid bacilli in various parts of the body has been frequently demonstrated. These organisms may at times be recovered in cultures made from the throat, but serial cultures (see above) made in the same individual show their presence not to be constant, as in the case of the true normal flora, but to be transient. They may be present for from one to a few days but then usually disappear, perhaps to reappear later. In general, they behave as do foreign organisms experimentally introduced into the upper air passages: they disappear rapidly, as they do not colonize, but are promptly washed away by the mouth secretions. We believe, therefore, that these

would be general unless the race as a whole became immune. It seems on the basis of the experimental⁴ work that the most important protective mechanism of the upper air passages is the flushing action of the secretions by which the majority of foreign organisms are disposed of. Such organisms may therefore be recovered from the throat in health (Table 1); but serial cultures are necessary to distinguish a transient harboring of the germ from an actual carrier state.

D. *The organism may be one which has become established in some local focus of disease in the upper air passages.*

This state of affairs obtains most commonly in the so-called carrier state in which an organism not a member of the normal flora may be harbored in the throat for long periods of time. Differential cultures

TABLE 8.—PROTOCOL IN A CASE OF SCARLET FEVER (CASE BU.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	Hemolytic Streptococcus	B. Influenzae	Pneumo-coccus	Comment	Clinical Notes
Jan. 24	∞	∞	Many (B. type)	0	0	.....	Onset, January 22, with sore throat, fever, etc.; typical scarlet fever rash on following day; January 24, typical scarlet throat; temperature 101
Jan. 28	∞	∞	10 colonies (B. type)	0	0	.....	Temperature, normal; throat not sore, but still a little red
Jan. 31	Many	∞	Very many (B. type)	0	0	A few colonies S. albus; a few colonies small gram-positive diphtheroid	Desquamating; throat clear
Feb. 8	Many	Many	Very many (B. type)	0	0	A few colonies small gram-positive diphtheroid	Convalescent
Feb. 15	Many	Many	Very many (B. type)	0	0	A few colonies S. albus	

* Bacteriologically, the changes are the same as in acute tonsillitis.

TABLE 9.—PROTOCOL IN A CASE OF INFLUENZA (CASE E.)*

Date of Culture	Nonhemolytic Streptococcus	Gram-Negative Cocci	Hemolytic Streptococcus	B. Influenzae	Pneumo-coccus	Comment	Clinical Notes
Feb. 6	Many	∞	Many	0	0	.....	Onset, February 5; typical symptoms of influenza; throat diffusely red; tonsils not swollen; no exudate
Feb. 7	∞	∞	Many	0	0	.....	Feels very bad; general aching, fever; throat diffusely red
Feb. 9	∞	Many	A few colonies	0	0	A few colonies of a huge gram-positive coccus	Convalescent; throat still raw and red
Feb. 18	∞	∞	A very few colonies	0	0	A few colonies of a gram-positive diphtheroid	Well
Mar. 21	∞	∞	0	0	0	2 colonies S. albus; a few colonies of a gram-positive diphtheroid	Well
Mar. 31	∞	Many	A few colonies	A few colonies (hemolytic)	0	∞ colonies S. aureus.....	Well

* About twenty cultures made previously in this individual failed to show hemolytic streptococci. It seems certain, therefore, that the presence of this organism followed the present acute infection. After seven weeks the subject still carries hemolytic streptococci in small numbers.

organisms when present in the throat are there as transients introduced from time to time by means of contact with some other part of the body, but that they do not actually colonize. Under certain disease conditions to be discussed below, these organisms may be present over longer periods of time.

C. *The organism may be an extraneous one which has been introduced into the throat.*

Under the ordinary conditions of extensive contact which exist among groups of individuals, a variety of extraneous bacteria, both nonpathogenic and potentially pathogenic, are constantly entering the upper air passages. At the same time the flora of healthy people, even when exposed to respiratory disease, remains surprisingly constant.² Clearly the organisms introduced, even if pathogenic, are as a rule disposed of without colonizing or producing disease. Were this not so, every one would soon harbor many types of germs, and the incidence of such diseases as pneumonia

made with a view of determining the seat of growth of the bacteria have shown in many carriers of hemolytic streptococci, diphtheria bacilli, meningococci, Friedländer bacilli and other germs that the organisms were breeding in a local focus of diseased tissue, such as the tonsils, nasopharyngeal lymphoid tissue, or a paranasal sinus. It was possible, furthermore, to prove in the case of Friedländer bacillus carriers⁵ that the organisms failed to colonize on the free mucous surfaces of the upper air passages but were discharged solely from a local focus of infection in the tonsil. In every isolated instance of a carrier of an extraneous organism, one should therefore think of this possibility as being very likely.

E. *The organism may be the cause of and associated with the presence of an acute disease.*

4. Bloomfield, A. L.: The Fate of Bacteria Introduced into the Upper Air Passages, Bull. Johns Hopkins Hosp. 31: 14 (Jan.) 1921.
5. Bloomfield, A. L.: The Mechanism of the Bacillus Carrier State, Am. Rev. Tuberc. 4: 847 (Jan.) 1921.

In acute diseases whose portal of entry is through the upper air passages, the causal organism may be found during the course of the disease in cultures made from the throat. Pneumonia, typhoid fever, tonsillitis, meningitis and diphtheria may be mentioned as outstanding examples. In these cases the extraneous organism is superimposed on the normal flora.

CONCLUSION

My purpose in this paper is to show, by quoting the work thus far done, the futility of single qualitative cultures in respiratory disease, and to emphasize the importance of the serial quantitative method. Extensive use of this method may eventually make clear the relation of the bacteria found in the throat to acute and to chronic disease, it may aid in solving the question of primary and secondary invaders, and it may give leads to rational vaccine therapy by enabling one to pick out the offending organism with greater accuracy.

EXPERIMENTAL MEASLES *

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It is a well recognized fact that measles, especially in children under 5 years of age, is one of the most serious of the acute infectious diseases because of the severe and not infrequently fatal complications to which it leads. The failure to prevent the spread of measles by quarantine and the inadequate control of its complications by isolation and symptomatic treatment have suggested that a more hopeful solution of the problem might be found in prevention by prophylactic inoculation. This is of course by no means a new idea. It was attempted as long ago as 1758 by Home¹ and as recently as 1913 by Herrman,² who attempted to immunize infants between 4 and 5 months of age when they were relatively immune, apparently with some success.

Since it seemed probable that a more satisfactory basis for the ultimate development of a practical method of prophylactic inoculation could be obtained by animal experimentation than by other methods, a study of experimental measles in monkeys was undertaken. The conflicting result reported by previous workers in this field made it necessary at the outset to establish beyond doubt the susceptibility of the monkey to the virus of measles. Our preliminary experiments, therefore, were undertaken with this immediate end in view, and they have served mainly to confirm the original contention of Anderson and Goldberger³ that the monkey is susceptible to measles. The results of these experiments have been published⁴ recently. In brief, it has been shown that monkeys (*Macacus rhesus*) injected intratracheally with unfiltered or filtered (Berkefeld N) nasopharyngeal secretions from cases of measles in the prodromal or

early eruptive stage of the disease react after an incubation period of from six to ten days with a group of symptoms closely resembling those of measles in man, namely, drowsiness, conjunctivitis, photophobia, Koplik spots, enanthem, exanthem, leukopenia and frequently fever. The lesions in the monkey have been shown to be essentially identical with the corresponding lesions of human measles as described by Mallory and Medlar.⁵ Briefly, they consist of a proliferative and exudative reaction about the capillaries in the upper layers of the corium. The exudate consists of serum and large mononuclear phagocytes or endothelial leukocytes. These cells appear to be derived from the swollen and proliferating capillary endothelium, and are in a state of active multiplication as indicated by numerous mitotic figures. The exudate invades the epithelium of the hair sheaths and epidermis, where it forms minute vesicles or vesicopustules. The vesicles in the epidermis rapidly dry up and give rise to minute, thickened plaques which desquamate as scales. The lesions of the buccal mucosa are similar in character, except that the epithelial lesions (Koplik spots) go on to maceration and shallow surface erosion instead of drying up to form scales.

The disease has been transmitted readily from monkey to monkey through a considerable number of generations by suspensions of skin and buccal mucosa prepared from monkeys killed shortly after the appearance of the exanthem; by nasopharyngeal washings collected during the prodromal period; by citrated whole blood, defibrinated whole blood and by serum injected intravenously, subcutaneously or intratracheally; and by intimate contact infection. Finally, it has been shown that one attack of experimental measles confers an active immunity against reinfection.

With these facts established, our efforts have been turned toward an attempt to develop a method of prophylactic inoculation against the experimental disease. In order to vaccinate successfully against measles, it seems probable that a living virus will have to be employed, as in the case of smallpox. If so, this presumably will require modification of the virus of measles so that it will produce on inoculation only a local and not a general infection. Modification or attenuation of a virus may theoretically be accomplished by animal passage or by subjection of a potent "fixed" virus to deleterious influences of chemical or other nature.

A preliminary experiment having shown that the blood of an infected monkey was infective for other monkeys from the last day of the incubation period to the second day of the exanthem, it was thought possible that by repeated transfer of the infection with large amounts of blood collected during this period, the virulence of the measles virus for the monkey might be enhanced until a potent "fixed" virus was obtained. The outcome of two such series of passages, however, was quite the reverse, and repeated transfer resulted in attenuation of the virus so that after from eight to twelve passages it was no longer capable of inducing the experimental disease. In the first series of passages, two or three successive bleedings of from 6 to 10 c.c. each, collected on the second, third, and fourth days of the disease in the donor monkey were employed. Beginning with the fifth passage, the experimental disease began to decrease in severity until the thirteenth

5. Mallory, F. B., and Medlar, E. M.: J. M. Res. 41: 327 (March) 1920.

* From the Hospital of the Rockefeller Institute for Medical Research.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Home, F.: Medical Facts and Experiments, Edinburgh, 1759.

2. Herrman, C.: Arch. Pediat. 32: 503, 1915.

3. Anderson, J. F., and Goldberger, J.: Pub. Health Rep. 26: 847, 887, 1911.

4. Blake, F. G., and Trask, J. D., Jr.: J. Exper. Med. 33: 385, 413, 621, 1921.

passage, when further passage failed. In the second series of passages a single bleeding of 10 c.c. collected on the first or second day of measles in the donor monkey was used with a similar result, the ninth passage failing in this series. Passage of measles from monkey to monkey by contact infection, while successful in early passages, has also failed as yet to provide a method for continuously propagating the disease in monkeys. The reasons for this gradual diminution in the infectivity of the measles virus for monkeys are obscure, and it will require much further experimentation to elucidate them.

Since these experiments, however, provided us temporarily with an attenuated virus, it seemed desirable to determine whether intracutaneous injection of small amounts of this virus might not result in a local reaction without evidence of a general infection. In preliminary experiments, which are not as yet sufficiently complete to warrant any definite conclusions, it has been found that a virus attenuated by animal passage, if injected intracutaneously in small amount, will produce a local reaction without evidence of a subsequent general infection. The local reaction is characterized by a cutaneous edema of from twenty-four to forty-eight hours' duration, which is followed in some cases by a local exanthem limited to the skin adjacent to the site of inoculation. If the area of skin showing the reaction is excised, minced and ground in salt solution, and the resulting suspension injected intracutaneously in another monkey, a similar local reaction may occur. It has also been found that similar results may be obtained by the intracutaneous injection of an originally potent virus which has been attenuated by preservation in glycerol in the icebox. Whether monkeys so inoculated will consistently develop an active immunity against infection is as yet uncertain. That they may, in certain instances, possess an effective immunity against infection with a potent virus is indicated by experiments now in progress, but not yet sufficiently complete to be reported in full.

ABSTRACT OF DISCUSSION

DR. JOHN F. ANDERSON, New Brunswick, N. J.: It is an interesting coincidence that Dr. Blake should present his paper on experimental measles before the same organization just nine years after Dr. Goldberger and I presented a summary of our work on the same subject. A critical reading of the seven papers by Dr. Goldberger and myself, and the three papers by Drs. Blake and Trask will show that our earlier work has been repeated and confirmed in every essential point by their later work, although as yet Drs. Blake and Trask have not reported on some phases of the subject covered by us, among which may be mentioned the period of infectiousness of the nose and throat washings, noninfectiousness of the scales, and resistance of the virus to various physical and chemical agents, nor have they reported infection by contact of young monkeys when placed in cages with monkeys sick with measles. It is of interest that Drs. Blake and Trask stated that the evidence we had presented of the production of measles in the monkey was not entirely conclusive, owing, possibly, to the fact, as stated by them, that we had not reported Koplik spots (though Lucas and Prizer did), blood counts and histologic studies of the skin, although it is safe to advance the opinion that but few physicians require such aids in the diagnosis of measles in the human being before measles is pronounced.

DR. CHARLES HERRMAN, New York: There is no doubt that Dr. Blake has added new evidence to this subject, although Drs. Anderson, Goldberger, Hektoen and others have already proved conclusively that the discharges from the nose and throat and the blood of patients with measles

were infectious, and that the disease could be produced experimentally in human beings and in monkeys. Dr. Blake's investigations are still more conclusive and have put the subject on a still firmer basis. Many years ago I became convinced that with our present methods the spread of measles could not be controlled, and that such a control was possible only by means of immunization against the disease applied in early infancy. In 1913, I began the inoculation of infants, immunizing them against measles. The method was based on the following facts: 1. It is definitely known that the discharges from the nose and throat, the mucus, in the active stage of the disease, that is, just before and while the eruption is beginning to appear, contains the virus of measles; it is not necessary to know what that virus is, or how to identify it under the microscope. 2. In large cities, where practically all mothers have had measles, a relative immunity is conferred to the offspring through the placental circulation. This immunity is absolute during the first two months and gradually disappears. In infants inoculated between 4 and 5 months of age, the relative and temporary immunity might be converted into an immunity which would last for at least a few years. 3. The infectious material is usually conveyed from the nasal mucous membrane of the patient to the nasal membrane of the individual infected. So that would be the way in which artificial infection could take place. With these facts in mind, the nasal mucus of children with measles who were otherwise free from disease, at the beginning of the stage of invasion when the eruption was beginning to appear, was collected on small swabs or drawn into small capillary tubes, which were sealed. This mucus was applied by touching the nasal mucous membrane of healthy infants between 4 and 5 months of age. One hundred and fifty infants have been thus inoculated; of these, twenty-five are definitely known to have come in intimate contact with patients with measles, and only two have contracted the disease.

DR. HENRY F. HELMHOLZ, Rochester, Minn.: Digkowitz, reporting from Pfaundler's clinic in Munich, showed that 173 individuals who had been exposed to measles and had been injected with 5 c.c. of the serum of convalescent patients, taken between the seventh and the fourteenth day after the temperature dropped to normal, had had absolute protection against the disease. We were able to repeat these experiments in ten instances where the child stayed right in the home with the infected individual, and the child was protected against measles. I think this is of great importance, and certainly during epidemics makes available a means of protecting children during the dangerous period from 1 to 4 in which the mortality is so exceedingly high.

DR. DENNETT L. RICHARDSON, Providence, R. I.: About four or five weeks ago Dr. O'Connor and I inoculated seventy-five children with serum from convalescent measles patients. The inoculated children have been more or less definitely exposed to measles, and in no case has any child developed measles.

DR. FRANCIS G. BLAKE, New York: We have not made a detailed study of the period of infectivity of which Dr. Anderson spoke, but we have confirmed his observations that, in monkeys, inoculations with secretions collected during the prodromal period of the disease have always been infective. When the secretions were collected on the first day of the exanthem, transmission has usually been successful; but failures have occurred when the secretions were collected later in the disease. The reason for going into the susceptibility of the monkey to measles was not that we had any doubt that Anderson and Goldberger had been successful in showing that the monkey was susceptible to the disease, but in order to clear away doubts that had arisen from the negative results reported by Sellards and other workers. The principal thing that we felt to be lacking in the final demonstration was the pathology; and, as Dr. Anderson said, the pathology of measles at the time he did his experiments was not sufficiently well described. I have followed with a great deal of interest the literature with regard to passive immunity. No doubt, the method offers a good procedure in epidemics, and one cannot help but think that something might have been accomplished in the army if that procedure had been applied.

PREPANCREATIC AND PERIPANCREATIC
DISEASEWITH A CONSIDERATION OF THE ANATOMIC BASIS
OF INFECTION FROM THE GALLBLADDER
TO THE PANCREAS *

JOHN B. DEAVER, M.D.

AND

J. E. SWEET, M.D.

PHILADELPHIA

I. PREPANCREATIC AND PERIPAN-
CREATIC DISEASE

BY JOHN B. DEAVER, M.D.

In the majority of diseases of the upper abdomen, the symptoms are sufficiently well defined to permit of a rather close approach to diagnosis in a large number of instances. Probably the most prominent exception in this respect is the pancreas. At the same time this organ is so often involved in pathologic conditions of the viscera surrounding it and even in disease of more remote regions, and direct attack on the pancreas is as yet fraught with so much danger, that a proper consideration of prepancreatic and peripancreatic disease as forerunners of acute or of chronic pancreatitis becomes of vital importance. For, in these days, when preventive medicine occupies so conspicuous a place in the medical forum, it behooves the surgeon also to concentrate attention on conditions which make for preventive surgery. It is for this reason that I am willing once more to express my views on this subject.

The most frequent forerunner of disease of the pancreas is some affection of the gallbladder or the bile passages, which is frequently, but not always, associated with calculi. Extension of such an inflammation mainly by way of the lymphatics gives rise to lymphadenitis along the course of the common duct and its lymphatics in the right free border of the gastrohepatic omentum, and to a peripancreatic lymphangitis and lymphadenitis with enlargement and hardening of the adjacent portion of the pancreas itself. Not alone from the gallbladder and the bile passages, however, does the pancreas become involved; but very often such involvement forms part of the pathology of gastric and duodenal ulcer. Although the pancreas itself is resistant to the action of the gastric juice, it may form part of the base of a gastric ulcer, and its lobules can frequently be seen lying free in the base of the ulcer, although the inflammatory process is most liable to produce thickening of the interstitial tissues and hardening of the surface of the organ. The possibility of perforation of such an ulcer, with the danger of acute pancreatitis added to the already threatening condition, must be kept in mind. The serious effect on the pancreas of chronic ulcer of the duodenum is a familiar story to those who have occasion to treat a considerable number of these ulcers. A recent experience at the Lankenau Hospital forcibly demonstrated this possibility with all its inherent serious consequences.

REPORT OF CASES

The patient came to operation with a typical ulcer history, extending over a period of two years. At operation, the ulcer,

with much induration, was found on the second portion of the duodenum, with inflammatory adhesions between the duodenum and the pancreas. The adhesions were separated, and amputated below the site of induration, and with the pylorus excised the head of the pancreas was sewed over the duodenal stump.

The postoperative course was very stormy. Evidence of secondary collection developed, and a second operation, performed on the fifteenth day, revealed acute hemorrhage pancreatitis with fat necrosis studding the pancreas and the omentum; also plastic exudate and pus under the liver. Free drainage was instituted. The condition failed to improve, and a third intervention was undertaken five days after the second. The incision was made into the left loin space from which pus and particles of pancreatic tissue exuded. After washing out the cavity, drainage tubes were introduced. There was no connection between the cavity and the original opening. The patient did well after this, and two weeks later was discharged to the care of her physician, with the wound not entirely healed.

This patient, unfortunately, died three months later of symptoms of an intercurrent pulmonary tuberculosis. Her physician reported to the follow-up clinic, that the wound had healed well and that there was no evidence of a return of gastric symptoms.

The basis of this stormy postoperative course was without doubt the duodenal ulcer, the contributing cause being the adhesions that had formed between the duodenum and the pancreas, and possibly also trauma to the pancreas at operation. One such occurrence is all that is needed to point the lesson of early attention to symptoms of upper abdominal disease, especially those, which, like cholecystitis and ulcer, are marked by chronicity more or less prolonged.

The appendix also may be a feature in peripancreatic and pancreatic inflammation through the retroperitoneal path. This avenue of infection is illustrated in at least two cases, previously reported.

One was a girl who came to operation with symptoms of acute gangrenous appendicitis accompanied by chills and fever. The appendix was removed, but the chills and fever persisted and acute abdominal symptoms developed necessitating a second operation. At the latter, a small abscess was found completely encapsulated in the mesentery of the ileum. The pancreatic lymph glands were enlarged and the pancreas itself greatly swollen and edematous. Death occurred ten days after the second operation. At necropsy no other lesion was found except the pancreatic lymphangitis above referred to.

The second case was also one of acute appendicitis with chills and fever. The appendix was removed, a few adhesions were found; but there was no pus. Seventeen days after operation, the patient developed signs of secondary collection, and at reoperation a large mesenteric abscess was drained. Death occurred five months later. Necropsy revealed multiple abscesses of the liver, chronic periappendicular peritonitis, acute congestion of the spleen and kidneys, suppurative cholecystitis, and abscess at the head of the pancreas.

The anatomic basis for this theory of the lymphatic route of infection is set forth by my co-worker, Dr. J. E. Sweet, professor of research in surgery at the University of Pennsylvania.

II. THE PASSAGE OF INFECTION FROM THE
GALLBLADDER TO THE PANCREAS

BY J. E. SWEET, M.D.

The problem of pancreatitis is the old problem of abdominal surgery: Where does the provocative agent come from? It would not make much difference about the theory if we could only agree on the correct procedure in practice. The final test of all theory is the

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

facts of practice; and if these facts do not conform to the theory, we will simply have to alter the theory, we cannot change the facts.

In order to understand the problem, it is necessary to assemble all the information we have, and to weigh the interrelations of these facts; to start at the very beginning, with the embryology of the organ.

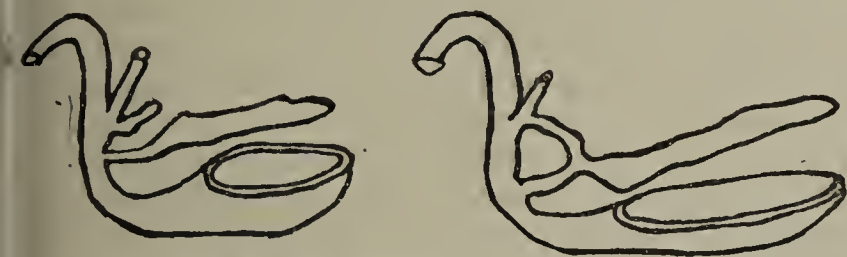


Fig. 1.—The development of the pancreas.

The pancreas arises, as do all the organs of the gastrointestinal tract, as an out-pouching, or out-budding, from the wall of the primitive gut, like a glove finger pushing out from the inside of the wall. The hollow of this bud or finger, forms the final duct; the cells at the end grow and develop into the secreting cells, the acini of the gland.

The pancreas anlage appears later than the liver anlage; the common duct has already developed. Three different buds,¹ apparently, go to form the pancreas; one dorsal bud from the wall of the gut nearer the stomach, from which the greater part of the pancreas, the body and tail, develops. Two ventral buds arise in close proximity to the common duct, sometimes growing out from the wall of the duct itself. Of these two ventral buds, one seems to disappear, perhaps forming the source of the aberrant glands often found along the gut wall (Fig. 1).

The close relationship between this portion of the pancreas and the common duct is thereby explained. Depending on the eccentricities of development, the relationship will vary somewhat; the common duct may be entirely surrounded by pancreatic tissue; pancreatic tissue may occur in the wall of the common duct itself.

This relation of the exact point of origin of the persisting ventral bud to the common duct determines the final relation of the main pancreatic duct to the common duct. If the pancreas anlage has grown out from the wall of the common duct itself, the finished pancreatic duct will open into the ampulla of the common duct; if the pancreas anlage has grown out from the wall of the gut itself, in close proximity to the common duct, the openings of the ducts will be in close proximity, yet the pancreatic duct may really open into the intestine and not into the ampulla at all.

This development of the ducts must be clearly borne in mind, for from it there arises a peculiar arrangement of affairs which must be considered. Yet it is not considered, either by the adherents of the theory of duct-borne infection, or by the surgeon who seeks to drain the pancreas through the gallbladder.

The facts seem to be these: Both buds develop by growth in continuity, the dorsal bud giving origin to by far the greater part of the gland, namely, all of the gland except that portion of the head in close proximity to the common duct and the intestinal wall. The persisting ventral bud grows out but a little way, then fuses with the tissue developing from the dorsal bud, giving origin to but a small part of the glandular

tissue. In the majority of cases, the duct system of this anlage becomes the more important duct system from the point of fusion of the two anlages to the wall of the gut.

This somewhat complicated developmental history results in the possibility of great variations in the final arrangement of things. The relation of the common duct and the pancreatic duct to each other and to the intestine will vary, according to the relation of the original ventral anlage to the common duct and to the intestinal wall. Four types of papillae of Vater are consequently described² (Fig. 2). It is evident that an infection coming down the common duct could gain entrance to the pancreas in the first type, possibly in the third; certainly not in the second and fourth. A small stone could block the opening, allowing bile to be forced into the pancreas, as in Opie's classical case, in Type 1, perhaps in Type 3, certainly not in Types 2 and 4. Increased pressure in the biliary apparatus would tend to close Type 3, and would make no difference in Types 2 and 4. It is doubtful whether the type pictured as Type 1 occurs very often; the usual picture, when the duct of Wirsung opens into the side of the common duct, is that of a fold of mucous membrane covering the opening, somewhat like the manner in which the ureters open into the urinary bladder.

But I would respectfully suggest that the determination of the finer anatomy of the papilla is a matter to be decided by the pathologist at the necropsy table, rather than by the surgeon at the operating table.

This complicated manner in which the duct system of the pancreas develops toward the final form results in further situations which must be borne in mind by

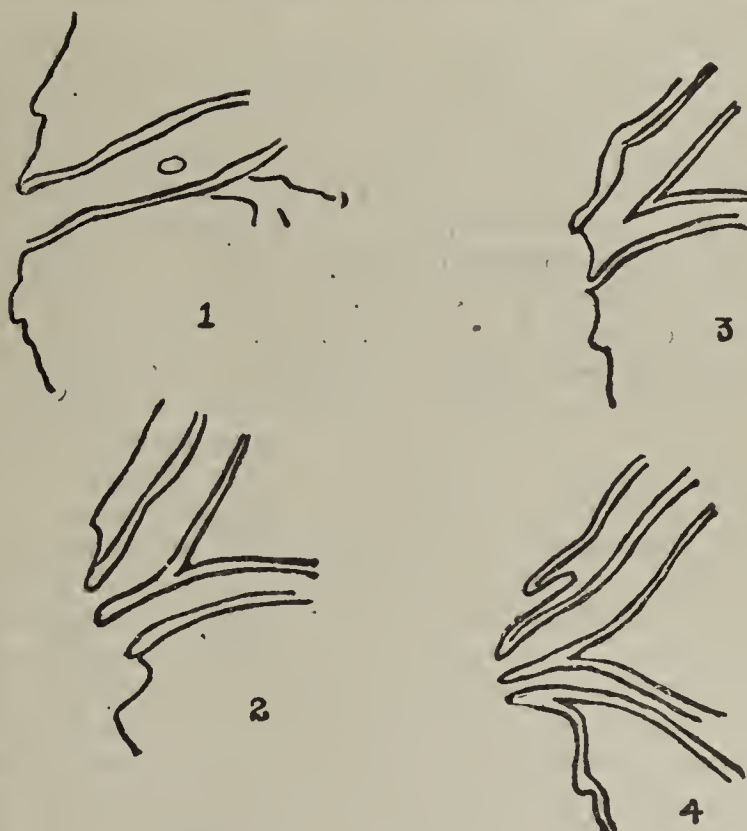


Fig. 2.—The four types of the papilla of Vater.

the operating surgeon. In a study of 100 subjects, Opie³ found two ducts in every instance; but occasionally one or the other was so small that it was found with difficulty. In ten of the 100 cases, the two ducts failed to anastomose with the gland, and in four additional cases, the two ducts were united

1. Hamburger: *Anat. Anz.* 7:707, 1892.

2. Letuelle and Nattan-Larrier: *Bull. Soc. anat. de Paris*, 1899, p. 987.

3. Opie: *Am. Med.* 5:966, 1903.

by such a minute twig that they might be regarded as independent of each other. In fourteen per cent. of the cases, then, the transfer of infection from the common duct to the entire pancreas is out of the question.

In twenty instances, the duodenal end of the duct of Santorini was not patent, and in a considerable number of specimens, the orifice of the duct of Santorini, though patent, was so minute that its functional significance was slight. In these cases, then, the entire gland could have been involved from the common duct, provided the type of papilla would have permitted. Unfortunately, Opie did not include a description of the finer anatomy of the papilla of Vater.

In eleven of the 100 cases the duct of Santorini was equal in size to, or greater than, the duct of Wirsung, so that during life it was doubtless the outlet for a considerable, if not the larger, part of the pancreatic juice.

Of the 100 cases, then, ten showed no union of the ducts; four a very minute union; and eleven showed a duct of Santorini of equal importance with the duct of Wirsung. Twenty-five per cent. of the cases could not be infected throughout the entire gland from the gallbladder; and in twenty-five per cent. of the cases, conversely, the pancreas could not possibly be drained through the gallbladder.

Now the condition of chronic pancreatitis is most frequently limited to the "triangle of pancreatic involvement"—the tissue arising from the ventral anlage. But let us not be too hasty in claiming that the arrangement of the ducts explains this, and proves the theory of duct-borne infection; for the manner of development of the pancreas will also determine the distribution of another structure of the organ, namely, the lymphatics.

It does not seem to be settled whether the lymph system starts centrally, as outbuddings of the veins, and grows into the periphery, or whether the tissue spaces simply fuse together, thus forming the lymph channels. In either event, the lymphatic system follows the lines of embryonic development. The lymphatics of the gallbladder connect with the lymphatics of the common duct, and these in turn with the lymphatics of that area of the bowel wall from which the liver anlage arose. The lymphatics of that part of the pancreas which arose from the neighborhood of the bile duct will also be intimately connected with the lymphatics of the lower end of the bile duct. And all will drain into the same regional lymphnodes.

The development of the duct system of the pancreas offers no explanation of the frequent limitation of chronic pancreatitis to the "triangle of pancreatic involvement," unless it can be shown that chronic pancreatitis is limited to that group of persons whose duct systems are so arranged that there is little or no anastomosis between the ducts of the two portions of the gland, and in whom, also, the papilla of Vater makes possible such a transfer of infection from the common duct to pancreatic duct. If the laws of inheritance and of survival of the fittest hold true of the pancreas, it would seem that such unfortunate individuals would have dropped out of the running, ages ago!

ROUTES OF INFECTION

But the development of the lymphatic apparatus does afford an explanation, for the embryology determines the course and the interrelations of the lymph system, and therefore explains the tendency of chronic pan-

creatitis to limit itself to the duodenal portion of the gland. For this route, only infection is necessary; an individual would not need to have been cursed by ancestors, careless of the relations of their ducts.

A consideration of the embryology leads to another conclusion. The ducts and acini are directly related; the cells at the end of the outgrowing bud form the secreting cells; naturally, too, the secreting cells must be in intimate relationship to the ducts, since the product of these cells is poured into the ducts. Infected bile forced up the ducts would, therefore, first, involve the secreting cells, causing an acute involvement of the acini. These destroyed acini may be replaced by connective tissue giving the picture of sclerosis. But chronic pancreatitis does not usually show signs of primary destruction of the secreting cells, nor does the clinical history point to any such acute condition; and if this is the route followed, infectious organisms are certainly brought to the pancreas. What becomes of them?

Archibald⁴ argues that the lymph route cannot be at fault because the pancreas is rarely the seat of bacterial inflammation. But we will show in a moment that the lymphogenic theory is the only one that can explain the absence of organisms. According to the duct theory, organisms must be in the infected bile; the adherents of this theory fail to explain what has become of them.

How shall the problem be solved? To our minds, the final solution will depend upon a careful study of necropsy material, with a very careful study of the ducts. If pancreatitis can be shown to occur under circumstances in which the anatomy makes a so-called ascending infection impossible, then we will have to admit another route; if these findings show that a majority of cases occur under circumstances wherein the ducts could have carried the infection, then the duct may stand accused; provided, however, that it is shown that those cases limited to the "triangle of pancreatic involvement" are thus limited because the duct systems fail to anastomose within the gland, and provided further that some one will explain what becomes of the bacteria in those cases in which the bile is certainly infected.

Animal experimentation has led to an impasse. The latest experiments by Archibald seem to him to show the passage of infection along the ducts; yet any one could interpret the same experiments as proving the lymphatic course as well, for in every one of his experiments he found an enlarged, congested lymph gland at the head of the pancreas. He states that "these glands are found acutely swollen, obviously as the result of the pancreatic lesion," even while he reports in Cat 89, "two large, swollen lymph glands, obviously inflamed . . . microscopic sections showed nothing abnormal in the pancreas."

Archibald is inclined to discredit the lymphogenic route because it would be a retrograde process, and because suppurative processes are not characteristic of pancreatic involvement. Yet he fails to consider that an infection of the regional lymph nodes might well cause a simple damming back of lymph, with aseptic swelling of the interstitial tissue, later organization and increased interstitial tissue, which is precisely the picture of chronic pancreatitis, and which explains why infectious organisms are not found.

4. Archibald; Surg., Gynec. & Obst. 28:529 (June) 1919.

Archibald explains the effectiveness of cholecystectomy by hazarding the guess that the operation removes the only muscular force of any strength in the biliary system. But, unfortunately, the operation of cholecystectomy is followed by a general dilatation of the ducts, which must mean that there has been an increase of pressure; therefore, if cholecystectomy is of value, it must be because Archibald is wrong. If he is correct, the removal of the gallbladder should accentuate the pancreatitis, because the pressure in the biliary system is increased. Unfortunately for his theory, such is not the case.

If the papillae of Vater were always so arranged that infection could enter the pancreas from the bile passages, which they are not; if the ducts were always so arranged that infection could involve the pancreas through the duct of Wirsung, which they are not; if cases of chronic pancreatitis showed clinical symptoms which might be ascribed to transitory attacks of limited acute pancreatitis, with later transformation of the degenerated acini into sclerosed areas, which they do not; if cholecystostomy, with prolonged drainage, could always drain the pancreas, which it cannot; if cholecystostomy, with prolonged drainage, ever did more than might be ascribed to the drainage of the gallbladder, which it does not; if cholecystectomy, which causes dilatation of the biliary passages, this dilatation showing increased pressure, aggravated the condition supposed to have been caused by increased pressure due to the spasm of the muscle of Oddi, which it does not; then we might be led to tinker with the papilla of Vater. But I propose, in view of these facts, to continue to think of chronic pancreatitis as a lymphangitis, secondary to a focus of infection in the wall of the gallbladder; and as surgeons have always done and always will do, I shall continue to remove the focus of infection and cure the condition.

RELATION OF THE LIVER AND THE PANCREAS TO INFECTION OF THE GALLBLADDER *

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Cholecystitis is nearly always associated with a certain grade of hepatitis or pancreatitis, or both. The degree of inflammation in the liver and in the pancreas is often so slight that it is recognized with difficulty. Cholecystitis does not always mean that the infection in the liver and pancreas will also be severe. In certain cases, the disease seems farther advanced in the liver or pancreas than in the gallbladder, suggesting that it was primary in the liver or pancreas and secondary in the gallbladder. It is possible that infection may progress in this manner; nevertheless, all the evidence indicates that the infection is primary in the gallbladder. Graham¹ has recently called attention to the intimate association between the gallbladder and the liver through the lymphatics, and has suggested that in certain cases the gallbladder may be infected through the lymphatics from the liver. A study of these lymphatics was made

by Sudler² some years ago, but their importance in relation to cholecystitis and hepatitis has not been realized until recently.

The gallbladder, as a part of the excretory mechanism of the liver, is brought into relationship with the liver through the bile ducts. Thus it is possible, although not likely, for infection in the hepatic tissues to reach the gallbladder by way of the bile stream. Infection might pass through one viscus to the other through the venous system.

The gallbladder and the pancreas are also associated through the lymphatics and the bile ducts. It has been shown that the efferent lymphatics from the gallbladder and those from the pancreas anastomose around the head of the pancreas; and it has been further suggested that this is the reason why this part of the gland is most often invaded (Maugeret³). Deaver⁴ believes that chronic pancreatitis in the majority of cases is due to the invasion of the substance of the gland by way of the lymph channel. He calls this condition pancreatic lymphangitis and says that it precedes interstitial pancreatitis. He believes that the source of this infection is the infected bile and the diseased gallbladder, and in a few cases, gastric and duodenal ulcers.

Opie,⁴ Meltzer⁵ and Mann⁶ have shown that the bile entering the pancreatic duct under certain circumstances results in an inflammation of the gland similar to that of interstitial pancreatitis. Several years ago, Archibald⁷ called attention to the fact that bile might be forced into the pancreatic duct as a result of the spasmodic contraction of the sphincter muscle at the end of the duct. He further suggested that remedies to overcome this would relieve the pancreatitis. Knowing that removal of the gallbladder cures most patients who have cholecystitis and pancreatitis, Mann and I removed the gallbladders from animals in order to study the changes which occurred as a result of the loss of this organ. Apparently there was an attempt to compensate for the loss of the functions of the gallbladder. The first change was dilatation of the common duct, and the second, paralysis of the sphincter at the entrance of the duct into the duodenum. This seemed to explain why removal of the gallbladder relieved inflammation in the pancreas, if it were due to an influx of bile, the result of a spasmodic condition of the sphincter muscle. If it were due to an extension of infection from the gallbladder through the lymphatics, then, naturally, removal of the infected gallbladder would afford relief.

The mechanism of the excretory apparatus of the liver is not altogether understood. The gallbladder seems to have several important functions, and yet when it is destroyed or removed, these are well compensated by changes in the bile ducts, and in the operation of the control sphincter at the end of the common duct. So far as we can determine, no serious consequences follow loss of the gallbladder. We have many patients under observation from whom the gallbladder was removed years ago, and nothing abnormal can be detected, no gross or microscopic changes in the liver or pancreas result.

2. Sudler, M. T.: The Architecture of the Gallbladder, *Bull. Johns Hopkins Hosp.* 12: 126-129, 1901.

3. Maugeret, quoted by Deaver, J. B.: *Surgical Anatomy*, Philadelphia, P. Blakiston's Son & Co. 3: 816, 1903.

4. Opie, E. L.: *Disease of the Pancreas*, Philadelphia, J. B. Lippincott & Co., 1903.

5. Meltzer, S. J.: The Disturbance of the Law of Contrary Innervation as a Pathogenetic Factor in the Diseases of the Bile Ducts and the Gallbladder, *Am. J. M. Sc.* 153: 469-477, 1917.

6. Mann, F. C.: Personal communication.

7. Archibald, E.: Does Cholecystenterostomy Divert the Flow of Bile from the Common Duct? *Canad. M. A. J.* 2: 557-562, 1912.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Graham, E. A.: Hepatitis: A Constant Accompaniment of Cholecystitis, *Surg., Gynec. and Obst.* 26: 521-537, 1918.

ENTRANCE OF BILE INTO PANCREATIC DUCTS

It has been shown that pancreatitis may result from the injection of bile into the pancreatic duct. Mann has recently performed a series of experiments to determine the conditions under which bile must enter the ducts in order to produce this change in the gland. He divided his work into several studies and investigated

TABLE 1.—CHOLECYSTITIS WITH PANCREATITIS—FORTY-EIGHT CASES

	Years
Average age of patients.....	42
Oldest	66
Youngest	22
Longest duration of symptoms before operation, forty years.	
Shortest duration of symptoms before operation, two months.	
	Operations
Cholecystectomy	48
Choledochostomy	15
Appendectomy associated with other operations.....	35
Gastro-enterostomy associated with other operations.....	2
Oophorectomy associated with other operations.....	1
CONDITION FOUND AT OPERATION	Cases
Jaundice	9
Stones in the gallbladder.....	46
Stones in the common duct.....	8
Regional lymphatics enlarged.....	6
Cholecystitis, Grade 1.....	0
Cholecystitis, Grade 2.....	32
Cholecystitis, Grade 3.....	12
Cholecystitis, Grade 4.....	4
Hepatitis, Grade 1.....	1
Hepatitis, Grade 2.....	0
Hepatitis, Grade 3.....	2
Hepatitis, Grade 4.....	0
Abscess of the liver.....	2
Pancreatitis, Grade 1.....	28
Pancreatitis, Grade 2.....	19
Pancreatitis, Grade 3.....	1
Pancreatitis, Grade 4	0
DATA OBTAINED FROM RECENT LETTERS OF INQUIRY	
Cured (attacks of diarrhea in 3).....	30
Unimproved	2
No reply	16

the cause or causes of pancreatitis, both acute and chronic, with reference to the bile. He found that in the goat, the pancreatic duct empties directly into the common bile duct, several centimeters from the entrance of the latter into the duodenum. This offers an ideal natural anatomic condition as a means of determining whether there is a physiologic mechanism which can, under sufficient pressure, force bile into the pancreatic duct and produce pancreatitis. Accordingly, the common bile ducts in five goats were doubly ligated and sectioned distal to the entrance of the pancreatic duct, and the animals were allowed to live for various lengths of time. None developed acute pancreatitis and none died from the effects of the bile being forced into the pancreatic duct, although bile was forced into the pancreatic duct as was easily demonstrated in two animals that lived for three or four weeks after the operation. In both, the pancreas was stained greenish throughout, and the pancreatic ducts were dilated and filled with a greenish fluid. On abrasion of the pancreatic surface, bile could be forced through by pressure on the gallbladder; and while the pancreas showed well-marked pancreatic changes, the changes simulated more nearly those following duct occlusion than those following the injection of bile. Many observers have demonstrated that in a large number of experiments, the injection of bile into the pancreatic duct with a syringe produces acute hemorrhagic pancreatitis. However, injecting a fluid such as bile with a syringe under very high pressure, causes a definite trauma to the gland. Mann, therefore, conducted experiments to determine the maximum pressure that could be developed in the common bile duct.

The pressure in the common bile duct is due to three factors: the secretory pressure of the liver, the contractile pressure of the gallbladder, and the mechanical pressure on the liver and biliary ducts by the abdominal muscles and the diaphragm. The maximum pressure produced in the common bile duct, the result of a combination of all these factors, was studied, and attempts were made to analyze the component parts of each. The experiments were performed on dogs with permanent biliary fistulas; that is, through an especially devised technic the common bile duct was transplanted to the skin and the pressure recorded by passing a catheter into the common duct and connecting by means of a "T" tube to a straight glass tube and the pressure then recorded in terms of millimeters of bile. The animals thus operated on and studied were quite comfortable, and many observations were made extending over long periods. These observations demonstrated:

1. The secretory pressure of the liver is seldom greater than 350 mm. of bile.
2. The contractile pressure of the gallbladder is difficult to estimate; but in no instance could it be determined that it was any greater than the maximum secretory pressure of the liver. As a matter of fact, it is questionable whether the gallbladder ever contracts and produces pressure greater than 300 mm. of bile. There seems to be no doubt that the gallbladder has a contractile mechanism exerting pressure on the biliary tract; but the contractile power of its own intrinsic muscle has been greatly overestimated.

TABLE 2.—CHOLECYSTITIS WITH CIRRHOSIS—THIRTY-ONE CASES

	Years
Average age of patients.....	46
Oldest	70
Youngest	29
Average duration of symptoms.....	6
Longest twenty years; shortest (papilloma of gallbladder) one month	
	Operations
Cholecystectomy	19
Choledochostomy	6
Gastro-enterostomy for duodenal ulcer associated with other operations, 1; excision of duodenal ulcer associated with other operations, 1.	
Cholecystostomy	6
Appendectomy associated with other operations.....	20
CONDITION FOUND AT OPERATION	Cases
Jaundice	6
Stones in the gallbladder.....	12
Stones in the common duct.....	8
Cirrhosis, Grade 1.....	26
Cirrhosis, Grade 2.....	5
Cholecystitis, Grade 1.....	9
Cholecystitis, Grade 2.....	14
Cholecystitis, Grade 3.....	7
Cholecystitis, Grade 4.....	1
Pancreatitis, Grade 1.....	6
Pancreatitis, Grade 2.....	3
Pancreatitis, Grade 3.....	3
Enlargement of the regional lymphatics.....	6
DATA OBTAINED FROM RECENT LETTERS OF INQUIRY	
Cured	17
Not improved	2
Not heard from.....	12

3. The mechanical effect of the abdominal muscles and of the diaphragm on the liver is the most marked in producing changes in the intraduct pressure. Deep respiratory movements and struggling produce greater fluctuations in pressure in the common bile duct than is possible by the secretory pressure of the liver or by contraction of the gallbladder.
- Thus far, Mann has found only one condition, the act of vomiting, under which the pressure in the common bile duct is greatly increased. If the animal is

made to retch, the intraduct pressure increases enormously, reaching as high as 1,000 mm. of bile. After having determined the maximum pressure that can be exerted on the bile in the common bile duct, Mann investigated the effect of the injection with a syringe of bile into the pancreatic duct under such a range of pressures. As has been stated, if bile is injected into the pancreatic duct with a syringe, acute pan-

The relation of the common bile duct to the pancreatic duct was studied in 170 necropsies, for the purpose of determining the percentage of instances in which the anatomic arrangement was such that it would be possible for either a stone or the action of a sphincter to convert the two ducts into one continuous passageway. This seemed a possibility in only 4.5 per cent. From these data it may be concluded that:

1. Only exceptionally is there a physiologic mechanism which can inject bile into the pancreatic duct with sufficient force to produce pancreatitis.
2. Only very exceptionally is there an anatomic arrangement whereby the ducts can be converted, either by a stone or by the action of the sphincter, into a continuous passageway permitting bile to flow from the common duct into the pancreatic duct.
3. While there is no doubt that pancreatitis is sometimes due to or associated with the passage of bile into the pancreatic duct, our data tend to support the hypothesis that the number of such instances must be exceedingly small.

If Mann's conclusions regarding the bile factor in the etiology of pancreatitis are correct it would seem that, in most cases at least, we must search elsewhere for the cause. It will most likely be found, as Deaver says, in the extension of infection to the pancreas through the lymph channels.

In this experimental work, we must take into consideration the fact that the bile which regurgitates into the pancreatic duct is normal bile and has not been changed by infection. It is possible that the infection in cases of cholecystitis changes the bile so that it readily causes trouble in the pancreas. Archibald has shown that infection reduces the protecting power of the mucus.

CHOLECYSTITIS ASSOCIATED WITH HEPATITIS

In a number of instances during operations in cases of pancreatitis, we have removed small pieces of tissue from the pancreas for study. This was done particularly if diabetes was present. Nicoll⁸ carried out the same procedure in a series of cases. The information obtained thus far has not aided in studies to determine the cause of pancreatitis.

Hepatitis does not always greatly change the gross appearance of the liver and often cannot be recognized except microscopically. The liver may be slightly enlarged, although the enlargement is detected with difficulty even on careful observation. Kehr⁹ estimates the enlargement as 15 per cent. and Graham¹ 87 per cent. It has seldom been observed in our cases. In some instances, there is apparently an edema in the hepatic tissues, which causes a rather rounded liver edge, but in most cases the edge is sharp. The surface in the region of the gallbladder is whiter, often mottled, with numerous white dots and lines. The inflammation of the liver is characterized by a leukocytic infiltration of the interlobular or periportal sheaths. This may progress to the stage of necrosis and fat infiltration, and in the more chronic cases may present the picture of an early cirrhosis. The clinical manifestations are not clear-cut and are probably obscured by the inflammation in the gallbladder.

TABLE 3.—CHOLECYSTITIS WITH AN ASSOCIATED HEPATITIS—FORTY-SEVEN CASES

	Years
Average age of patients.....	49
Oldest	69
Youngest	21
Average duration of symptoms.....	9
Longest, thirty-two years; shortest, three months	
	Operations
Cholecystectomy	41
Choledochotomy	6
Cholecystostomy	2
Appendectomy	25
Splenectomy associated with other operations.....	1
CONDITION FOUND AT OPERATION	Cases
Jaundice	5
Stones in the gallbladder.....	22
Stones in the common duct.....	3
Regional lymphatics enlarged.....	7
Cholecystitis, Grade 1.....	14
Cholecystitis, Grade 2.....	22
Cholecystitis, Grade 3.....	6
Cholecystitis, Grade 4.....	5
Hepatitis, Grade 1 (local in 7).....	22
Hepatitis, Grade 2.....	12
Hepatitis, Grade 3.....	9
Hepatitis, Grade 4.....	4
Liver larger than normal.....	3
Pancreatitis, Grade 1.....	7
Pancreatitis, Grade 2.....	6
Pancreatitis, Grade 3.....	1
Present condition reported by letter satisfactory.....	24
Present condition the same or with recurrent attacks.....	4
Present condition not reported.....	19

creatitis usually occurs, and quite frequently the outcome is fatal. If bile is injected under pressure of 500 mm., or a pressure greater than the secretory pressure of the liver and the contraction of the gallbladder, acute pancreatitis does not occur. If the bile is injected under a pressure of 1,000 mm., which was the maximum pressure produced in the common bile duct, namely, that produced by vomiting, acute pancreatitis may occur, although rarely. From this, Mann concludes that even if a stone or the action of the sphincter should convert the pancreatic and common bile ducts into a continuous channel, only under exceptional conditions, such as struggling or vomiting, would it be possible to inject bile into the pancreatic duct under sufficient pressure to produce pancreatitis.

In order to determine whether it would be possible for the sphincter to convert the common bile duct and the pancreatic duct into a continuous channel, as has been suggested by Archibald, the sphincter at the end of the common bile duct was examined in four species in which the two ducts enter together, namely, the dog, the cat, the monkey, and man. The examination of several hundred sections of the sphincter showed clearly that in almost all instances the muscle fibers are intimately connected with both ducts so that a contraction of the sphincter will simultaneously close both the common bile duct and the pancreatic duct and will not convert them into one continuous channel. However, in two instances, both in cat and in man considerable muscle tissue has been found distal to the point of common entrance of the two ducts, so that there is a vague possibility that contraction of the sphincter might allow bile to be forced into the pancreatic duct.

8. Nicoll, J. H.: Remarks on the Frequency, Diagnosis and Treatment of Chronic Pancreatitis, Brit. M. J. 2: 625-627, 1919.
9. Kehr, quoted by Graham, Footnote 3.

In our necropsy studies we have observed that hepatitis is always found in association with gallbladder and bile tract infections and is never seen in association with ulcers of the stomach and duodenum or inflammation of the appendix.

With the idea of learning the part played by inflammation of the liver, I recently reviewed the histories of 1,290 gallbladder cases in which operation had been performed in 1919. The operations were performed by ten surgeons in the clinic, and the observations on the degree of hepatitis and pancreatitis probably varied with the individual surgeon's particular interest in the conditions.

Forty-seven cases of cholecystitis with hepatitis were chosen for study. In many of these, a piece of liver tissue was excised for microscopic study at the time of the operation. There were undoubtedly many other cases of hepatitis in the series; but in some, the inflammation was so slight that it was not recognized; other cases were ruled out from this study because of complications.

A careful review of the clinical histories did not reveal anything suggesting involvement of the liver. Each contained a more or less typical history of cholecystitis. The average duration of symptoms was nine years. The longest duration was thirty-two years and the shortest three months. There were stones in the gallbladder in twenty-two of the forty-seven cases, and in the common duct in three cases. Slight jaundice was present in five cases, and without the evidence of biliary cirrhosis which is found in the obstructive cases. The gallbladder was removed in forty-one of the cases and drained in two; the common duct was also drained in six cases. The regional lymphatic glands were markedly enlarged in seven cases; they were undoubtedly somewhat enlarged in many others. The liver was estimated to be greatly enlarged in three cases. No attempt was made actually to measure the liver, and it may have been somewhat enlarged in many more cases. Both pancreatitis and hepatitis were associated in fourteen of the cases.

All of the forty-seven patients recovered satisfactorily from the operation, and we have been able to trace twenty-eight. Twenty-four are practically well, four were not greatly benefited and have since had similar attacks. It is more than one year since the operation, which would seem sufficient time for complete restoration of the liver, so it is quite probable that the present symptoms are not due to hepatitis.

Besides these forty-seven cases there were also thirty-one in which the changes in the liver had advanced to cirrhosis. The cirrhosis was not suggested by the clinical features. Pancreatitis was associated in twelve of the thirty-one cases. In spite of the diseased liver and pancreas seventeen of the eighteen patients we have traced report that they have been practically well since the operation for cholecystitis. Two patients have not thus far improved. Since the large percentage of the patients are improved as a result of the treatment, the hypothesis seems to be sustained that cholecystitis is the primary lesion and treatment for it also relieves the infection in the liver.

Of the total number of 1,290 gallbladder and bile duct cases, 347 (26.8 per cent.) had associated pancreatitis. For a comparative study of the cases of cholecystitis with hepatitis and cirrhosis, we selected forty-eight cases of cholecystitis with pancreatitis. The clinical histories in such cases do not as a rule

suggest pancreatitis. The condition was determined at the time of operation by enlargement in the pancreas, more frequently in the head; in others the pancreas was generally hardened. On palpation it was found to be more firm than normal and the lobules could be felt as separate pieces of gland. Often an irregular rough surface, frequently with a sandy or shotlike feel, could also be palpated. Edema was often present. Thirty of the forty-eight patients have been well one year after the treatment of the gallbladder disease; two are not improved. No reply was received from letters of inquiry to sixteen.

Stones were present in the gallbladder in forty-six cases and in the common duct in eight. The common duct was drained in fifteen cases. While the lymphatic glands were undoubtedly enlarged in many, they were noted only in six. This does not mean that more of these cases were not cases of pancreatic lymphangitis, but simply that the lymph nodes were not large enough to attract attention.

COMMENT

1. A review of our studies inclines us to believe with Graham that cholecystitis rarely exists without hepatitis. Often the inflammation in the tissues of the liver is so slight that it is not noticed unless special effort is made to detect it. The close association of the liver and the gallbladder by the lymphatics makes extension of the infection from one to the other very easy.

2. Pancreatitis occurs frequently with cholecystitis, and as a result a definite gross change occurs in the pancreas. While it is possible that the inflammation in the pancreas may be due to the influx of bile into the pancreatic duct, Mann's recent experiments show that this does not occur except under unusual conditions. It is possible for infection to invade the pancreas by way of the lymphatics from the gallbladder, and in many cases this probably explains the source of the infection. It is apparently entirely relieved by the treatment for the cholecystitis.

3. We were unable to find in the clinical histories of patients known to have hepatitis any symptoms that were especially suggestive of the inflammation. The same may be said of the patients in whom the liver changes had progressed to a stage of cirrhosis.

4. It is possible that the incomplete relief of symptoms and the recurrences in a small number of these cases are due to inflammations in the liver or pancreas.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DEEVER AND SWEET, AND JUDD

DR. ALBERT J. OCHSNER, Chicago: The conclusions in both papers seem reasonable to me. Our observations are hampered because of the condition under which we have to work. The necropsy findings are not as satisfactory as they should be. After death the postmortem changes are marked in the pancreas unless necropsy is made immediately because of the postmortem secretion and digestion. Our experimental observations are difficult and somewhat unreliable because it is quite impossible to perform these experiments with the same abnormal secretions of bile and pancreatic fluid that cause the pathologic condition in the human being. Except in case of trauma, acute pancreatitis, or thrombosis the process is a slow one. Again, in the study of the pancreas during surgical operations, the observations must be made by many different surgeons with different impressions on the examination of the same condition. Whatever we do in the way of treatment may have its effect on these conditions, but we are

practically never in position to reexamine the organ and determine what the effect has really been. There is a principle which is carried through the physiologic action of all the organs that have secretion which may accumulate to the effect that there is a marked difference in the effect of the various fluids when drainage is normal and when there is stasis. Whenever there is stasis the fluid that accumulates has an opportunity to degenerate, using degenerate in the broad sense, while the fluid in the same gland when constantly expelled normally does not have this peculiar opportunity of degeneration. This fluid, when it has degenerated because of stasis, has an entirely different effect on the organ that has secreted it from what it has after having been contaminated only in the ordinary way through the circulation. This fact interferes to a marked extent with the reliability of experimental observations. It would be unreasonable to suppose there could be direct destruction of the secreting gland cells of the pancreas by direct contact because of the character of these cells. They are located at a point at which they must be capable of exposure to an enormous amount of insult without harm to them. As a matter of fact, barring trauma, it is practically impossible to injure these cells directly because of contact with bile or pancreatic fluid; and as a matter of fact, also, the result of injury affects the glands not primarily, but only secondarily after they have become influenced by the connective tissue which is the result of long continued irritation. Irritation cannot come directly from the gland tissue, but must come from the lymphatics; and consequently my reading of the experiments of Archibald would correspond with that which Dr. Deaver has given us. Our practical conclusion must be that were there no stasis of diseased bile which through this stasis becomes dangerous, there would be no pancreatitis, except, of course, from trauma or ulceration. I have seen gastric ulcers penetrating the pancreas in the tail and body. As a matter of fact, removing the possibility of stasis, we have removed, so far as possible, the cause of the trouble.

Clinical Notes, Suggestions, and New Instruments

A NEW INSTRUMENT FOR THE ENUCLEATION OF TONSILS IN CAPSULE

DAVID L. FLANARY, M.D., ST. LOUIS

The accompanying illustration shows the instrument in the open position.

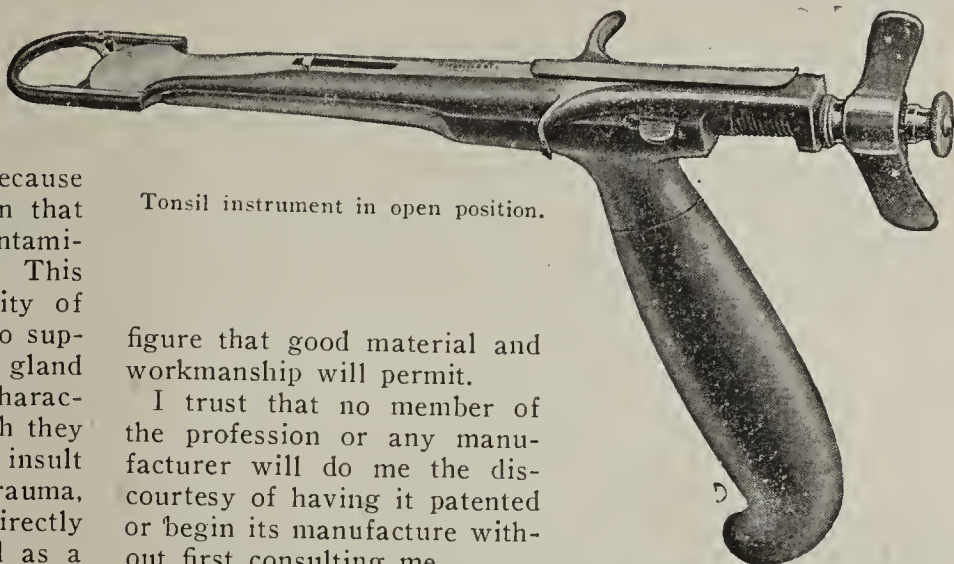
Tonsil enucleation in capsule is no new idea. The only thing new is in the mode of removal. Since the first advocate of the removal of tonsils in capsule, a number of instruments have been brought forward. Most of these instruments, in the hands of some men, did beautiful work. But as most of the instruments are used by physicians that are not ambidextrous and some of them not over strong in their hands, I felt that this instrument would make their work easier.

This instrument is held as one would an automatic pistol. On each side of the dull blade there is a thumb rest, with which to send the blade home without releasing the grip on the handle. Underneath the blade and set in the back end of the cutter-bar is a catch spring, which catches every sixteenth of an inch of the blade sent home. If, perchance, one catches a portion of the anterior pillar, or fails to engage all of the tonsil, one just touches the side of the catch spring with the thumb of the same hand that is holding the instrument, and the blade will rebound, by a spring embedded in the breast of the cutter-bar, to be sent down again by the thumb that touched the spring.

This release feature enables the operator to retain the index finger of the other hand in the mouth against the tonsil, and prevents his having to remove this finger from the mouth in order to get the blade back, when it has gone down wrong, as in the case with all other instruments. When the blade has been sent down firmly behind the tonsil with the thumb

and anchored by the catch spring, it is then forced home by the propeller on the back end of the cutter-bar.

The instrument is light, well balanced and easy to clean. It comes to the profession for what it may be worth, unpatented and without royalty, so it is to be had at the lowest



Tonsil instrument in open position.

figure that good material and workmanship will permit.

I trust that no member of the profession or any manufacturer will do me the discourtesy of having it patented or begin its manufacture without first consulting me.

Acknowledging with gratitude my indebtedness to all those that have labored in this line before me, I affectionately give this instrument to the profession.

NEW TONSIL INSTRUMENT

HENRY M. GOODYEAR, M.D., CINCINNATI

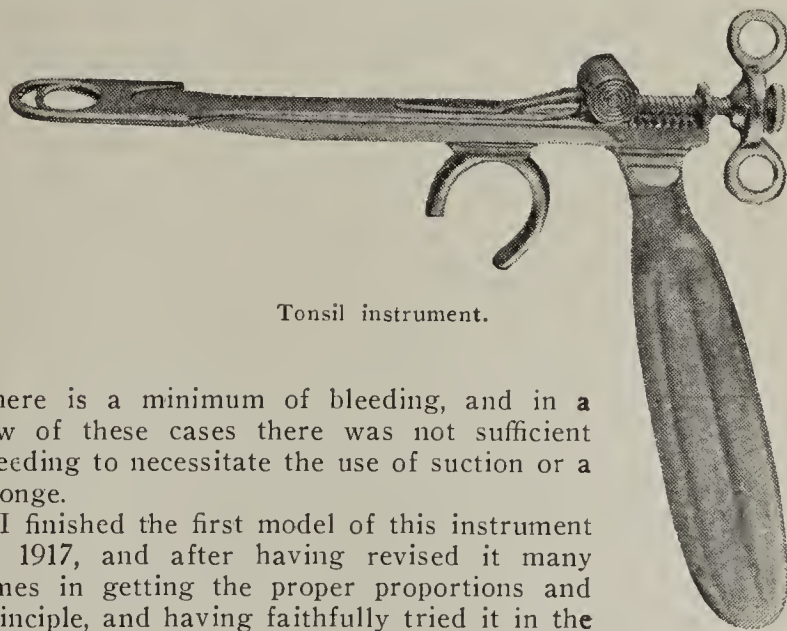
The accompanying illustration of this instrument is sufficient to explain the general mechanical construction. As to application, the instrument is applied to the tonsil after the fashion of any tonsil enucleator built on the plan of a permanent ring fenestrum.

The handle is so placed that the force is applied at right angles to the point of application to the tonsil.

After engaging the tonsil through the fenestrum, the finger piece is raised, locking automatically, and the final enucleation is completed by slowly turning the ringed screw at the top.

The dull ring separates the tonsil from behind forward, following the line of extracapsular clearance, and bluntly dissecting the tonsil from its bed.

More than a hundred operations have been performed with the latest model of this instrument, and it has been found practically impossible to injure the tonsil pillars or the superior pharyngeal constrictor muscle back of the tonsil, the tonsil coming away in its capsule, clean of muscle fibers.



Tonsil instrument.

There is a minimum of bleeding, and in a few of these cases there was not sufficient bleeding to necessitate the use of suction or a sponge.

I finished the first model of this instrument in 1917, and after having revised it many times in getting the proper proportions and principle, and having faithfully tried it in the field of operation, I believe I can conscientiously recommend it as an instrument simple and durable in construction, which gives the minimum of bleeding and trauma, with a complete and simple enucleation of the tonsil. It is especially well adapted to general tonsillectomies in children.

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SATURDAY, JULY 16, 1921

EDEMA IN DIABETES

Edema is commonly associated with cardiac or renal disturbances; hence the expressions cardiac or nephritic edemas have found considerable vogue in medical literature. The edema of heart disease depends in large measure on stasis of blood in the systemic veins; but this is by no means always the sole factor concerned. Doubtless, local circulatory changes and chemical peculiarities of certain tissues may be contributory in the genesis of cardiac edema. All of these occasionally come into play in the case of pulmonary edema. Nephritic edema is frequently treated as a condition in which water is retained in the body owing to inability of the kidneys properly to eliminate salts, notably sodium chlorid. There is no longer any doubt, however, that the water retention may in some instances be the primary disturbance, the retention of salt being secondary and necessary to maintain a more normal composition of the body fluids.

Edema has long been known in diabetes as a complication which may become extreme. When it results in a noteworthy gain in weight, it may become a source of error. As has been pointed out by Joslin,¹ patients may seem to be gaining when in reality they are losing weight because of insufficient diet. So, likewise, slight changes in body weight which may accompany dietetic alterations or the ingestion of sodium chlorid and sodium bicarbonate are looked on as material gains and are thus liable to be misunderstood by the patient. Joslin remarks, further, that diabetic edema occurred most frequently in former years following oatmeal days and the administration of alkalis, but now is common with fasting diabetics of severe type and is apparently related to the large quantity of salt which they ingest with broths and vegetables.

This is by no means, however, the sole cause or the whole story of diabetic edema. Wilder and Beeler² have lately reminded us that the symptom may arise in cachectic patients without signs of albuminuria or other evidence of disease of either heart or kidneys. Oliguria

need not accompany the formation of the edema, this depending more on increased intake of water than on the suppression of urine. Likewise, no very marked suppression of salt excretion is evident; a large daily excretion of sodium chlorid accompanies the maximal edema. The feeding of sodium chlorid, as has long been known, favors the formation of the edema, but a rising edema occurs at times with a normal salt intake. Many of these phenomena are in striking contrast to conditions existing in cardiac or nephritic edemas.

Evidently, undernutrition plays peculiar havoc with the water balance of the organism. It appears that severe inanition may be attended with a lowered renal threshold for chlorids when nephritis is not a complicating factor. Why should edema thereupon arise? According to the investigations at the Mayo Clinic, both the edema and the behavior of the chlorid threshold are independent of the state of the acid-base equilibrium of the body, as measured either by the carbon dioxid capacity of the plasma or by the titratable acid or ammonia excretion of the urine. Increasing edema and lowering chlorid threshold may accompany diminishing acidosis, and vice versa. They are likewise independent of the degree of glycemia and of the presence or absence of glycosuria. Hence, Wilder and Beeler conclude that edema in diabetes differs fundamentally from the edemas in diseases of the heart and kidneys. The determining factor seems to be inanition, which relates it to the hunger edema of war times and other edematous conditions of undernutrition.

CRITIQUE OF GASTRIC ANALYSIS

Those who read the literature of gastro-enterology must be impressed by the apparent conflict of opinions that prevails with respect to many fundamental factors in this department of medicine. The situation has become so complicated that many practitioners have frankly confessed their inability to derive as much dependable information from modern gastric analysis as the importance and the long maintained prominence of the subject would seem to warrant. Somehow it appears to many as if more real therapeutic helpfulness was forthcoming in the earlier days of simple estimations of "free" and "total" acidity developed by the Ewald test breakfast or the Riegel test dinner than is now furnished by the almost innumerable procedures of gastric examination, including roentgen-ray observations which will soon be able to claim a history of a quarter-century.

An explanation of some of the causes of the existing confusion and corresponding lack of confidence in the diagnostic claims of the gastric clinic has recently been ventured in THE JOURNAL by Rehfuß and Hawk.¹ They point to the frequent inability to discriminate

1. Joslin, E. P.: Treatment of Diabetes Mellitus, Philadelpia, Lea and Febiger, 1917, p. 124.

2. Wilder, R. M., and Beeler, C.: Plasma Chlorids and Edema in Diabetes, Am. J. Physiol. 55: 287 (March) 1921.

1. Rehfuß, M. E., and Hawk, P. B.: Gastric Analysis, I, Fundamental Principles, J. A. M. A. 76: 371 (Feb. 5) 1921.

between the limitation of the roentgen-ray examination and that of gastric analysis. The latter, according to their interpretation, is simply a measure of gastric work involving three important factors: (a) gastric motor function, as shown by the duration of digestion manifested after the administration of a certain test meal; (b) secretory function, which is the sum total of all the factors, extragastric and intragastric, making up the secretory curve, and finally (c) the determination of evidence of a pathologic condition of the stomach, such as mucus, pus, blood, bacteria, organic acids or protein, which in themselves are either contributed by the lesion, or are occasioned by it.

If gastric analysis is at present designed to measure the sum total of gastric work, it must be obvious that the results at any period may vary with the task imposed upon the digestive organ. Doubtless, investigators will differ widely in their judgment as to what type of test meal will best elicit desired information. It would seem, however, as if today the assumed advantages of one or the other meal were overshadowed by the extreme variety of procedures, resulting almost in complete chaos in the mind of the untutored practitioner. We heartily agree with the Philadelphia gastro-enterologists that "one of the greatest drawbacks in gastric analysis is the lack of standardization." There is no ideal test meal. The requirements have been tersely stated by Rehfuess and Hawk: The meal must be accessible, of an average short evacuation time, and must not interfere with the detection of pathologic products. They favor the Ewald meal, owing to its simplicity, accessibility, stimulating power, and particularly our accumulated knowledge of its value in both normal and pathologic conditions of the stomach. At present, complexity of test meals merely spells confusion.

Another innovation in diagnostic procedure for gastric examination is represented by the "fractional method" of withdrawing contents for analysis. Small portions, not exceeding 10 c.c. (one-third ounce), are aspirated at intervals of fifteen minutes with the avowed object of following more carefully the successive phases of the digestive phenomena. This practice, already widely employed, is presumably based on the assumption that the gastric chyme, after a test meal, is a homogeneous mixture so that a sample withdrawn in the current manner represents the acid concentration of the gastric contents as a whole at any given period of digestion. The investigations of Gorham² indicate that the assumption may become untenable, particularly in conditions of disease. The "sample" obtained by the "fractional method" only represents the acidity of the gastric chyme at that moment in the part of the stomach from which it is obtained; or, in other words, it is dependent entirely on the position of the tip of the tube in the stomach. As Gorham shows, this position

is necessarily a constantly changing one, owing, first, to the change of size and position of the stomach while emptying itself through the pylorus and by aspiration; secondly, to the shortening and lengthening of the stomach from gastric contraction; and, thirdly, to the peristaltic waves that tend to carry the tube toward the pylorus. Hence Gorham insists that in order to speak of a quantitative gastric analysis, the stomach must be emptied completely at a definite time after a standard test meal. This will be recognized at once as a return, in principle, to the old fashioned procedure of two decades ago.

ANTIRABIC INOCULATION FOR DOGS

Rabies is a disease that occurs virtually all over the world, and man invariably contracts it from some lower animal, usually the dog. In view of the seriousness of the malady, preventive measures have long attracted the attention of hygienists. The prophylactic treatment due to the epoch making investigations of Pasteur has attained a permanent place in medical practice. Stimson¹ of the U. S. Public Health Service recently assured the readers of *THE JOURNAL* that rabies vaccine, prepared by various procedures, is now available throughout all portions of the United States to the extent that it may fairly be said that no exposed person need die of rabies for lack of injections. Many health boards are prepared to furnish it free of cost to the indigent, and the cost of the commercial preparations is not prohibitive except to the destitute, for whom other provisions are made in almost every instance.

Individual prophylactic treatment, of course, cannot in any sense be regarded as a satisfactory scheme for the prevention of rabies in a community. The problem of the carrier of the materies morbi, the dog, is of greater moment. Accordingly, in recent years the plan of destroying ownerless dogs, and of muzzling and keeping under restraint all others of the canine species, has been demonstrated as an effective mode of eradicating rabies where the restrictions are carried out rigorously. The experience of England is often cited in illustration. Consistent muzzling of all dogs, together with most radical restrictions on admission of dogs from foreign countries, produced almost complete elimination of rabies. Owing to the enormous area to be policed in this country, it is not so easy to carry out the systematic control of the dog population. Whenever rabies becomes more prevalent than usual in any state, however, restrictive measures are likely to be put into operation until a period of comparative safety leads to renewed indifference.

According to recent advices from Japan, rabies, which formerly occurred there in only a few instances and within narrow limits, is beginning to become more prominent, cases appearing in all parts of the country.

2. Gorham, F. D.: Variations of Acid Concentration in Different Portions of the Gastric Chyme, and Its Relation to Clinical Methods of Gastric Analysis, *Arch. Int. Med.* 27: 434 (April) 1921.

1. Stimson, A. M.: Biologic Therapy, XII, Rabies Vaccine, *J. A. M. A.* 76: 241 (Jan. 22) 1921.

The method of prevention heretofore applied by killing rabid and stray dogs, and by confinement or muzzling of pet and licensed animals, has proved insufficient to eradicate rabies in Japan. Umeno² and his co-workers at the Kitasato Institute for Infectious Diseases in Tokyo, believing that something more than dog control is required to combat the disease, have investigated the possibility of prophylactic inoculation which might be applied extensively to the canine population. The procedure applied to man and involving many repeated injections of vaccines of varying potency or attenuation would obviously be impracticable in the treatment of large numbers of dogs. However, the Japanese bacteriologists assert that they have succeeded in perfecting a method whereby a successful prophylactic inoculation may be made in one or two injections. It has been tested on hundreds of dogs. For example, during the year 1919, there were 14,644 registered pet dogs in Kanagawa Prefecture, of which 9,150 were vaccinated. Among that large number of vaccinated dogs, there occurred no cases of rabies. None suffered from infection after vaccination. Umeno and his co-workers, who can now report on results involving more than 31,000 vaccinated dogs, assert that there has been a striking decrease of rabies, rabid dogs appearing only among the nonvaccinated. Hence they advocate the prophylactic inoculation of licensed dogs in addition to the other measures now taken to remove the danger of rabies from the human population. Like many hygienic proposals, this one concerns the welfare both of man and of the domestic animals.

CIRCULATORY REACTIONS TO HEMORRHAGE

Hemorrhage represents one of the emergencies that occasionally present a serious situation to the functioning organism. If loss of blood invariably brought about a lowering of arterial tension because of the depletion of the circulating fluid, the conditions ensuing might frequently be most unfortunate. Lowered blood pressure is liable to lead to less efficient supply of blood to important bodily structures, with a consequent impairment of function owing to lack of adequate oxygen and tissue nutrients. Low pressure may become synonymous with poor circulation.

Numerous investigations have demonstrated, however, that unless the hemorrhage is extensive, this expected sequence of events does not occur. Even after considerable hemorrhages, the fall in blood pressure rarely is as marked as might be anticipated. What happens to counteract the inevitable tendency toward a depletion of the circulatory system? The pulse rate increases so that the return of venous blood to the heart is augmented. More rapid breathing also facilitates the return flow from the abdomen. It has long been known that fluid enters the blood from the tissues

with extraordinary rapidity so as to replace some of the loss by hemorrhage. It has been stated that this dilution of the blood occurs so rapidly that blood coming from an open artery becomes perceptibly lighter in color at the end of a few minutes of moderate bleeding.¹ This is the reason it becomes so important therapeutically after hemorrhage to place at the disposal of the body sufficient liquid to enable the tissues to restore their temporary losses.

Meek and Eyster² have lately demonstrated in experiments on animals that the volume output of the heart is rarely diminished after bleeding, except for a slight drop during hemorrhage, until the loss of blood amounts to about 2 per cent. of the body weight. By the use of roentgenograms taken of the heart before and after hemorrhage, it was shown that the diastolic size is maintained even after the loss of large quantities of blood. In twenty-one experiments, each with from two to six hemorrhages, the heart did not decrease more than 5 per cent. until the loss of blood on an average equaled 2 per cent. of the body weight. Ultimately, of course, the compensation breaks down with continued bleeding. The steady decrease in blood volume is sharply contrasted with the sudden reduction in diastolic heart size which occurs when about 20 per cent. of the blood is lost, and which would seem to indicate the breakdown of some protective mechanism, according to Meek and Eyster. A unique advantage seems to lie in the retention of diastolic size of the heart; for modern researches have shown that, as in the case of skeletal muscle, the efficiency of cardiac contraction depends on the length of the muscle fibers.

Will increased heart rate or dilution of the blood or both suffice to account for this beneficent protection against loss of cardiac efficiency after ordinary hemorrhage? Meek and Eyster think not. They urge that accelerated pulse occurs only after considerable blood has been lost; and they maintain that the known observations will not justify attributing to the absorption of tissue fluid more than a secondary part in the maintenance of the cardiac diastolic size after hemorrhage. Meek and Eyster find that the only satisfactory explanation is the conclusion that the effective circulation is kept up by constriction of the venules and capillaries, particularly those which have been more or less stagnant. When hemorrhage in the intact animal reaches about 2 per cent. of the body weight, the venules and capillaries of the ear may be seen markedly to constrict. Since such a mechanism is thus shown by Meek and Eyster to exist, it becomes probable, as they say, that the compensatory reaction may have been operating in various parts of the body in earlier stages of the hemorrhage, and that in this way there is provided a constant venous return and cardiac output, even though the blood volume is decreased.

2. Umeno, S., Vet and Doi, Y.: A Study on the Anti-Rabic Inoculation of Dogs and the Results of Its Practical Application, Kitasato Arch. Exper. Med. 4: 89 (March) 1921.

1. Hewlett, A. W.: Pathological Physiology of Internal Diseases, New York, D. Appleton & Co., 1916, p. 586.

2. Meek, W. J., and Eyster, J. A. E.: Reactions to Hemorrhage, Am. J. Physiol. 56: 1 (May 1) 1921.

Current Comment

METABOLISM IN INFANTILE ATROPHY

The intelligent management of the type of "infantile atrophy" in which there is inadequate growth at early ages demands information that has only recently become available. It is conceivable that the failure of infants in this condition to grow properly may be due to some defect of metabolism resulting in an inability to utilize properly the available sources of energy. Equally possible is the existence of alimentary conditions which render the digestion and absorption of food products faulty. With respect to the fate of ingested proteins or fats in atrophic infants, the available evidence lends no support to the assumption that there is any lack of alimentary availability of these nutrients.¹ The data which Fleming² has secured in a study of the respiratory exchange of cases of infantile atrophy at the Royal Hospital for Sick Children in Glasgow give testimony against any assumption that the tissues of such individuals are unable to utilize either fats or carbohydrates. There is no extravagance in their metabolism, and the evidence indicates that in atrophy the essential constituents of the diet can be normally utilized when once they actually gain access to the metabolizing tissues. By exclusion, some failure of alimentation must be held responsible for the state of malnutrition under discussion. Fleming's inquiries place the probable blame on gastro-intestinal disturbances leading to defective absorption, especially of carbohydrates. If this shall indeed prove to be an important factor in the production of atrophy, dieto-therapeutic procedures are within the range of immediate consideration.

WHAT IS AN ANTIBODY?

Within the last few years the words "antigen" and "antibody" have become terms in the vocabulary of practical medicine as well as in the science of immunology. Discussion of the general phenomena of immunity can scarcely be carried on without reference to them. An antigen is a substance which, on introduction into the body in proper amounts and under suitable conditions, induces the formation of a special antagonistic substance, the antibody. At the present moment there are scarcely any well authenticated exceptions to the general rule that every soluble complete protein may serve in at least some degree as an antigen. With respect to the cleavage products of the proteins the evidence of their antigenic properties is at most debatable; certainly none of the amino-acids or simpler polypeptids, i. e., amino-acid complexes, can serve as antigens. The alleged function of lipoids in this rôle is likewise not established. Karsner and Ecker³ insist, in fact, that if lipoids are obtained from animal tissues, favorable results may be obtained; but in none of these experiments is it proved that the lipoids are

entirely free from proteins. Far less is definitely known with respect to the nature of the manifold antibodies. Diphtheria antitoxin, which has been studied longest in an intensive manner, has served as the prototype of this class of substances. There has been much evidence to indicate its close relationship or association with certain proteins, notably the globulins of the blood. It is not analogous to enzymes, if one may judge from the failure of antitoxin to be adsorbed by or removed from solution with a variety of indifferent precipitates. The large size or colloid character of the antibody molecule is shown by its comparative non-diffusibility. Recent studies by Huntoon, Masucci and Hannum⁴ have helped to narrow the field of investigation somewhat by indicating more clearly than heretofore that antibodies do not belong to that group of proteins usually classed as serum proteins. They showed, as others have previously indicated, that antibodies resist tryptic digestion—a fact which makes them unlike ordinary proteins. Antibodies, furthermore, do not manifest those biochemical reactions and transformations which are at present ascribed to the ill-defined euglobulin and pseudoglobulin fractions of the blood. Being insoluble in ether, they cannot be classed as lipoids or fats. By knowing more precisely what antibodies are not, we may hope to succeed better in the coming years in learning more adequately what they really are.

A PLEA FOR MEDICAL PROTOZOOLOGY

The occurrence of intestinal protozoa in man has long since ceased to be of concern to the student of tropical medicine alone. Such organisms as the nonpathogenic parasite *Endameba coli* and the pathogenic *Endameba histolytica*, for example, now appear to have an unexpectedly widespread distribution among persons in temperate as well as in torrid climates. The problems of the rôle of the protozoa of man, in health and disease, involving questions of identity of the parasites, their pathogenicity, the carrier state, the modes of transmission, the possibility of intermediate hosts, the therapy of the disturbances created, etc., have become so varied that they call for serious and extensive investigations in the interests of medicine. It almost seems as if a faculty of experts were required to attack the numerous aspects of the new medical protozoology. The need of more surveys of the occurrence of intestinal protozoa, in order to add to the present medical knowledge of the incidence of each species according to geographic range, age, race and occupation has been emphasized by Hegner and Payne.⁵ They urge physicians to direct more attention to the prevalence of intestinal protozoan parasites, thereby stimulating clinical work on pathogenesis and therapy. If mankind is frequently harboring unsuspected invaders which produce local damage or elaborate chemical products that act as subtle poisons to the system, they need to be discovered. For years the urine was the center of interest in certain features of clinical diagnosis; then the blood began to gain a prominence

1. Finkelstein, H.: Jahrb. f. Kinderh. **68**: No. 5. Rubner, M., and Feubner, H.: Ztschr. f. Biol. **38**: 315, 1899. Hutchison, H. S.: Quart. Med. **13**: 277 (April) 1920.

2. Fleming, G. B.: An Investigation into the Metabolism in Infantile atrophy, with Special Reference to the Respiratory Exchange, Quart. J. Med. **14**: 171 (Jan.) 1921.

3. Karsner, H. T., and Ecker, E. E.: The Principles of Immunology Philadelphia, J. B. Lippincott Company, 1921, p. 22.

4. Huntoon, F. M.; Masucci, P., and Hannum, E.: Antibody Studies, III, Chemical Nature of Antibody, J. Immunol. **6**: 185 (March) 1921.

5. Hegner, R. W., and Payne, G. C.: Surveys of the Intestinal Protozoa of Man in Health and Disease, Scienc. Month. **22**: 47 (Jan.) 1921.

formerly unachieved; now it is the feces that deserve to claim a share of attention in the careful diagnostic scrutiny of man. Bacilli, spirochetes, blood plasmodia, intestinal protozoa, occasional fungi and yeasts—a motley army of enemies which we must learn to recognize and deal with sooner or later. Why not soon?

ETIOLOGY OF THE COMMON COLD

Any one who first studies the numerous elaborate discussions and directions on the prophylaxis and treatment of those acute conditions known as the common cold in the upper respiratory tract will be profoundly disappointed at learning how little is definitely known about the etiology of the condition. There is a widespread belief—or an assumption based on analogy with related diseases—that bacteria play a part in most colds. If one asks, however, for evidence regarding the microorganisms actually involved in the primary cold, an answer will rarely be forthcoming. One of the vague hypotheses requisitioned from time to time assumes that various types of bacteria are commonly harbored in the nasopharynx, and that only when the local resistance or the general immunity of the body is lowered by some unusual circumstance do they find opportunity to develop in harmful ways so as to produce coryza. The primary disease manifested by hyperemic phenomena in the upper air passages should be clearly differentiated from local complications, chiefly due to pyogenic organisms, which frequently accompany a common cold. They include sinus infections, middle ear infections, laryngitis, tracheitis and bronchitis—rarely pneumonia and sepsis. Bloomfield¹ of the Johns Hopkins Hospital has lately come to the conclusion that none of the common bacteria found in the nose or throat have been proved to be the primary cause of colds. In uncomplicated cases the flora differs in no fundamental way from that found in healthy persons, although it is distinctly richer and more varied. This, Bloomfield reminds us, fits in with the old theory that the cold, whether produced primarily by temperature changes or by infection, leads to environmental alterations which, as it were, light up the bacterial flora already present in the pharynx. Yet the presence of these organisms is too variable and inconstant to warrant the conclusion that they are the primary causes of colds. Bloomfield finds the most convincing evidence in the scanty literature to favor a filtrable virus as the cause of the common colds. This tentative conclusion recalls the pioneer statement of Kruse,² who instilled Berkefeld filtrates of dilutions of nasal secretion from patients with acute colds in the nasal passages of healthy persons, thereby developing typical colds in many of them. Foster³ has reported similar results in this country. Correct treatment demands an exact knowledge of etiology. Prophylactic inoculation with mixed vaccines has proved to be illusory. Perhaps a reinvestigation of the theory of a filtrable virus will not be devoid of profitable outcome.

1. Bloomfield, A. L.: Variations in the Bacterial Flora of the Upper Air Passages During the Course of Common Colds, *Bull. Johns Hopkins Hosp.* **32**: 12 (April) 1921.

2. Kruse, W.: Die Erreger von Husten und Schnupfen, München. med. Wehnschr. **61**: 1547, 1914.

3. Foster, G. B., Jr.: The Etiology of Common Colds, *J. A. M. A.* **63**: 1180 (April 15) 1916; *J. Infect. Dis.* **21**: 451 (Nov.) 1917.

Association News

REPORT OF SPECIAL COMMITTEE ON DEPARTMENT OF PUBLIC WELFARE

At the Boston session the President of the Association was authorized to appoint a committee to confer with the President of the United States on matters pertaining to public health (*THE JOURNAL*, June 18, p. 1762). The committee has submitted the following report to the President of the Association:

Washington, D. C.
July 6, 1921.

Dr. Hubert Work, President,
American Medical Association:

We, the members of the special committee appointed by you, make this preliminary report.

The committee has held three meetings in Washington. As a result of these conferences, we believe that the administration and members of the Congress who are responsible for the organization of the contemplated Department of Public Welfare do not have in mind the establishment of a federal medical paternalism, or do not intend in any way to interfere with the practice of medicine and surgery as now carried on by legally licensed practitioners.

We believe that the main and important object of the impending federal legislation is to secure coordination of all existing federal bureaus and agencies relating to the welfare of the public in one department of the government; to standardize public health and other welfare work of the government; to secure cooperation with the respective state governments in all matters relative to public health and welfare.

The committee will maintain its active consideration of these measures and will attempt to secure the adoption of the foregoing principles in the finally completed legislation.

C. E. SAWYER, M.D. CHARLES W. RICHARDSON, M.D.
G. D. DE SCHWEINITZ, M.D. THOMAS S. CULLEN, M.D.
FRANK BILLINGS, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. William Edler, public health service, formerly director of the U. S. Interdepartmental Social Hygiene Board, Los Angeles, has been transferred to take charge of the government hospital in Tacoma, Wash., where mental cases are being treated.

Chiropractors Given Jail Sentence.—Refusing to stop the practice of chiropractic without a license, Alice Huhn of Anaheim was sentenced, May 27, to sixty days in the county jail.—It is reported that F. B. Whidden, publisher of the *California Chiropractor*, was sentenced, June 17, to sixty days in jail for practicing without a license.

COLORADO

Emergency Hospital at Pueblo.—At the request of the governor of Colorado, immediately after the recent flood at Pueblo, the authorities of the Fitzsimons General Hospital, near Denver, organized and established an emergency hospital to take care of the sick and injured, and connected it by wireless with Fitzsimons Hospital. The relief expedition included eleven officers, fifteen nurses and twenty-five enlisted men of the medical department, with Major Shelly U. Marietta, M. C., U. S. Army, in command.

DISTRICT OF COLUMBIA

Annual Meeting of Medical Women.—At the annual meeting and supper of the Institute Fraternity, held, June 23, at the home of Dr. Julia M. Green, Washington, Dr. Addison Boyce, New York, spoke on the "Future of Women in Medicine." Dr. Mary Elizabeth Hanks, Chicago, was toastmistress.

ILLINOIS

Gift of Laboratory to Hospital.—The Rockford Hospital has received the gift of a completely equipped laboratory from Mrs. Walter A. Forbes, as a memorial to her parents, Mr. and Mrs. Seeley Perry of Rockford.

Personal.—Dr. George G. Taylor, Elkhart, chief of the division of social hygiene, has resigned. He will devote his entire time to work in connection with the U. S. Public Health Service with which organization he holds a commission as surgeon. Dr. Taylor will probably be assigned to duty in Illinois.

Medical Practice Act Annulled.—In a decision handed down by the April term of the Illinois Supreme Court the medical practice act that became operative July 1, 1917, was annulled. The court held that the law is unconstitutional and is, therefore, void for the reason that Section 5 of the statute (medical practice act) unlawfully and unjustly discriminates against one class of practitioners. From the attorney-general comes the opinion that the act of 1899 with its amendments now automatically becomes effective. It is understood that the attorney-general has advised against asking a rehearing of the cases, as the opinion was unanimous.

Venereal Disease Campaign to Continue.—Although federal aid for the fight against venereal disease in Illinois ceased on July 1, 1921, because Congress failed to appropriate the necessary funds, the campaign will continue with the same vigor and aggressiveness that has characterized the work during the last three years. The fifty-second general assembly set aside \$200,000 for this important phase of public health service for the current biennium. The division of social hygiene will, therefore, be able to "carry on." Owing to the uncertainty of continued federal or state financial aid, the nineteen clinics now operating in Illinois slowed up somewhat in their activities during the last few months. An agent of the department is making the round of these clinics with the good news that the usual funds will be forthcoming from the state. The message has proved to be very stimulating.

KENTUCKY

Physician's License Revoked.—It is reported that at a meeting, held May 25, the state board of health revoked the license of Dr. Charles L. Cawein, Louisville, who is under indictment charged with murder in connection with the death of a patient following a criminal operation.

LOUISIANA

Personal.—Dr. Stephen W. Stafford, New Orleans, superintendent of the Charity Hospital since 1897, resigned on account of physical indisposition. Dr. William W. Leake, former assistant surgeon of the Illinois Central Railroad Hospital, has been appointed to succeed him.

MARYLAND

Infant Malady Increases.—Three cases of infantile paralysis have been reported to the Baltimore City Health Department during the past week. Previous to last week there had been but three cases since the first of the year—one in January, one in February, and one in June. Officials of the department are not alarmed over the reporting of three cases in one week, but are watching the situation closely.

Personal.—Dr. Robert P. Bay has been appointed acting chairman to the board of supervisors of city charities, to succeed Dr. J. Hall Pleasants, resigned.—Dr. Martin R. Casey of Weston, W. Va., has been appointed assistant to Dr. Charles J. Carey, superintendent of the Eastern Shore State Hospital at Cambridge. Prior to his appointment, Dr. Casey was assistant superintendent of the West Virginia State Hospital.—Dr. Alan M. Chesney of Baltimore, class of 1912, Johns Hopkins Medical School, has been appointed associate professor of medicine at the Johns Hopkins Medical School. This is the first of a number of appointments to be made by Dr. G. Canby Robinson, recently made head of the department of medicine. Dr. Chesney will succeed Dr. Alphonse R. Dochez and will have charge of the bacteriologic division of the medical clinic at the hospital.

MASSACHUSETTS

Personal.—Dr. Francis W. Peabody, Harvard Medical School, has been appointed chief of the Harvard Teaching Service in the Boston City Hospital. He will also become director of the Thorndyke Laboratory in the City Hospital. He has been selected to represent Harvard at the dedication

of the new building of Peking Union Medical College, China, in September, and also at the medical conference which will be held at the same time.

Dr. Cabot Entertains Physicians at Cohasset.—The seventy-five physicians who remained at Boston after the annual session of the American Medical Association, to take the course of lectures at the Massachusetts General Hospital, on "Differential Diagnosis," given by Dr. Richard C. Cabot, Harvard Medical School, were entertained at the summer home of Dr. Cabot, June 27, at an *al fresco* luncheon, with tennis, music and water sports. Dr. Cabot was presented with a lamp as an expression of esteem by the visiting physicians.

Valuable Library Service Open to Physicians.—The Scientific Temperance Federation, Boston, has probably the largest library in America of scientific works and references dealing with alcohol. To its services all physicians have easy and welcome access. At the annual meeting of the federation, held June 23, the secretary reported the result of three investigations of special interest made last year:

1. Evidence from all sections of the country obtained from public health and law enforcement officials showed practically no increase in drug addicts traceable to prohibition of alcoholic liquors, the apparent increase noted in a few cases being due to enforcement of antinarcotic laws.

2. A symposium from well-known physicians on present day medical practice in the use of alcohol as a preventive of, or remedy for, influenza and pneumonia, showed that all the writers agreed that alcohol cannot be considered a preventive of these diseases; and while many recognized that medical practice differs as to its administration, a considerable number thought it of no value and said they did not use it in these diseases.

3. A study of New York City statistics derived from weekly and monthly health reports as to adult mortality from Bright's disease, liver cirrhosis and alcoholism, and of early infant mortality, comparing figures under prohibition with those of five to seven previous years: The average annual number of deaths in 1919 and 1920 from Bright's disease and nephritis decreased 17 per cent. from the average number in 1912-1918; and liver cirrhosis, 49 per cent. The total number of deaths from alcoholism decreased from 687 in 1916 to 98 in 1920; on the average in fourteen large cities it was 84 per cent. lower in 1920 than in 1916-1917. The average annual mortality of infants under 1 year decreased in 1919 and 1920, 15 per cent. from the average for four preceding years; for the same periods the average of deaths under one month decreased 13 per cent. When the last six months of the successive years were compared, as prohibition did not go into effect till July 1, 1919, and there was a measles epidemic in the first half of 1920, the decrease in average total number of deaths under one month fell off 17 per cent. from the average for the four preceding years. The average infant mortality rate per thousand for 1915-1918 was 93; for 1919 and 1920, it was 84.

MICHIGAN

Medical Meeting Held on Mine Rescue Car.—The Houghton County Medical Society held its June meeting on Mine Rescue Car No. 10 of the U. S. Bureau of Mines, at Houghton. Dr. Cleve E. Kindall, surgeon of the U. S. Bureau of Mines, spoke on "First-Aid Training and Its Application to the Mining Industry," and Dr. Nathan S. MacDonald, Sidney Mines, N. S., told "What the United States Is Doing for the Disabled Soldiers."

Prisoners' Tuberculosis Hospital Camp.—It was decided at the meeting of physicians on duty in Michigan penal institutions, held June 29, at Lansing, that the state should establish a prisoners' tuberculosis hospital camp for treatment of inmates. The state commissioner of health was delegated to take up with the state administration, ways and means of building the hospital. It is estimated that there are 100 or more state prisoners who are suffering from tuberculosis.

Improper Diet Handicaps Children.—The traveling clinic of the state department of health, which in recent months has held clinics in twenty-five counties in both the upper and lower peninsulas, and examined 5,211 children, reports that 65 per cent. were underweight. According to a statement of the state health commissioner, undernourishment is not due to lack of food in the homes, in the majority of cases, but rather to the fanciful appetites of the children acquired through lack of discipline exercised over their diets, and to misunderstanding on the part of the parents as to what constitutes a proper diet. In order that the child may develop properly and gain a normal resistance to disease, Dr. Olin urges parents to adopt a diet of milk, cereals, fresh vegetables and fruits for their children, and compel them to eat at regular hours.

MINNESOTA

Formation of Society for Medical Experiment.—Twenty-three members of the faculty of the department of agriculture and school of medicine, University of Minnesota, have recently organized a branch of the Society of Experimental Biology and Medicine.

Personal.—Dr. William J. Mayo has recently been elected an honorary member of the Medico-Chirurgical Society of Edinburgh. The honorary membership of this society is limited to ten.—Dr. Harold E. Robertson, formerly director of pathology and bacteriology in the Medical School of the University of Minnesota, has been transferred to the staff of the Mayo Foundation of the university as professor of pathology. Dr. Robertson has also become a member of the staff of the Mayo Clinic as head of the section on pathologic anatomy.

Association of Resident and Ex-Resident Physicians of the Mayo Clinic.—The third annual meeting of the association, which was organized before the war, was recently held at Rochester. It was decided to publish the proceedings of the meetings in the form of transactions, and the first volume has recently appeared. Meetings will be held annually in Rochester, the date of the next being June, 1922. The following officers have been elected for the coming year: president, Dr. Donald G. Guthrie, Sayre, Pa.; vice president, Dr. George M. Thomas, Minneapolis; secretary, Dr. Harold L. Foss, Danville, Pa.; assistant secretary, Dr. Archibald H. Logan, Rochester, and treasurer, Dr. Arthur H. Sanford, Rochester.

MISSOURI

Municipal Hospital Farm.—The board of aldermen, St. Louis, passed a bill, June 24, appropriating \$175,000 for the purchase of a large tract of land as the site for the proposed Municipal Hospital Farm. A bond issue of \$1,100,000 has been authorized by the voters to establish the farm. When completed, the new institution will materially reduce the congestion in the city sanatorium and other hospitals maintained by the city.

State University News.—The board of curators of the state university has taken a definite stand in favor of establishing a four year course in medicine at the university. The board will prepare a bill for presentation at the next session of the legislature in 1923 to authorize and appropriate money for the establishment of a state hospital at Columbia to be operated in conjunction with the medical school. The Missouri State Medical Association at its last annual meeting at St. Joseph appointed a special committee to cooperate with the university in drafting a bill for the creation of the state hospital and the establishment of a four-year medical course. The members of this committee are: Drs. R. M. Funkhouser, St. Louis, chairman; W. H. Brewer, St. James; F. G. Nifong, Columbia.

Meeting of Health Officers.—The second annual meeting of the Missouri Health Officers Association was held at Columbia, June 20. Some of the subjects discussed were: "American Red Cross Cooperation," by Dr. George H. Jones; "The Venereal Progress to Date," by Dr. R. L. Russell; "Physical Defects and Communicable Diseases Among Children," by Dr. C. P. Knight; "The State General Hospitals," by Dr. F. G. Nifong; "School of Medicine and Hospitals," by Dr. Guy L. Noyes. Other phases of public health work were discussed, particularly rural hygiene by Dr. Cortez F. Enloe, state health commissioner. The luncheon at Boone Tavern given by the state university proved an enjoyable hour for informal talks. Forty-eight members of the conference were present.

New Nurses' Law Effective.—The new nurses' law passed at the last session of the legislature became operative, June 20. It requires every person nursing for hire to obtain a license from the Nurse Examining Board and creates a new division of nursing called licensed attendants. The preliminary educational requirements for registered nurses will be four years in a high school after July 1, 1928, but licensed attendants need have only an eighth grade certificate. Annual reregistration is required so that the nursing resources of the state will be a matter of official record at all times. Nurses who are now practicing and registered must reregister with the board before Jan. 1, 1922, or take another examination. In communities of 30,000 or less a nurse may practice for hire as a "licensed attendant" without specified educational qualification, on the certificate of a licensed physician. Such attendants cannot practice outside of their communities.

Personal.—Dr. Cortez F. Enloe has been appointed state health commissioner by the state board of health. Dr. Enloe is also secretary of the board.—Dr. Thomas Parran, Joplin, has been appointed to take charge of the work of the Bureau of Rural Sanitation. Both of these offices were created by the last legislature.—Dr. and Mrs. Ralph L. Thompson, St. Louis, will spend the summer in Europe visiting London and Paris. They sailed on the *Aquitania*, July 5.—Dr. A. L.

Furth, Cape Girardeau, chief of the resident staff of St. Louis City Hospital, completed his six-year course at the City Hospital, July 1, and has been succeeded by Dr. Howard C. Brascher as chief of the resident staff. Thirty-six new interns became members of the staff, July 1, thirty juniors and five seniors having completed the one and two year courses.—Dr. G. A. Jordan, assistant health commissioner of St. Louis, has been appointed hospital commissioner, to take effect July 15, to succeed Dr. C. H. Shutt, resigned. Dr. Jordan has been connected with the health department of St. Louis for thirty-four years, being assistant health commissioner for the past thirteen years.

State Board of Control.—Governor Hyde has appointed a new nonpartisan board of control consisting of six members, three Republicans and three Democrats, to manage the eleemosynary institutions under a new law passed by the last general assembly. It is expected that this readjustment of the management of the institutions will prevent political influence from affecting the appointment of superintendents and employees and make the tenure of medical officers depend on professional ability and adaptability to the work. The new board displaces six dependent boards of five members each. The institutions affected are: State Hospital No. 1 at Fulton, State Hospital No. 2 at St. Joseph, State Hospital No. 3 at Nevada, State Hospital No. 4 at Farmington, the State Sanatorium for Incipient Tuberculosis at Mount Vernon, and the Colony for the Feeble-Minded at Marshall. The following were appointed on the board: H. D. Eyans of Bonne Terre, a banker and member of the Republican State Committee; W. C. Pierce of Maryville, banker, a member of the board of managers of State Hospital No. 2, Charles Rendlin of Hannibal, Republicans; Frank Farlow of Webb City, formerly chairman of the Jasper County Democratic Committee; R. M. White of Mexico, newspaper publisher and member of the board of managers of State Hospital No. 1, and Arthur Fitzsimmons, a St. Louis lawyer, Democrats. Evans' and Farlow's terms expire June 19, 1924; Pierce's and White's terms expire June 19, 1923, and Rendlin's and Fitzsimmons' terms expire June 19, 1922.

MONTANA

State Health Meeting.—The third annual meeting of the Montana Public Health Association was held in Billings, July 11-12. The principal address was delivered by Dr. Leslie L. Lumsden, Assistant Surgeon-General of the U. S. Public Health Service. Following the public health meeting the Montana Medical Association held its annual convention, July 13-14, giving physicians of the state an opportunity to attend both sessions.

NEVADA

State Medical Meeting.—The Nevada State Medical Association held its annual meeting, June 23-24, at Elko, under the presidency of Dr. Ralph A. Bowdle, East Ely. The following officers were elected for the ensuing year: president, Dr. R. A. Bowdle (reelected); vice presidents, Drs. Maritt J. Rand, Elko; John L. Robinson, Reno; secretary-treasurer, Dr. Sidney K. Morrison, Reno.

NEW YORK

Honors Graduates Who Served in War.—A bronze tablet, in honor of 185 graduates of the institution who served in the World War, was dedicated during the recent commencement exercises at Syracuse University College of Medicine.

Summer Course in Occupational Therapy.—A summer course in curative occupations will be conducted at Byrdcliffe, Woodstock, Ulster County, from July 6 to August 12, by the New York Society of Occupational Therapy. The class will be limited to 128 students.

Violation of Narcotic Law.—It is reported that Dr. John C. Russell, Saranac Lake, president of the village, and also president of the board of education, has pleaded guilty to violation of the Harrison Narcotic Law, and was sentenced to pay a fine of \$100, or \$20 on each count.

Wins Damage Suit for Diabetes.—A jury before Supreme Court Justice O'Malley upheld the claim of Mrs. Rose Cohen that as the result of a collision between a truck of the Bacon Coal Company and a Gates Avenue car in Brooklyn, in 1919, she was injured in such a manner that diabetes developed and she became an invalid and lost 70 pounds. The jury gave a verdict of \$12,000 against the coal company. During the proceedings Sir William Osler was quoted to prove that diabetes could be caused by shock.

Personal.—Dr. Pliny B. Fiske, Byron, sustained injuries about the body, and possibly internal injuries, when his automobile ran into a ditch, when attempting to pass an auto truck, causing Dr. Fiske to be thrown out of the car.—Col. Homer Folks has been reappointed by Governor Miller to succeed himself as member of the Public Health Council for the term of office, which is six years.—Surg. Samuel B. Grubb of the U. S. Public Health Service has been detailed as chief quarantine officer of the port of New York, succeeding Surg. Leland B. Cofer, who has been relieved on account of ill health.

Plattsburg Camp Plans Health Follow-Up.—According to an announcement by Capt. Arthur F. Cosby, executive secretary, the Military Training Camps Association, a new health examination plan will be inaugurated at the Plattsburg camps this summer, providing for a complete physical examination of each man on arrival at the camp, with notations of his physical defects. On his return home he will receive a report of his physical condition and will be advised what course of treatment to follow to eliminate any disabilities. It is believed that by means of a follow-up system after the men return from camp permanent results will be accomplished in improving the health of the men.

New York City

Personal.—Dr. Thomas W. Salmon has been appointed professor of psychiatry at the Columbia University College of Physicians and Surgeons, and has resigned from the staff of the Rockefeller Foundation. Dr. Salmon will continue to serve as medical director of the National Committee for Mental Hygiene.

NORTH CAROLINA

Library Given to University.—The medical library of fifty-two volumes belonging to Capt. John Edwin Ray, Jr., who was wounded in the battle of Bellicourt, and died in October, 1918, has been given by his mother to the library of the University of North Carolina.

Change of Rules Relating to Election of Officers.—The North Carolina Medical Society has adopted resolutions for the naming of new officers by the entire society, instead of by the nominating committee as heretofore. According to the custom of the society, changes in the by-laws must wait one year before final action is taken.

OHIO

Use of Reformatory Boys for Nursing.—The state legislature has appropriated \$25,000 for the construction at the Sandusky Soldier's Home of a model home for Mansfield Reformatory boys who are used as nurses at the Sandusky Hospital. Ohio is said to be the only state where prisoners are used as nurses.

Personal.—Dr. Harry H. Snively, Columbus, has been appointed by the governor as director of the department of health. Under the reorganization plan which went into effect, July 1, the department of health took over from the secretary of state the functions of the state inspector of plumbing and the state registrar of vital statistics.

OREGON

Memorial to Dr. Yenny.—At a recent meeting of the board of regents of the University of Oregon, it was decided to place contracts immediately for the construction of the new medical school building in Portland. It was also decided to name the medical school building after the late Dr. Robert C. Yenny.

PENNSYLVANIA

Chiropractor Fined.—A news item states that, June 13, W. H. Gittings, chiropractor of Bethlehem, was found guilty of practicing medicine without a license and fined \$1 and costs.

Doctors Lose Licenses.—It is reported that at a meeting early in June the Bureau of Medical Education and Licensure revoked the licenses of Drs. W. H. Theal and John G. Dougherty of Philadelphia, and Frank L. Seely of Jersey Shore, following investigations of charges of violation of regulations of the medical practice law.

Personal.—Dr. Hobart Amory Hare, professor of materia medica in Jefferson Medical College, has received the degree of doctor of laws, University of Pennsylvania.—Dr. John A. Kolmer, professor of pathology and bacteriology in the graduate school of medicine of the University of Pennsylvania, and director of the pathologic laboratories of the Der-

matological Research Institute, has received the degree of doctor of science from Villanova College.—Dr. Jessie R. Peterson has tendered her resignation as resident physician of the department for women of the State Hospital for the Insane, at Norristown.

Philadelphia

First Sane Fourth.—The city passed the first sane fourth in its history. There were no long lists of fireworks victims. There were no children lying dead, mute testimony to the possibilities of the "harmless" sparkler. No children were made armless because they did not know the cannon cracker was lighted. Only one injury was reported. A small boy was struck by a bullet from a revolver. The man who fired the revolver wound up in a cell. He did not know it was loaded and the casualty, anyhow, was not due to fireworks.

Health Board Asks for School Nurses.—An increased corps of school nurses will be urged on the board of education, according to the department of public health, of which Dr. C. Lincoln Furbush is director. At present 65,000 children in the elementary schools and 8,000 in the elementary continuation schools, Girls' Trade School, senior high schools and junior high schools are without the service of nurses. Furthermore, those who are now on duty are overtaxed, because of the large number of children assigned to their care.

SOUTH CAROLINA

Campaign of Health in Schools.—A commission has been appointed by Dr. Harry L. Shaw, Sumter, president of the South Carolina Medical Association, from the state association, to investigate the sanitary and hygienic conditions of the public schools and formulate plans for their improvement.

TEXAS

New Army Hospital at El Paso.—The William Beaumont General Hospital at El Paso with a 400-bed capacity was opened, June 15, with 230 patients and with a medical army personnel of twelve officers, twenty-seven nurses and 173 enlisted men.

WASHINGTON

State Examining Board.—Dr. Charles C. Tiffin, Seattle, has been appointed by the governor as one of the members of the state examining board, provided by the administrative code. Other members of the new board are: Dr. John B. McNerthney, Tacoma, and Dr. John W. Mowell, Olympia.

CANADA

Personal.—Dr. Roscoe Graham, Toronto, has been west delivering the address in surgery before the Saskatchewan Medical Association.—Dr. Clarence L. Starr, Toronto, surgeon in chief to the Hospital for Sick Children, has been appointed professor of surgery in the University of Toronto.—Dr. John J. Fraser, formerly of Walkerton, Ont., at present practicing in Toronto, has been appointed district medical officer of health in the Fort William-Port Arthur district, succeeding Dr. Robert E. Wodehouse, who is now secretary of the Canadian Association for the Prevention of Tuberculosis.—Dr. Edward W. Montgomery, Winnipeg, has been elected president of the Canadian Medical Association, closing its fifty-second annual meeting at Halifax on July 9. Winnipeg is to be the place of meeting in 1922.—Dr. John Fenton Argue, Ottawa, has been elected president of the Ontario Medical Council.

GENERAL

Officers of Medical Women's Association.—At the annual meeting of the Medical Women's National Association, held recently in Boston, Dr. Mary Elizabeth Bass, New Orleans, was elected president, and Dr. Grace Kimball, Vassar College, Poughkeepsie, N. Y., president-elect. Madame Marie Curie was made an honorary member of the association.

Dinner in Honor of Rockefeller Foundation Representatives.—During a colonial health conference, the British government gave a dinner, June 13, at the Carleton Hotel, London, in honor of George E. Vincent, Wickliffe Rose, and Vincent G. Heiser, representatives of the Rockefeller Foundation. The Hon. Winston Churchill, secretary for the colonies, presided.

Personal.—Dr. Valeria Hopkins Parker, Hartford, Conn., has been appointed executive secretary of the United States Interdepartmental Social Hygiene Board, to succeed Dr. Thomas A. Storey, Washington, D. C., who, because of the

pressure of other duties, was not a candidate for reappointment. The board has charge of the moral protection of communities near the military and naval bases.

International Congress of Military Medicine and Surgery.—In response to an invitation extended to various allied powers requesting that delegates be sent from the armies and navies to join in the discussion of the lessons of the war in medicine and surgery, the United States government has forwarded orders to Commander Bainbridge to proceed to Belgium and attend the congress as the representative of the Medical Corps of the U. S. Navy. The date of the congress is July 15-20.

Amendment to Sheppard Bill Introduced.—An amendment to the Sheppard bill introduced by Senator Moses of New Hampshire would transfer the enforcement of this proposed act from the Children's Bureau of the Department of Labor to the U. S. Public Health Service of the Department of the Treasury. The contention of the senator is that the U. S. Public Health Service with its large and trained corps of physicians and surgeons would be better able to administer the measure than the Children's Bureau. The Sheppard bill is now before the Senate and is expected to be acted upon in the near future.

Senate Committee Reports Favorably New Dry Bill.—The Senate Committee on the Judiciary has favorably reported to the Senate the antibeer bill approved by the House of Representatives the later part of June. No changes were made in the provisions preventing a physician from prescribing beer as a medicine. Senator Sterling of South Dakota in filing the report declared that he expected to insist upon an early vote by the Senate. In a statement he said:

The ruling of the former Attorney General allowing beer to be prescribed as medicine makes a farce of the prohibition law. It puts no limit on the amount and a doctor can prescribe it by the case or the keg. The bill as reported makes little change in the bill as approved by the House except for some slight modifications in the language dealing with the formulas for proprietary medicines and in the importation of certain wines needed for medicines.

Garden City Sanatorium.—Dr. André Baillon, laureate of the faculty of medicine, Paris, and president of the Franco-American Committee to Fight Tuberculosis, has come to America to complete the organization of the American membership of the committee and to form subcommittees in cities outside New York, with the object of completing the projected Garden City Sanatorium, in Provence, France. The sanatorium will be designed to take care of French soldiers who became tuberculous as the results of war service, and for the children of devastated regions in north France who suffered from exposure during the German occupation. The site of the sanatorium has been selected in the Esterel Mountains, overlooking the Mediterranean. One hundred children now under the care of the American Committee for the Relief of the Devastated Regions of France will be transferred to the sanatorium as soon as it is finished.

Bequests and Donations.—The following bequests and donations have recently been announced:

National Committee for Mental Hygiene, \$100,000; Society for Improving the Condition of the Poor, New York, \$200,000; Henry Street Settlement and New York Hospital, each \$50,000; Adirondack Cottage Sanatorium, \$25,000, by the will of Mrs. Elizabeth Milbank Anderson.

Saratoga Hospital, Saratoga Springs, N. Y., \$100,000; New York Society for Relief of Ruptured and Crippled, \$10,000; New York Eye and Ear Infirmary, \$10,000; Brooklyn Home for Consumptives, \$5,000, by the will of Mrs. Ellen D. V. Hazelton, Westfield, Mass.

Union Memorial Hospital, Baltimore, \$50,000; Church Home and Infirmary, Baltimore, \$60,000, by the will of Mrs. Marie Conrad Lehr, wife of Dr. Louis C. Lehr, Washington, D. C.

The Roosevelt Hospital, New York, for a free memorial bed, \$36,250; to St. Luke's Hospital, New York, for a free bed, \$35,000, by the will of Henry R. C. Watson of Brandon, Vt.

St. Vincent's Home and Maternity Hospital, Philadelphia, \$1,000, by the will of Peter J. Hallahan.

St. Joseph's Hospital, Philadelphia, \$250, by the will of Joseph Verner.

Provisional Health Committee.—Official announcement of the membership of the Provisional Health Committee has been received. It is made up of twelve experts selected by the council as private individuals and with no regard to anything but their personal ability and standing. To these are added representatives of the International Labor Office and the League of Red Cross Societies. There is at present no representative from the United States. The health organization of the league, as finally developed, should have the following objects:

To act as a connecting link between the health authorities of all countries; to act as a clearing house for information concerning everything that constitutes a menace to public health; to form a sort of general staff when an epidemic threatens to overrun a number of

countries; to coordinate the efforts of the Red Cross Societies in their work on behalf of "improvement of health, prevention of disease and the mitigation of suffering throughout the world" as prescribed by Article 25 of the Covenant; to cooperate with the International Labor Office for "the protection of the worker against sickness, disease and injury arising out of his employment"; to advise voluntary organizations requesting assistance; and, finally, to establish health missions when asked to do so by the League of Nations or by any country belonging to the league.

Tri-State Meeting at Portland.—The triennial joint meeting of the medical associations of Oregon, Washington and Idaho was held at Portland, Oregon, June 30 to July 2. The registration was nearly 700, representing over one-third the combined membership of the three associations. The meetings were held in the Multnomah Hotel. In addition to papers and demonstrations by members of the three associations, the following visitors appeared on the program: Drs. William F. Braasch, Rochester, Minn.; Robert E. Farr, Minneapolis; Alan Brown of the University of Toronto; R. E. Coleman of the University of Vancouver, British Columbia; Dean Lewis, Chicago; Alfred Strauss, Chicago; G. V. I. Brown, Milwaukee; V. P. Blair, St. Louis; Frank Hinman, San Francisco; Frederick R. Green, Chicago; Judge Harold M. Stephens of Salt Lake City, representing the American College of Surgeons, and Mr. Celestine J. Sullivan, executive secretary of the California League for the Conservation of Public Health. The session was held under the presidency of Dr. Joseph A. Pettit of Portland, who tendered the members and guests a reception at his residence on Thursday evening. On Friday evening the annual banquet and ball was held at the Waverly Country Club, and on Saturday afternoon the entire body was taken for an extended automobile trip along the Columbia Highway, followed by a barbecue and picnic dinner at the Automobile Club Grounds.

American Legion Promulgates Resolution on Hospitalization.—The following resolution was passed unanimously at a meeting of the National Committee on Hospitalization and Vocational Training of the American Legion, held July 6, 1921, at Washington, D. C. As directed by the resolution, copies are to be sent to the 10,042 posts of the American Legion throughout the United States and the resolution will be published in the *American Legion Weekly*, which has a weekly circulation of more than 700,000 copies among ex-service men and women:

This committee, after duly hearing a report from the Consultants of the Secretary of the Treasury, desires to record its appreciation of the progress made and the work accomplished by the Secretary of the Treasury in allocating the money recently appropriated by the Congress for the expansion of existing federal hospitals for ex-service men. This committee approves highly of the method adopted by the secretary of appointing consultants chosen from the specialists of the country, to advise on the location and type of hospitals to be erected under the aforesaid appropriation and would urge upon the Secretary of the Treasury that he request the consultants to recommend to him such additional provision as in their judgment, after further careful study, may seem to be necessary to complete the hospital program for ex-service men, and furthermore, the National Adjutant is requested to forward a copy of this resolution to every post.

The consultants acting with the Secretary of the Treasury are Drs. William C. White, Frank Billings, George H. Kirby and Chancellor J. G. Bowman.

LATIN AMERICA

Appointments to the Medical Faculty of Bogota.—According to the *Galeria Médica*, to fill the vacancies left by the death of Dr. Fajardo Vega and of Dr. J. del C. Cárdenas, Dr. G. Vergara Rey has been appointed to the chair of tropical medicine; Dr. Jenaro Rico to the chair of medical physiotherapy, and Dr. J. M. Montoya, professor of children's diseases, was appointed on the board of managers.

Inauguration of Laboratory at Ciudad Bolívar.—The *Gaceta Médica de Ciudad Bolívar* gives the addresses made by the director, Dr. F. R. Páez and others at the inauguration recently of the bacteriology and parasitology laboratory of the state of Bolívar, installed in the Hospital Ruiz. The third national medical congress is to convene in that city, July 24, and the principal topic appointed for discussion is the medical geography of Venezuela.

Campaign Against the Hookworm in Paraguay.—The vice consul reports from Asuncion that during a campaign against hookworm last summer, by the department of health, it was discovered that about 83 per cent. of the suburban population of the city of Asuncion and Villarrica were infected. Twenty per cent. of all the deaths in Paraguay are ascribed to this disease. The total population of Paraguay is estimated at 1,000,000, of which 90,000 reside in Asuncion and 34,000 in Villarrica.

FOREIGN

The Göteborg Plan for Dispensaries.—A medical writer in the *Lyon Médical*, describing his impressions from a trip through Sweden, praises the way the free dispensaries are managed at Göteborg. Each applicant presents a certificate of indigence or pays 2 crowns for his consultation.

Zambaco Prizes.—The Société Française de Dermatologie et de Syphiligraphie recently awarded the two Zambaco prizes to Dr. Fouquet for his work on reinfections and superinfections in syphilis, and to Dr. Montlaur for his study of eczematoid lesions in interdigital spaces and folds.

Prize Offered to French Inventor with Three Children.—The Direction des Recherches Scientifiques et Industrielles has recently been endowed with a fund the income of which is to provide two annual prizes, totaling 12,500 francs, to be awarded for some invention made by the father of at least three children.

Centennial of Scientific Society.—The Niederrheinische Gesellschaft für Natur- und Heilkunde recently celebrated at Bonn the centennial of its foundation. The main address at the medical section was by Krause, who reviewed the history of the medical sciences as presented in the society meetings. A number of honorary members were elected, including Professor Forssell of Stockholm.

The Welsh National School of Medicine.—For about thirty years the Cardiff School of Medicine at Cardiff, Wales, has offered the work of the first three years of the British five-year medical course, its students going elsewhere to obtain their clinical training. It is now planned to establish a complete curriculum which will be offered beginning next October. The medical school is to continue as the Faculty of Medicine of the University of Wales.

Personal.—Dr. Belzer of Bordeaux has been awarded the gratitude of Belgium medal for services rendered to Belgian refugees during the war.—The pupils and friends of Dr. Giredey have organized a committee to collect funds to present him with a medal on the occasion of his retirement from active work in the Paris hospitals. A bronze replica of the medal will be given each one who subscribes 50 francs. Address G. Doin, Librairie Doin, Paris.—Prof. W. Uhthoff retires this year from the chair of ophthalmology at Breslau, having reached the age limit.

Tribute to Maragliano.—The Italian internists hold their annual meeting this year, in October, and it is proposed to celebrate on that occasion the fortieth anniversary of the connection of Professor and Senator E. Maragliano with the teaching force of the University of Genoa. The meeting and the anniversary celebration are to be held at Naples, where Maragliano obtained his degree in medicine. He was the guest of the University of Pennsylvania in 1904 for the Phipps lecture. He is one of the two directors of the *Riforma Medica*, and has long been one of the leaders in pathology and internal medicine in Italy.

Gynecology and Obstetrics Congress.—The Second Congress of the Association of Gynecologists and Obstetricians of French-speaking countries is to convene at Paris, Sept. 29 to Oct. 1, 1921. The subjects appointed for discussion are: disturbance in thyroid functioning in connection with gestation; medical and social protection for the pregnant; indications for abdominal hysterotomy in the course of labor with normal pelvis; hysterectomy in acute puerperal infection; and radium therapy in cases of uterine fibromas (Faure of Paris); in cancer of the uterus (Hartman of Paris); in metrorrhagia under other conditions (Koenig of Geneva). Membership in any French-speaking gynecology or obstetrics society entitles to membership in the congress. The general secretary is Dr. Brindeau, rue de Grenelle 71, Paris.

Guests at Dedication of Peking Union Medical College.—At the dedication of the Peking Union Medical College to take place in Peking, September 15-22, as announced in THE JOURNAL, July 12, the following members of the board of trustees of the Rockefeller Foundation will be present: George E. Vincent, president; Paul Monroe, chairman of the board of trustees; John D. Rockefeller, Jr., Martin A. Ryerson, Chicago; William H. Welch, Johns Hopkins University; Oriol Armitage, of the Society of the Propagation of the Gospel in Foreign Parts, England; James L. Barton, Boston, secretary of the American Board of Commissioners for Foreign Missions; F. H. Hawkins, London Missionary Society, England, and J. Christie Reid, of the Medical Missionary Association of London, England. The following physicians have also accepted invitations and will attend the Interna-

tional Medical Conference to take place at that time: Professor Tuffier, Paris; Drs. A. B. Macallum, McGill University, Montreal, Canada; Sir William Smyly, Dublin; R. T. Leiper, London School of Tropical Medicine; Francis W. Peabody, Harvard University Medical School; George de Schweinitz, University of Pennsylvania; Florence Sabin, Johns Hopkins University; S. S. Goldwater, Mount Sinai Hospital, New York; Thomas Cochrane, London; J. G. Clark, University of Pennsylvania; Victor G. Heiser, International Health Board, and Richard M. Pearce, Rockefeller Foundation.

Gratitude Expressed by German Pediatricians.—Our German exchanges publish an official notice drawn up at the annual meeting of the Deutsche Gesellschaft für Kinderheilkunde, held at Jena in May, the first since the war. It states that the society feels it incumbent to express its profoundest gratitude to all those "who during the war and especially since the close of the war have tried to alleviate distress among children in Germany. This gratitude is to all who helped, either in Germany or elsewhere. Beside the German organizations . . . especial thanks are due in particular to the foreign relief on a large scale, especially the children's aid mission of the Quakers of America who, in collaboration with Herbert Hoover's American Relief Administration and European Children Funds have been supplying food since February, 1920, for children of all ages up to 18, and for expectant and nursing mothers; also to the Quaker society of England for their care for refugees and other services; to the Salvation Army for distributing free milk; to the child saving work done by the organizations for the purpose in Denmark, Norway, Holland, Sweden, Switzerland and Finland, sending donations and receiving German children into their homes; to the international organization responsible for the 'Save the Children Fund,' and finally to the committees formed in German colonies in North America, Central and South America, Dutch East Indies, China, South Africa, Brazil, Argentina and other foreign lands, for their donations of money and in particular their gifts of milch cows. Our gratitude is profound for this assistance to our children, and also our appreciation of the spirit of sympathy and helpfulness and reciprocal confidence which is manifest in all these efforts. Only the strengthening of this spirit can bring true peace to peoples." The communication is signed by the president and secretary of the society, Prof. E. Peiper of Greifswald and Prof. H. Brüning of Rostock.

Deaths in Other Countries

Dr. Carlo Moreschi, one of the leading physicians of Italy, recently appointed professor of clinical medicine at Messina. He succumbed to hemorrhagic smallpox at Pavia.—Dr. F. G. Thomson of Rosario, Argentina, a leader in the organized prophylaxis of venereal disease and of tuberculosis, and professor in the Escuela Industrial de la Nación.—Dr. John Matthew Fortesque-Brickdale, Bristol, England; member of editorial staff of the *Bristol Medical-Chirurgical Journal* and author of works on chemistry and therapeutic actions of drugs; died recently, aged 51.—Dr. William A. Bell, former practitioner of St. George's Hospital, London; became associated with General Palmer, Colorado, and was interested in the founding of the Denver and Rio Grande Railroad system, of which company he was for many years vice president; associated in the founding and development of Colorado Springs, Manitou, and other Colorado towns, and maintained a residence, "Bairhurst," at Manitou; author of "New Tracks in North America"; died recently, at his home in England, aged 80.—Dr. E. Lauwers, chief of public health service in western Belgium and a leading surgeon, member of several scientific societies at home and abroad, aged 63.—Dr. H. Albers-Schönberg, professor of roentgenology at Hamburg. He was one of the first to appreciate the importance of the roentgen rays for medicine, and was the first professor of roentgenology to be appointed, and has published numerous works on this specialty. His prolonged work with the rays entailed severe injury. One arm had to be amputated and he has finally succumbed to malignant degeneration of his roentgen burns.—Dr. H. Brock of Berlin, founder of the Balneologic Society, aged 89.—Dr. A. Fiedler of Leipzig, aged 86.—Dr. L. Knorr of Jena, who discovered the pyrazolon compounds, including antipyrin, aged 62.—Dr. A. Lerch of Vienna.—Dr. R. Penzini, Jr., of Callao and Dr. M. Hernández of Maracaibo, both in Venezuela.—Dr. J. Deutsch of Munich, said to be the first to apply roentgen treatment to uterine fibromas.—Dr. A. Würzburg, long statistician to the national public health service in Germany.—Dr. J. Fabre, professor of obstetrics at the University of Lyons, aged 55.

Government Services

Navy Closes Yokohama Hospitals

The Surgeon-General of the Navy has ordered the U. S. Naval Hospital at Yokohama, Japan, closed in the interest of economy. Lack of demand for hospital facilities in Japan has been falling off in recent years and Navy Department decided that there was no occasion for a continuation of this institution. Capt. Raymond Spear, U. S. Navy Medical Corps, who has been in command, will be transferred to other duties with his assistants.

Senate Committee Reports Favorably Reserve Retirement Bill

The Senate Military Affairs Committee has reported favorably to the Senate the Bursum bill calling for the retirement of disabled emergency and reserve officers on the same financial status as the officers of the regular military establishment. Quite a number of emergency medical officers wounded and disabled as a result of their service in the World War will be benefited should the measure pass both houses of Congress and become a law. Senator Bursum introduced the proposed act on the claim that the country was not living up to the provisions of the Army reorganization and the draft act that stated that all officers and enlisted men would be placed on the same footing as regards pensions after their entrance into the Army.

Distinguished Service Medal to Colonel Reynolds and Lieutenant Hull

President Harding has awarded the distinguished service medal to Col. Frederick P. Reynolds, Medical Corps, U. S. Army, for meritorious services as a surgeon of the advanced section, service of supply, American Expeditionary Forces. He is from Elmira, N. Y. For extraordinary heroism in action near Cormicy, France, May 27, 1918, Lieut. Alson J. Hull, U. S. Medical Corps, has also been awarded the distinguished service cross. He is from Troy, N. Y., and was attached to the Fourth South Staffords, British army, in action.

Flight Surgeons

Seven students have recently graduated and received the rating of flight surgeons from the School of Flight Surgeons, at the American Army Medical Research Laboratory, Mitchel Field, Long Island, N. Y.

Changes in Naval Medical Corps

Capt. James S. Taylor, M. C., U. S. Navy, in charge of the division of Naval medical publications, and editor of the *Naval Medical Bulletin*, was detached from the Bureau of Medicine and Surgery, July 15, and assigned to duty as medical officer of the Navy Yard, Philadelphia. He will be relieved by Capt. Frank L. Pleadwell, recently fleet surgeon, on the staff of Admiral Wilson. In addition to his work on the Naval medical publications, Captain Pleadwell will have charge also of the educational activities of the Medical Corps.

Public Health Institute

The proposed public health institute which the U. S. Public Health Service contemplated holding in Washington, D. C., during the fall of 1921, has been indefinitely postponed. This action has been decided on after several conferences between officers of the service and officers of the American Public Health Association.

Public Health Service Takes Over Navy Hospital

The U. S. Public Health Service has taken over the management of the Navy Camp and Hospital at Gulfport, Miss. It will be used for the care and treatment of shell shock soldier patients. Owing to some technical difficulties now in progress of clearing up, no lease has yet been signed for the property. Surgeon G. A. Kempf of the U. S. Public Health Service has taken charge of the hospital with Passed Assistant Surgeon V. L. Mahoney as executive officer.

Foreign Letters

PARIS

(From Our Regular Correspondent)

June 10, 1921.

International Conference on Epizootic Diseases

Last October, following the appearance of cattle plague in Belgium, the Comité consultatif des épizooties of France requested, at the suggestion of its president, that the various governments be invited to appoint delegates to a conference for the purpose of deciding on the proper measures to be taken to prevent, or at least to check the progress of, epizootic diseases. The minister of agriculture, recognizing the value of the suggestion, submitted it to the ministerial council, by which corresponding action was taken. Invitations were promptly sent to foreign governments with the result that they readily entered into the plan. Forty-two countries, colonies or dominions, besides France, expressed their approval and were represented at the conference. In 1871, exceptional conditions analogous to those of today were the occasion for a conference of like nature. The Austrian government at that time took the initiative with the view to establishing uniform rules concerning the prevention of cattle plague, which was spreading over central Europe, Belgium and a large part of France. The Vienna conference worked out a set of regulations of international scope, but, owing to the disappearance of the disease, it was not published. However, the principles therein set forth have served as a basis for all modern legislation on the subject. The conference of 1921 was different from that of 1871 both on account of the large number of governments that took part in it and thus gave it an almost international character, and also because its program was not limited to the adoption of efficacious measures for combating the cattle plague. The French delegation, which had been instructed by the French government to work out the program of the conference, thought it advisable to include the study of methods that might serve to prevent the spread of other epizootic diseases. After a general discussion, during the course of which the delegates of the different governments made known the conditions obtaining in their respective countries, committees were appointed, with instructions to prepare and submit conclusions, which were approved by the conference and presented to the various governments for ratification. Some of the conclusions lay down general principles, while others take the form of resolutions. It appeared that, while complete unanimity was feasible in certain matters, in other points at issue it was preferable to allow a certain amount of freedom to the individual governments. The most important thing is that each government be promptly notified of the appearance of any epizootic disease in a neighboring country, so that it may take the necessary precautionary measures for its own protection. It is equally important that the information on sanitary topics shall be published by the various countries in accordance with uniform rules and shall be given out as frequently as possible. Formal resolutions relative to this subject were adopted. The conference recognized also the desirability of a common bond of union being established between the scientists throughout the world whose double aim it is to discover preventive and curative measures whereby the spread of epizootic diseases may be effectively opposed. Thus every scientist can keep himself informed in regard to the work undertaken and the results secured in other laboratories. He will be able to experiment under conditions often just a trifle different from those under which the experiment was first done. Thus he can control the value and efficiency of work undertaken and results obtained else-

where. The publication of the results (though they be only partial or even negative) of various experiments will prevent the loss of time and energy that would arise from performing experiments which have already been made. Investigations should be confined to researches made with a view to discovering curative methods. They must also include, from the standpoint of prophylaxis, everything pertaining to the spread of the disease, bacteria carriers, the amount of resistance shown by certain species or certain individual animals, and the danger of contamination that may lie in the meat and other products of certain animals, even though they may appear harmless. The conference thus outlined an important program of scientific research, in the carrying out of which the scientists of the world are requested to coordinate their efforts. The realization of this program requires the publication of an international sanitary statistical bulletin and the creation of a bureau that shall serve as a clearing house for all kinds of information. It was also decided to establish a permanent bureau against epizootic diseases and having a similar mission to the bureau which was created about fifteen years ago for the protection of human health and which bears the name of the International Bureau of Public Health. The object of this bureau, as expressed by the terms of the establishing resolution, is to collect and bring to the knowledge of governments and their health departments, facts and documents of general interest concerning the spread of epizootic diseases and the means employed to combat them; to promote and to coordinate all researches and experiments connected with the pathology and prophylaxis of infectious diseases in animals for the accomplishment of which an appeal must be made to international collaboration; to work out forms of international agreements relative to sanitary control of animals, and to place at the disposal of the signatory governments the best means of controlling the execution of such agreements. The conference requested that the headquarters of this bureau be permanently located at Paris, where each year the delegates of the various governments will convene for the purpose of examining into new problems which may arise or into modifications which may be required in international legislation, the foundations of which it has thus laid.

LONDON

(From Our Regular Correspondent)

June 12, 1921.

The Prevention of Venereal Diseases: The Government Policy

As shown in previous letters, ever since the war the prevention of venereal diseases has been a burning question in this country. For some time the government has been considering the modification of its policy, and the result is a circular issued by the Ministry of Health to the local health authorities (county councils). Up to the present the government policy has been based on the recommendations of the Royal Commission on Venereal Diseases which, in the main, are gratuitous treatment at hospitals and other institutions in all parts of the country, and a campaign of publicity and education as to the dangers and the necessity for early treatment. In a few areas, ablution or disinfecting centers have been instituted as an experiment. War experience of the different armies has given rise to the question whether in civil life some further measures should be adopted, and this was considered by a committee appointed by the minister of health. This committee came to the conclusion that, although certain drugs properly and skilfully applied are efficacious in prevention, the most carefully organized system for the supply of these drugs in packets and the instruction of men in their use did not produce such reduction in incidence as to warrant its recommendation to the government. It was, however, found that when preventive treatment by a skilled

attendant was provided after exposure, the results were better than when the same measures were taken by the individual, even after the most careful instruction. Unofficially also the question has been under the consideration by a special committee of the National Birth Rate Commission. The government has given careful consideration to the question on which these two committees are not agreed—the question of self-disinfection—but they are in general agreement that (1) abstention from promiscuous intercourse is the best way to avoid risk of disease, and a steady and continuous policy of public enlightenment is essential; (2) disinfection immediately after exposure is effective only to the extent to which it can be thoroughly and intelligently applied. They also find that medical opinion is divided as to the efficacy of disinfection for the civil population and in particular as to (a) whether it is practicable to give such instruction to the population generally as will insure that disinfectants are thoroughly and skilfully applied; (b) whether propaganda as to the efficacy of disinfectants would not lead to persons risking infection who would otherwise avoid it, and (c) whether the disinfectants will not be used in some cases for treatment with the result that proper treatment will be delayed. The government is thus confronted with this difference of opinion on the medical side as to self-disinfection, while on the moral and social side weighty objections are advanced against it. It has therefore decided that it cannot give it official support. It considers that this decision emphasizes the importance of continuing and extending public instruction and enlightenment as to the danger of promiscuous sexual intercourse. It recommends the widespread use of leaflets warning the public of the prevalence of venereal disease, pointing out that it is the duty of all who have incurred the risk to cleanse themselves thoroughly and immediately, and if the slightest symptoms occur to seek medical treatment promptly. The arguments against official advocacy of self-disinfection are not considered to apply to the provision of ablution centers under medical supervision, but experience is not yet sufficient to decide whether such centers should be established in large towns.

The Decrease of Typhoid Fever

Dr. W. H. Hamer, health officer for London, considers that among the factors operating in producing the great fall in typhoid prevalence of the last twenty years, amelioration of conditions obtaining in connection with the harvesting of fish and shellfish from inshore waters have played a not inconsiderable part. The oyster scare of the nineties diminished consumption of oysters, and led to improvements in cultivation and storage. For many years, however, cockles and mussels derived from grossly polluted sources continued to be supplied to the poorer population of the large towns, and to be consumed locally at seaside resorts. The practical disappearance of the Tees oyster and mussel fishery was accompanied by a remarkable fall in the greatly excessive amount of typhoid fever in Durham. Dr. Hamer quotes Professor Gardiner for the statement that so long as the oyster shells remain closed and do not lose their shell water, the oysters remain good for human consumption, and cannot be infected on their journey to the customer. Noting Gardiner's description of the process of "teaching the oyster to keep its mouth shut," Dr. Hamer also recalls his optimistic view that "cases of typhoid infection from oyster beds are now almost nonexistent."

As regards fish, three outbreaks occurred in London in September, 1900, which were attributed to this source, and it was found that small fish which were used ungutted were specially dangerous. Dr. Hamer thinks that the need for systematic inspection with a view to destruction of fish and shellfish unfit for consumption, the desirability of protecting

the nurseries of the small fish, of prohibiting the sale of ungutted flatfish, and of coping with the problem of the unsatisfactory shellfish beds calls for attention if the position as regards preventing spread of typhoid is to be not merely maintained, but still further improved on, until at length the goal is attained—the entire abolition of the disease.

Eugenics

At the annual meeting of the Eugenics Education Society, Major Leonard Darwin, in his presidential address, said that eugenics had been called a dismal science, but it should be described as an untried policy. Both in genetics and eugenics further advances in knowledge were much needed, and many inquiries were now held up only for want of funds. The wisdom of attending to breed in the case of cattle and dogs was universally admitted. Experience in the stockyard enabled us better to understand the laws of natural inheritance; but reliance on those laws did not imply that the methods of the animal breeder should be introduced into human society. Eugenists advocated nothing contrary to the highest religious ideals. They had been accused of wishing to abolish love as a guide to conduct, but that was false. They wished to purify it of all harmful influences. Love was largely aroused by advantageous moral and mental qualities, and it found this the firmest foundation on which to base a eugenic policy. By promoting right ways of regarding sexual problems, the moralist was often, unknown to himself, striving to improve the racial qualities of the future generations. We should encourage the discussion of all relevant reforms, but should be cautious in recommending governmental interference. If action was too bold, progress would be slow, for the wrong road would often be taken. If discussion was not bold, progress would also be slow, for a nation could not grope its way quickly in the darkness of ignorance. As to sterilization, for example, by open discussion true conclusions would be most likely to be reached.

PEKING, CHINA

(From Our Regular Correspondent)

May 15, 1921.

Plague Situation

Since my letters on the plague and famine in China, there have been a few new developments. Following the rather surprising outbreak of plague on the borderline between the two provinces of Shantung and Chihli, several small epidemics started in neighboring places and for a time caused great concern. However, they were promptly placed under the control of the medical authorities and have gradually died out, but not without the sacrifice of one of the Chinese physicians, a recent graduate of the old Peking Union Medical College. The plague in Manchuria is gradually disappearing without developing alarming proportions, thanks to the intensive preventive measures used against it by the North Manchuria Plague Prevention Service under Dr. Wu Lien Teh. The famine distress has been further augmented by the lack of rain during March and the first part of April. In many places the winter wheat has been destroyed. This grain, normally maturing in June, was counted on to break the back of the famine. Although later crops of other foods will take the place of winter wheat, the delay will necessitate the support, for a much longer period, of those whom the Famine Relief Committee has elected to carry through until harvest time.

Clubs Formed of Faculty of Peking Union College

The faculty of the Peking Union Medical College has organized the Journal Club, with Dr. Oswald Robertson of the department of medicine as its president, and Dr. Carl TenBroeck of the department of pathology as its secretary.

Meetings are held biweekly and reviews of current articles and monographs of general interest are discussed.

Another organization of the staff is the Faculty Medical Society. Dr. Jocelyn Smyly of the department of medicine is its president, and Dr. Henry Meleney of the department of pathology is its secretary. This society also meets biweekly, alternating with the Journal Club. At some of the meetings the progress or result of the researches being conducted by the members of the staff is reported. At others, clinical material is presented. Once a month the Peking branch of the China Medical Missionary Association meets conjointly with the Faculty Medical Society and takes part in the program.

Streptococcic Epidemic

The winter has been a severe one from the point of view of infectious diseases. One of the most important phases of this has been an epidemic of hemolytic streptococcus sore throat, with middle ear disease and mastoiditis.

Nervous and Mental Diseases

Cerebrospinal syphilis and its degenerative sequelae are conspicuous both in frequency and in gravity. Tabes dorsalis and general paresis appear to be at least as frequent here as in American clinics. Primary tract degenerations and the muscular dystrophies are evidently not infrequent among the Chinese. The infrequency thus far of trigeminal and other severe neuralgias in this service is surprising, since pain is the symptom which brings the Chinese most promptly to the western physician. For the indolent degenerative diseases they are more likely to content themselves with the native practitioner, at least until resulting motor weakness stirs them to overcome their inborn conservatism. Many of the cases of epidemic encephalitis (lethargic) have been of the myoclonic type. Mental defectives of all grades are frequently encountered. Dementia praecox has been the commonest of the psychoses. Psychoneuroses are frequent among the Chinese. A violent fit of anger is a cause commonly assigned by the patient or the family for the ensuing train of symptoms.

BUDAPEST

(From Our Regular Correspondent)

May 19, 1921.

Influence of Alcoholism of the Mother on the Offspring

At the recent meeting of the medical society, Dr. Darvas said that the pernicious influence on the offspring of habitual parental inebriety is a well recognized factor in pathology, and statistics seem to show that this cause is vastly more operative when of the two parents the mother is the sinner. This, indeed, is only what one would anticipate, in view of the fact that for nine months the fetus remains exposed to the baneful influence of the alcohol, taken persistently. Sobriety on the part of the father has little effect so far as the health and vitality of the child is concerned, and in presence of maternal drunkenness may almost be discarded, although no doubt the result of two bad strains would intensify the consequent mischief. The influence of chronic parental inebriety in this connection bears mainly on the higher departments of the nervous system, producing more or less marked intellectual inferiority and a functional incapacity on the part of what may be described generally as the moral function of the brain. For instance, the children of drunken mothers are liable to become epileptic, hysterical or neurasthenic, are predisposed to infantile paralysis, and have an imperfect conception of the moral obligation of truth in spite of careful training which, by the way, they do not usually get. Their emotions and passions cannot be brought under adequate control; consequently they furnish a large contingent to the criminal and to what the criminologist would call the irresponsible classes. Looked at from this point of view, it becomes obvious

that criminal tendencies are of the nature of a constitutional disease to be dealt with preventively and therapeutically rather than vindictively.

Leprosy in Herzegovina

Dr. Vokurka has returned from Herzegovina (Jugoslavia), whither he betook himself for the purpose of study in loco the probable causes of the prevalence of leprosy in that country. He found that the disease is very sparingly distributed over Bosnia and Herzegovina (before the war parts of the Austro-Hungarian monarchy), and is nowhere very abundant and affects primarily the native population. Dr. Vokurka surmises that it was probably a new disease when first recognized in Sarajevo some 150 years ago, since which time it has gradually extended over the whole country. The principal point of interest in these observations is the confirmation which Dr. Vokurka has found of his theory that leprosy is due to deficient alimentation, the consumption of badly cured mutton. This fact is in harmony with the finding of Prof. Jonathan Hutchinson, who found in studying leprosy in South Africa that the disease is due to the consumption of badly cured salt fish. Dr. Vokurka is constrained to admit that the evidence is in favor of the disease being sometimes communicated from man to man, not, however, by direct contagion, but by the consumption of food contaminated by manipulation by leprosy persons. As this method of transmission is possible only under cover of the grossest hygienic neglect, its spread mainly among the poorer classes is explained. The conclusions formulated by Dr. Vokurka are in favor of legislative control of the sale of food, the education of the public as to the methods of transmission, and the establishment of small leper homes into which the victims of the disease should be induced to go during the infectious period.

Human Actinomycosis in Bukowina

The district medical officer in Czernovitz has been notified that near the Bessarabian border there are some human actinomycosis cases. He duly started to visit this district and examined all the reported cases. The affection was in nearly every case (eleven) on the face or the neck. In each case the clinical diagnosis was confirmed by the microscopic examination of the pus. To these eleven cases he would add five others, noted by a colleague in Kisinian which, added to all those published, gave a total of thirty-six cases of human actinomycosis known up to the present in the mideastern part of Europe. Out of the thirty-six cases, twenty-one were localized in the face and neck and fifteen in the viscera. As regarded the prognosis of that affection, the district officer was able to procure information on the final lot of about 250 patients both at home and abroad. By these documents it was found that the mortality, which was only from 2 to 3 per cent. in the cutaneous forms and 10 per cent. in the cervicofacial forms, rose to 30 per cent. when the malady was deeply situated in the temporomaxillary region, to 65 per cent. in abdominal actinomycosis of intestinal origin, and to 85 per cent. when the liver or cerebrospinal system was attacked. The gravity of the visceral forms arose from the difficulty of treating due to the extended infiltration of the malady.

Infection of the Ears of Schoolchildren

An interesting and important report was laid before the Medical Society of Budapest by Dr. A. Müller, who examined the ears of 500 schoolchildren. The investigation was undertaken with the object of ascertaining the amount of ear disease in children of the poorest class, and if necessary, of drawing attention to the subject. Various tests were adopted, into which it is needless here to enter, save in the case of the meaning placed on the term "normal." By this was meant that the membranes appeared normal and that the whispered voice could be heard at a distance of 6 meters. Inability to

pass this test with one or both ears was present in 245 out of 500 children. Foreign bodies were found in the ear in eleven children, eight of whom were girls. Out of eighty-seven cases of deafness there were adenoids in sixty-one; 127 of the total number of children had discharge from one or both ears, and in forty-three cases the discharge was suppurative. The number who had previously suffered from middle ear discharge was 123, and of these sixty-nine had adenoids, and perforation was present in twenty-four, while adenoids were found in all in 214 children, of whom 189 presented some aural troubles. Dr. Müller finally raised the question as to what steps should be taken in the matter by the authorities. He recommended that the systems employed in Germany, England and Sweden should be investigated and reported on.

VIENNA

(From Our Regular Correspondent)

June 8, 1921.

A One Day Strike of Physicians in Austria

The serious dissatisfaction of the medical profession with the behavior of the government toward them has aroused angry feelings among physicians, as explained in my previous letter. The often threatened manifestation of this feeling took place a few days ago when all practitioners in this country stopped working for a day as a demonstration against the government. Both the physicians in the country and those in the towns were invited to attend a mass meeting in the large assembly hall in Vienna, and upward of 2,000 of them were present when a resolution embodying the demands of the profession was unanimously carried. The medical councils and the medical organizations had united their efforts to bring about a universal action; all hospitals, ambulances, charity institutes, private physicians and clinics on that day stopped working. Only absolutely necessary first aid was rendered by the few men delegated for that purpose. All other men had to be present at the mass meeting, and for the first time in the history of medicine in this country we had no "outsider." The demonstration has proved to the government that, if necessary, the medical organization and corporations have their members sufficiently under control to insure absolutely efficient working of a strike if that should be deemed necessary. And the government was also made well acquainted with the demands of the profession, for the resolution mentioned above contains the following points: The medical profession demands that in all questions pertaining to the social welfare of the population or the profession alone, the opinion of the authorized representatives of the medical profession be asked before such bills or acts be drafted, and such opinions be duly considered according to economic interests of physicians; that a medical act be at once brought before the National Assembly regulating the rights and duties of physicians and permitting that the interests, both ethical and material, of the profession be duly looked after; the antiquated sickness insurance institutions should be reorganized from a modern standpoint. The interests of the insured persons should be brought into better relation with the economic conditions of both parties concerned. For this purpose, an immediate formation of a special committee on that subject is demanded. A supreme board of health, in which the medical men would have to be given the absolute majority of the members, is required. The profession does not object to the cooperation with nonmedical men, but their number must not be overwhelming, as hitherto. The ministry of health should be made independent and not form merely a department of another ministry, as hitherto. A new public health act is demanded, giving proper attention to the achievements of modern science, especially prophylaxis and hygiene. The officials of the state are to be held respon-

sible for all damage caused by their doings to the health of individuals just as much as any other private person. Compulsory instruction in hygiene is recommended for all schools, permission to treat the diseased human body to be granted only to fully qualified medical men after serving a period of two or three years in hospitals. There should be insurance against sickness and invalidity, as well as old age pensions, for all doctors of medicine. A modern reform of the medical curriculum is demanded, and compulsory free postgraduate instruction by courses every few years combined with practical classes. The profession, which for years has been asking and petitioning in vain, without receiving anything else but vague promises, has now lost its patience; and unless the government gives definite and convincing proof of its willingness to comply with the justified demands of the profession within four weeks, physicians are prepared to fight it out and stop all their work. It may be mentioned that while formerly a large proportion of the profession abhorred the idea of a medical strike, now all corporations, including the professors of the universities, the officers of public health and the non-practicing doctors of medicine are unanimous as to the advisability of this modern weapon in the fight for the existence of the profession. And even the laity is in favor of the attitude of the profession, however strange this may seem. We have learned here that the men at the head of the state at present are not accessible to the arguments of common sense unless they are backed by a more or less comprehensive display of suave force. The position of physicians is much strengthened by the fact that the public finds it does not get the benefits it is entitled to from the existence of an excellently educated body of physicians in this country of old medical fame.

Precarious Position of the "House Physicians" in Vienna

A large percentage of the general practitioners in this city are in a critical economic position, as was pointed out at one of the recent meetings of the "Economic Organization." The former house physician is virtually dying out. The bulk of the middle classes are now unable to procure any pay for the services of a private physician and must turn to hospitals and outpatient departments and give up all idea of comfort during illness. Apart from the small number of specialists and surgeons or internists who practice among the newly rich, physicians had to apply for one of the posts in the Krankenkassen or sickness insurance clubs. The pay thus obtained is the chief income of the majority of physicians. If we take also physicians appointed in the theaters, and in public health offices or other private or public corporations, more than 70 per cent. of all practitioners of this city are receiving a fixed salary and their time is taken up by such offices. Still these sources of income are not sufficient to enable the physician to keep up the former standard of life. Servants or carriages are things of the past with the vast majority of us, and numerous physicians and their families are patrons of the war kitchens, where food is rather below the caloric standard requisite for the hard work done by the men. New clothes, books, and attendance at the theater or concerts are luxuries at present, not admissible for the average physician, and the "Economic Organization" has all hands full of work to assist many men, whose social and moral position is at the verge of becoming intolerable. The report on which the remarks of this paragraph are based was read at the meeting of the committee and was not intended for public notice, because it was deemed harmful to let the public know exactly how badly off some of our confrères are.

Lack of Cadavers for Dissecting

The smooth course of instruction of the would-be young physician of bygone days has given place in many instances to serious difficulties, owing to lack of money. The expendi-

ture for chemical reagents, apparatus and rabbits or dogs, to say nothing of bigger animals or books, has become too heavy a burden for many laboratories and institutes. These drawbacks can be overcome, as soon as money is forthcoming either from the state or from private sources. But there is another important difficulty, not surmountable by money alone. The dissecting theaters of our anatomic institutes are lacking dead bodies. This is due directly to the downfall of the empire, for formerly sick people from all parts of the vast country, comprising more than 50,000,000 inhabitants, flocked to the medical center, Vienna, and many persons died here in the hospitals, without the bodies being claimed by their friends. Now we have a reservoir of only 6,000,000 to draw on, and even in every middle-sized town there are good hospitals, so that the influx to Vienna is diminished still farther. And those who do die in the city's hospitals are nearly all claimed by their friends. The result is that the students of the first semester have to restrict themselves to the study of skeletons or preserved wet or dry specimens, and to watch the few luckier groups dissect a casually obtained corpse, and wait until something falls to their lot in the same line. Of course, such a state of things cannot be permitted to go on. It is paramount that a law be passed, securing ample opportunity for dissecting by regulating which body can and which cannot be claimed by the authorities of the faculty for purposes of instruction.

BERLIN

(From Our Regular Correspondent)

May 21, 1921.

Roentgen-Ray Treatment of Malignant Growths

At the recent Berlin meeting of the German Surgical Society, Professor Perthes of Tübingen gave a detailed report on the roentgen-ray treatment of malignant tumors. Passing over matters of technic, he considered mainly the problem as to what roentgen-ray treatment had accomplished and what attitude we are to take toward it in viewing the indications for operative intervention. Of course, radium treatment and combined radium and roentgen-ray treatment were also discussed. Skin carcinomas, not only basal-cell but also squamous-cell cancers, can be cured by irradiation without operation. If carcinomatous glands are present, success is not so certain. In carcinomas of the lip treated by roentgen irradiation, freedom from recurrence could be established after three years in 80 per cent. of the cases. The cosmetic result is better than is secured by operation. Likewise in carcinoma of the penis, freedom from recurrence was observed for a period of three and a half years. Carcinomas of the mucous membranes react poorly to roentgen rays but better to radium. In carcinoma of the tongue, combined treatment may be successful. In tumors of the jaws, surgery has made great progress, so that here roentgen irradiation need not be considered. In carcinomas of the pharynx and larynx, clinical cures can be effected by roentgen irradiation, but recurrences soon present themselves. Only in carcinoma of the larynx located above the vocal cords has roentgen irradiation accomplished favorable results; carcinomas occupying a lower position should be operated on. In esophageal carcinoma favorable results have occasionally been brought about by combined radium and roentgen-ray treatment. However, during treatment, edema of the glottis frequently occurs, which may render tracheotomy necessary. In carcinomas of the gastro-intestinal tract there is no reason to depart from operative treatment. In carcinoma of the rectum the problem does not appear to be solved as yet. Of five cases receiving combined radium and roentgen-ray treatment three resulted fatally; two patients are still alive thirty-four months after the treatment and are in very good condition. Carcinoma of the breast should receive operative treatment, as roentgen irradiation effects only a

clinical cure and recurrences soon appear. Also in carcinoma of the uterus only a few selected cases are suited to roentgen irradiation. Therefore, only cutaneous cancers of the lip, possibly carcinomas of the tongue and esophagus, laryngeal tumors above the vocal cords and perhaps certain rectal carcinomas are amenable to roentgen irradiation. All other cancers should be operated on, with the exception of a certain number of uterine carcinomas. Also in the case of inoperable carcinomas good results may be accomplished within definite limits, but lasting results are the exception. However, by means of radium and roentgen-ray treatment it is sometimes possible to so influence inoperable tumors as to make them operable. Whether or not carcinomas of the stomach should be subjected to roentgen-ray treatment appears rather doubtful in view of the unfavorable results hitherto secured. As for postoperative prophylactic treatment, Perthes, and likewise Tietze and Payr, have not achieved very good results. Perthes observed more recurrences than usual, especially during the first year, which induced him to give up prophylactic irradiation. Of the sarcomas, the lymphosarcomas react well to roentgen rays. In the case of periosteal sarcomas, roentgen irradiation should be given a trial. As for myelogenic sarcomas, operation is preferable if resection will serve the purpose. If resection is not sufficient but removal seems alone adequate, roentgen irradiation should be tried. Sarcomas of the upper jaw should be given operative treatment, whereas gliomas of the brain and hypophysial tumors react well to roentgen irradiation. Also fibrosarcomas of the nasopharynx are adapted to irradiation. The primary and late injuries following roentgen irradiation (*roentgenkater*, or roentgen sickness and roentgen cachexia) should not be undervalued, but the principal drawback of roentgen irradiation is the uncertainty of the results. Perthes doubts whether there is any such thing as a carcinoma dose in the sense that Seitz and Wintz use the term. We can only speak of a minimal carcinoma dose. All tumors do not react alike to roentgen rays; in fact, within the same tumor the various cells react differently. However, Perthes holds the view that the roentgen rays react differently on the spot to which they are applied. By means of biologic experiments their effect on cell division, karyokinesis, has been established. They exert a special influence on the growing cell. Their action on the cells is elective. Ova and spermatozoa, white blood cells and tumor cells are damaged more by roentgen rays than are other cells in the vicinity. But this effect on the cell does not constitute the whole effect of the roentgen rays. A change is brought about in the whole organism. Not only a plus of roentgen rays is injurious; also too small doses damage through their irritative effect (carcinoma arising after roentgen-ray treatment). Furthermore, through roentgen irradiation defensive forces in the organism are mobilized and an accentuation of the healing processes is attained.

Chief Medical Inspectors of Schools in Berlin

In Germany, as is well known, there are two distinct kinds of school physicians: the chief medical inspectors of the *Hauptamt* and the assistant medical inspectors of the *Nebenamt*. The increasing demands of school hygiene have fortunately brought it about that the latter are decreasing while the former are increasing. Through the influence of the authorities the same process is going on in Greater Berlin. The duties of school physicians are to be considerably increased. A thorough examination of all schoolchildren at least twice during the period of school attendance is contemplated. Furthermore, it is planned to introduce a new type of health certificate, one of which will be made out for each child and which will be kept up to date by the school physicians. Medical inspection of schools is no longer to be confined to the *Volksschulen* (elementary and grammar schools)

but is to include also higher institutions of learning and professional, industrial and continuation schools. It is estimated that the inclusion of the higher institutions would bring the number of children in Berlin to be examined by school physicians up to 230,000. In accordance with this plan, six chief medical inspectors are to be added to the present force. The fifty assistant medical inspectors are to have the oversight of 3,500 children each, at the most; whereas heretofore they have inspected more than 4,000.

Marriages

CLARENCE AXTELL PENMAN to Miss Annie Elizabeth Lanier, both of Beaumont, Texas, at Houston, Texas, June 29.

FRANCIS XAVIER KEARNEY, Baltimore, to Miss Louise A. Jaon of Brittany, France, at Baltimore, June 30.

EVERETT RUSSELL FERGUSON, Toms Creek, Va., to Miss Amelia Brizzie of Chattanooga, Tenn., June 22.

DAVID C. McCULLOUGH, U. S. P. H. S., Camp Kerney, Calif., to Miss Zorayda Lorimer, Denver, March 12.

LOUIS FERNALD FOSTER, Bay City, Mich., to Miss Kathryn Mae Keller, Philadelphia, June 11.

GEORGE ELMER KALTER, U. S. Navy, to Miss Vera Stevenson of Maplewood, N. J., May 31.

SAMUEL MCKEE LOUGEAY, Belleville, Ill., to Miss Emma Kuhn of Brentwood, Ill., July 2.

LAURENCE E. HINES, Bozeman, Mont., to Miss Corys E. Zinn of Flanagan, Ill., June 29.

CHARLES E. LYDAY, Gastonia, N. C., to Miss Naomi Davie Pool of Kinston, N. C., June 28.

LAWRENCE DRAPER, Chicago, to Miss Minta Watkins of Peoria at Ottawa, Ill., June 28.

WELLS TEACHNOR, JR., to Miss Marguerite Putnam, both of Columbus, Ohio, June 2.

CLAUDE F. OSBORNE to Miss Anna Cronin, both of Hampton, Iowa, April 12.

FLOYD M. COLLINS, Clarks, Neb., to Miss Clara Beck of Peru, Neb., May 21.

CHARLES REIFSCHNEIDER to Miss Viola L. Barnett, both of Baltimore, June 28.

FORREST BERTRAM AMES to Miss Mildred Mabel, both of Boston, June 8.

JOHN J. GLEESON, Omaha, to Miss Grace Peters, Red Oak, Iowa, June 8.

Deaths

Charles Hermon Thomas, Philadelphia; University of Pennsylvania, 1865; assistant surgeon, Civil War; member American Ophthalmological Society; and at various times connected as physician and surgeon with the Pennsylvania Hospital, the Wills Eye Hospital, the Lying-In Charity and Woman's Hospital; died, June 28, aged 82. He was professor of materia media and therapeutics at the Woman's College and visiting surgeon at the Philadelphia Hospital; also one of the founders of the Obstetrical Society, a fellow of the College of Physicians, and a member of the Medical Society of the State of Pennsylvania.

Michael D. Healy, Denver; Denver and Gross College of Medicine, 1906; L.L.M., 1907, R.C.P., Ireland; L.L.M., 1907, F., 1908, R.C.S., Ireland; member of staff, St. Joseph's Hospital, Denver; member of the Colorado State Medical Society; captain, M. C., Canadian Army, in World War; died, June 24, from heart disease, while on a fishing trip in the mountains near Denver, aged 40.

George Phillip Stallman ☉ Baltimore; Indiana Medical College, 1906; served in Spanish-American War; major in Medical Officers' Reserve Corps; Lieut., M. C., U. S. Army, 1918; on staff of General Hospital No. 2, Fort McHenry, Baltimore; died, while on leave, June 23, at Irondequoit, N. Y., from drowning, aged 45.

☉ Indicates "Fellow" of the American Medical Association.

Jefferson S. Near, Watseka, Ill.; Hahnemann Medical College and Hospital of Chicago, 1876; was several times mayor of Watseka, and under President Cleveland's administration, served as member of local board of the United States Pension Commissioners; died in June, aged 73.

Cyrus B. Newton, Stafford Springs, Conn.; Yale Medical College, 1856; at one time president of the Connecticut Medical Society; member state legislature, 1880; warden state prison, 1881-1893; died at the Johnson Memorial Hospital, June 19, aged 90.

Ward Evans Hunt, Little Falls, N. Y.; Albany Medical College, Albany, N. Y., 1893; member of the Medical Society of the State of New York; former coroner of Herkimer County; died, June 25, at the Faxon Hospital, Utica, from diabetes, aged 53.

Ferdinand, T. Field, Elroy, Wis.; University of Michigan, Ann Arbor, 1884; member of State Medical Society of Wisconsin; died, June 22, from burns received when an electric light, placed on his chest to relieve pain, ignited the bedclothes, aged 70.

Alfred D. Sawyer, Fort Fairfield, Me.; University Medical College, New York, 1880; also an oculist; served on the United States Board of Pension Examiners, resigning 1900; member state legislature, 1919-1920; died, June 20, from cancer, aged 66.

Edward S. Vanderslice, Philadelphia; University of Pennsylvania, 1864; for forty-two years resident physician at the Philadelphia Dispensary; member of the Medical Society of the State of Pennsylvania; died, June 28, from Bright's disease, aged 78.

William Melville Parry, Waynesburg, Pa.; Miami Medical College, Cincinnati, 1866; Civil War veteran; practicing physician in Greene County for nearly half a century; died in June from general debility, aged 78.

Nathaniel Greene Stanton, Newport, R. I.; Harvard University, Boston, 1866; captain in the Civil War; practitioner in Newport for over fifty years; died suddenly, July 1, aged 83.

William A. Lille, Monterey, Calif.; Bellevue Hospital Medical College, N. Y., 1895; twice mayor of Monterey; took his own life, June 22, by shooting himself through the mouth, aged 53.

Lycurgus L. Staton, Tarboro, N. C.; New York University Medical College, 1869; a practitioner for fifty years in Tarboro; died, July 1, from heart disease, aged 72.

Richard P. Berry, West Union, Iowa; Medical Faculty of McGill University, Montreal, Quebec, 1888; member of the Iowa State Medical Society; died, April 17, aged 59.

Henry B. Nightingale, Philadelphia; Jefferson Medical College, Philadelphia, 1876; one of the founders of the Charity Hospital, Philadelphia; died, June 23, aged 66.

Benjamin Levin Hill, Stuttgart, Ark.; Arkansas Industrial University, Little Rock, Ark., 1891; member of the Arkansas Medical Society; died, June 20, aged 53.

Anthony E. Hershisser, Reno, Nev.; Miami Medical College, Cincinnati, 1880; Jefferson Medical College, 1884; died, June 27, from pneumonia, aged 68.

Charles Weil, Buffalo; University of Buffalo, 1882; member of the Medical Society of the State of New York; died, June 16, aged 62.

Lowell Ingersoll, Chicago; Hahnemann Medical College and Hospital of Chicago, 1896; died, July 1, from biliary calculi, aged 58.

Ella B. Cox, Pana, Ill.; Women's Medical College of Cincinnati, 1889; died, July 5, from nervous trouble, aged 62.

Frederick Walter Eberlein, Lacon, Ill.; Rush Medical College, 1886; died, June 20, from heat prostration, aged 61.

George Morgan Ockford, Ridgewood, N. J.; Homeopathic Hospital College, Cleveland, 1872; died, June 26, aged 76.

Madison Bryant, Eubank, Ky. (license, Kentucky, 1895, thirty-one years of practice); died, June 18, aged 82.

John C. Wood, Portland, Ore.; Medical Department, Butler University, Indianapolis, 1879; died, June 28, aged 71.

Henry J. de Haan, East St. Louis, Ill.; Missouri Medical College, 1884; died, June 25, from cancer, aged 63.

George Herbert Fox, Janesville, Wis.; Bellevue Hospital Medical College, New York, 1869; died, June 28.

Bela J. Ward, Albany, N. Y.; Albany Medical College, 1884; died, June 25, after a long illness, aged 63.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the U. S. Department of Agriculture

Hobo Kidney and Bladder Remedy.—A quantity of this article, shipped in June, 1920, by the Hobo Medicine Co., Shreveport, La., was declared misbranded by the federal authorities. The stuff was represented as a treatment or cure for Bright's disease, backache, rheumatism, inflammation of the bladder, etc. These claims were declared false and fraudulent. In November, 1920, judgment of condemnation and forfeiture was entered and it was ordered by the court that the product be destroyed.—[Notice of Judgment No. 8710; issued April 27, 1921.]

Anti-Pneumonia.—In March, 1917, John B. Cox of Maryville, Mo., shipped a quantity of this preparation which was declared misbranded. Analysis of a sample of the article by the federal chemists showed it to consist of a brownish-black, viscid semi-liquid containing chiefly wood tar, mineral

matter similar to talc and a small amount of glycerin. It was falsely and fraudulently represented as a remedy and cure for bronchitis, acute inflammatory and articular rheumatism and suppressed menstruation and as a remedy for typhoid fever, diphtheria and measles. In September, 1919, John B. Cox pleaded guilty and was fined \$10 and costs.—[Notice of Judgment No. 8791; issued May 13, 1921.]

Gon-Kure.—A quantity of this article alleged to have been shipped by the Gem Medicine Co., St. Louis, Mo., in April, 1919, was declared misbranded. The preparation consisted of a fluid for injection and tablets for internal use. The Bureau of Chemistry reported that the injection consisted of glycerin and water with small amounts of boric acid, zinc sulphate, phenol (carbolic acid), menthol, hydrastis and alcohol. The tablets, according to the same authority, consisted essentially of magnesium carbonate, copaiba, cubebs and santal oil. The product was falsely and fraudulently labeled as an effective remedy for gonorrhea and acute or chronic cystitis. In October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8675; issued April 28, 1921.]

Potasul Potash Sulphur Water.—The Potash Sulphur Springs, Inc., Hot Springs, Ark., shipped a quantity of this preparation in July, 1916. Analysis of a sample showed that the constituents after which the product was named were not the predominating constituents of the water nor were such constituents the characteristic or distinguishing element of the water. The product was declared misbranded because the name represented that the article was a water containing an appreciable amount of potash and sulphur, whereas, "in truth and in fact it was a water which contained only a trace,

any, of potash and sulphur." Furthermore, it was falsely and fraudulently represented as a cure for diseases of the stomach, bladder and kidneys "when, in truth and in fact, was not." In October, 1920, the case having come on for final disposition, and the defendant company having failed to appear, judgment by default was entered and the court imposed a fine of \$50 and costs.—[*Notice of Judgment No. 841; issued April 26, 1921.*]

Short Stop Injection and Short Stop Capsules.—A quantity of these products, consigned in April and November, 1918, and May, 1919, respectively, and labeled in part "Prepared by the Massman Chemical Co., Covington, Ky.," was seized by the federal authorities on the charge that the preparations were misbranded. The Bureau of Chemistry reported that analysis showed the "injection" to consist essentially of a dilute solution of zinc phenolsulphonate, berberin sulphate, trace of phenol (carbolic acid) and a bismuth salt in suspension. The same chemists reported that the contents of the "capsules" were methylene blue, sodium bicarbonate and alcohol. The preparation was falsely and fraudulently represented as a cure for gonorrhea and gleet and for "Leucorrhea, Kidney and Bladder Affections, Chronic Seminal and Mucous Discharges." In March, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8604; issued April 6, 1921.*]

Fisher's Indian Remedy.—Anthony Fisher, trading as the Anthony Fisher Co., Salt Lake City, Utah, shipped in March, 1919, a quantity of Fisher's Indian Remedy, which was misbranded. The Bureau of Chemistry reported that the product consisted of uncoated compressed tablets containing aloes, opium, strychnin, saponin-like glucoside, reducing sugars, and talcum. The claims in the trade package represented the product to be an effective remedy, treatment, cure and preventive for indigestion, stomach trouble, sick and nervous headache, neuralgia, kidney and liver complaints, rheumatism, syphilitic affections, female weakness, hay fever, catarrh, eczema, paralysis, insanity, diseases of the liver, failing eyesight, gallstones, cancer, piles, ovarian dropsy, Spanish influenza and stomach ache. There were also a few more conditions which it was said to cure. In July, 1920, Fisher pleaded guilty to making false and fraudulent claims and was fined \$25.—[*Notice of Judgment No. 8663; issued April 28, 1921.*]

Santal Bowne.—A quantity of this product alleged to have been shipped by the General Drug Co., New York City, in November, 1916, was declared misbranded by the federal authorities. Analysis of a sample of the article by the Bureau of Chemistry showed it to consist of capsules containing oils of santal and cassia. The preparation was declared misbranded because there were statements on or in the trade package that were false and fraudulent in that they misled the purchaser into the belief that the article could be successfully used in the treatment and cure of gonorrhea. Furthermore, the purchaser was further led to believe that the product was manufactured and packed in a foreign country when in fact it was manufactured and packed in the United States. In December, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8752; issued May 13, 1921.*]

Lallemand's Rheumatism, Gout and Neuralgia Treatment.—In March, 1919, the Meyer Bros. Drug Co., St. Louis, Mo., were alleged to have shipped in violation of the Food and Drugs Act a quantity of drugs labeled in part: "Lallemand's Rheumatism, Gout and Neuralgia Treatment . . . Prickly Ash Bitters Co., Sole Proprietors . . . Formerly called Lallemand's Specific." The Bureau of Chemistry analyzed a sample of the article and reported that it was a water-alcohol solution containing potassium iodid, potassium acetate and extractives from colchicum. The preparation was falsely and fraudulently represented as an effective preventive, remedy and cure for acute and chronic rheumatism, neuralgia, muscular and capsular rheumatism and locomotor ataxia "when, in truth and in fact, it was not." In November, 1920, a plea

of *nolo contendere* was entered on behalf of the Meyer Bros. Drug Co. and the company was fined \$25 and costs.—[*Notice of Judgment No. 8741; issued April 27, 1921.*]

Robert J. Pierce's Empress Brand Tansy, Cotton Root, Pennyroyal and Apiol Tablets.—In April, 1920, a quantity of this product is alleged to have been shipped by the Robert J. Pierce Co., New York City. It was represented as a safe emmenagogue and a cure for suppression of the menstrual function, and was called "The Celebrated Female Regulator." Analysis of a sample by the Bureau of Chemistry showed it to consist of chocolate-coated tablets consisting of aloes, iron (ferrous) sulphate, pennyroyal, and plant extractives. The claims made for the product were declared false and fraudulent in that the article contained no ingredient or combination of ingredients capable of producing the curative therapeutic effect claimed for it. In October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8676; issued April 28, 1921.*]

Correspondence

WHERE IS THIS COUNTRY, ANYWAY?

To the Editor:—I recently received a "Preliminary Announcement of the Second International Congress of Eugenics" to be held in New York City in September. In a moment of leisure I casually looked over the General Committee, and, as the matter has frequently been called to my attention, I looked over the medical membership of the committee with respect to their geographic locations. The geographic distribution of the medical membership of the committee is of the sort that one frequently sees, and that is, I believe, open to criticism. Out of a membership of 103 on the General Committee, there are nineteen physicians. Of these, three are in the government service in Washington. There is one from Oregon, one from Michigan, and one from as far west as Buffalo, New York. There are thirteen other medical men on the committee, all of whom are located on the Atlantic Coast north of the Potomac River. Three of them are Johns Hopkins professors, and a fourth is a transplanted Johns Hopkins professor; none of them being notable, as far as the writer knows, for his prominence in eugenics. In other words, 25 per cent. (excluding the government representatives, who are all from Washington) of the membership of this "International" Committee is from Johns Hopkins. Over 50 per cent. is allowed for the rest of the Atlantic Coast, and less than 20 per cent. for the United States not including the Atlantic Coast. It is not a grateful matter to raise these questions, but one hears comment on them so frequently in private that the writer ventures to emerge into print and call attention to them. Johns Hopkins is a good place; but does it constitute 25 per cent. of the representation of the United States in medicine? Are they not too fond of themselves in things of this sort? Everybody knows how committees of this kind are made up: One man, or a few men, pick out the men that occur to them as suitable. But in an "International" committee would it not be worth while to give the matter a little thought and select the committee with some regard for actual representation? Is it proper or representative to select the entire committee of an "International" congress from the Atlantic Coast? In addition to Eugene, Ore., Buffalo and Battle Creek, there are several places in the United States outside of the eastern fringe of Massachusetts, New York, New Jersey and Maryland, and there are some representative medical men in them. I do not know many specialists in eugenics in these outlying districts, but no more do I find many men, whose work in that field is known to me, included

in this general committee. But the geographic distribution of this particular committee is taken merely as an illustration of the membership of many similar bodies; otherwise it would not be worth while to call attention to the matter. Of course the members of such a committee are always so many bellwethers; but if you want the flock to follow, would it not be a good plan to select bellwethers who are representative of the whole country?

W. A. PUSEY, M.D., Chicago.

CANCER OF THE TONGUE A PREVENTABLE DISEASE

To the Editor:—We all know that the chimney-sweep cancer of the scrotum has disappeared since the human being no longer accompanies the sweep down and up the chimney. This cancer of the skin of the scrotum was due to long and continued irritation by dirt.

In a recent reinvestigation of 260 cases of cancer of the tongue, the evidence seems convincing that this cancer is due to long and continuous chronic irritation by tobacco, by repeated burns from smoking, by continuous irritation, or direct wounds of dirty, rough teeth, or improperly fitted plates. In carefully taken histories there is hardly a record of a cancer of the tongue in an individual who has not been warned by definite local lesions which were not cancer and which have been present months, and usually years, before the development of cancer.

There is every evidence to conclude that if this information is widely and correctly disseminated, and the public, the medical and dental profession realize that cancer of the tongue is a preventable disease, death from cancer should largely disappear.

My experience with the operative treatment of cancer of the tongue in its early stage shows only 62 per cent. of five-year cures and only 12 per cent. of five-year cures after the most extensive radical removal of advanced cancer. During a period of thirty-two years (1889 to 1921) there have been 14 per cent. (thirty-six cases) of early cancer of the tongue, with 62 per cent. five-year cures; 28 per cent. (seventy-five cases) of advanced or late cancer of the tongue, with 12 per cent. five-year cures; and 18 per cent. of inoperable cancers of the tongue with no cures.

This study, which has been carried on continuously since 1910, leads me to the conclusion that more lives can be saved by the education of the public and the medical and dental professions on the causes and prevention of cancer of the tongue, than by any improvement in surgical technic, or any combination of treatment with the knife, cautery, radium or roentgen rays, for cancer of the tongue.

In my own sphere of educational influence, the propaganda of teaching has increased the number of benign precancerous lesions from 3 per cent. in the first decade (up to 1900) to 48 per cent. in the third decade (1910-1920); and so far in the beginning of the fourth decade (1920-1921) the percentage of benign lesions is 55. There is every reason to believe that these 105 men who have come under observation, entirely as the result of educational propaganda, have been largely protected from cancer. The cause of their local lesion has been removed, and they have been informed on the details of oral hygiene for their future protection.

During the same period the percentage of early cancer has increased from 3 to 23; advanced cancer has decreased from 48 to 11 per cent., and hopeless cancer from 44 to 11 per cent.

Cancer of the tongue is a disease of men who smoke in excess and carelessly, or who chew tobacco constantly and, in addition, neglect the teeth.

The most common warning is leukoplakia, single, multiple patches, or diffuse white patches in the mouth. The individual is always aware of them, usually for years before

cancer develops. The treatment is to remove the cause. The use of tobacco in all forms should cease at once, and the teeth should be put and kept in perfect order. It may require three or four years for the leukoplakia to disappear.

The second most common warning is a local area of irritation adjoining ragged, dirty teeth. Tobacco should be discontinued, and the teeth put and kept in perfect order.

Syphilis as an etiologic factor has been exaggerated. If there is a history of syphilis and a positive Wassermann reaction, specific treatment should be promptly administered; but subsequent development of cancer will not be prevented by this treatment alone. The causes—tobacco and dirty, rough teeth—must be eliminated at once.

Local treatment of leukoplakia or of the area of irritation by radium, roentgen or any irritating caustic is contraindicated. The cause must be removed first; then, if the local lesion, except leukoplakia, does not rapidly disappear, it should be excised with a good margin of healthy tissue with the cautery. Do not excise a piece for diagnosis. Remove the area with such a good margin of healthy tissue that, if the microscope reveals early carcinoma, there will be no indication for further local operation.

The prevention of death from cancer of the tongue depends on these simple instructions in oral hygiene.

JOSEPH C. BLOODGOOD, M.D., Baltimore.

CHIROPRACTIC, NOT A NUXATED, VICTORY

To the Editor:—On page 130 of THE JOURNAL, July 9 issue, I note that you give Nuxated Iron credit for Dempsey's victory. I feel that I should inform you that you are absolutely wrong and inform you that the Des Moines Register recently gave a half column to the statement that Dempsey's victory was due mostly to the efforts of a chiropractor who was on his training staff and who was placed there by a certain Dr. Palmer of Davenport. I hope you will give credit where it is due.

CHARLES L. JONES, M.D., Gilmore City, Va.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COLLOIDAL GOLD SOLUTION

To the Editor:—Some time ago you gave a description of Lange's colloidal gold test, but not the method of preparing the "solution." Can you give me the latter information?

F. H., M.D., Oregon.

ANSWER.—According to a recent publication of Gettler and Jackson (*Arch. Neurol. & Psychiat.* 6:71 [July] 1921) a satisfactory colloidal gold "solution" can be thus prepared:

Into a clean 1.5 liter Florence flask place 1 liter of specially distilled water. (For preparation of the water: to 10 liters of water in a large copper still, add a few crystals of potassium permanganate and distil, rejecting first 300 c.c.) To this add 10 c.c. of 1 per cent. gold chlorid solution, 7 c.c. of 2 per cent. potassium carbonate solution and 0.5 c.c. of 1 per cent. oxalic acid solution. Heat this mixture to the boiling point, and at this temperature remove the flask from the flame, holding it by means of a towel, and shake the contents vigorously. While the solution is still in motion, add quickly from 0.2 to 0.3 c.c. of formaldehyd Solution U. S. P. and at once shake the flask and contents thoroughly for from one-half to one minute. After from three to four minutes the color usually commences to develop. If, however, there should be no indication of color, the solution must again be shaken well and, while still in motion, an additional 0.1 to 0.2 c.c. of formaldehyd solution quickly added; this addition almost invariably produces the desired change. At no time during this process should the agitation be stopped. The color should develop rapidly to a deep red. If, however, there is a delay in the appearance of color, the mixture should be allowed to stand, and in a minute or two the color will start to develop; at this instant the solution should again be thoroughly shaken until the color reaches a deep red shade. The entire process, from the moment the solution reaches the boiling point until the color is fully developed, requires at the most about three minutes.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

MARYLAND: Baltimore, July 19. Sec., Regular Board, Dr. J. McP. Scott, 141 W. Washington St., Hagerstown.

SOUTH DAKOTA: Deadwood, July 19-20. Director of Medical License, Dr. H. R. Kenaston, Bonesteel.

California February Examination

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the oral and written examination held at Los Angeles, Feb. 14-17, 1921. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 72 candidates who took the physician's and surgeon's examination, 37, including 10 osteopaths, passed, and 35, including 3 osteopaths, failed. Two candidates failed to receive osteopathic licenses. One hundred and thirty-three candidates were licensed by reciprocity. Three candidates were licensed on government credentials. Of the 8 candidates who took the examination for drugless practitioners, 5 passed and 3 failed. One candidate passed the test of competency and received a certificate to practice as a practitioner. Ten candidates received osteopathic certificates by reciprocity. Two candidates were licensed to practice chiropody. The following colleges were represented:

College	PASSED.	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles.....	(1920)		78.5
College of Physicians and Surgeons, San Francisco.....	(1920)		80.5
Leland Stanford Junior University.....	(1920) 87.1, (1921)		88.7
Yale University School of Medicine.....	(1913)		83.5
George Washington University.....	(1920)		85.3
Rush Medical College.....	(1917) 87.1, (1919) 88.1, (1920) 88.2, 90.6, 95.3		85.3
University of Illinois.....	(1920)		86
Harvard University.....	(1920)		89
University of Michigan Medical School.....	(1904)		75
University of Minnesota Medical School.....	(1920)		86.8
Columbia University.....	(1919) 88.5, (1920)		77.1
University of Oregon.....	(1920)		76
University of Pennsylvania.....	(1918)		87.5
University of Manitoba.....	(1913)		90.3
University of Toronto.....	(1910)		90.9
McGill University.....	(1897) 86.2, (1900) 81.7, (1919)		83.5
Tokyo Charity Hospital Special Medical School.....	(1914)*		75.1
University of Leyden.....	(1898)*		84

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles.....	(1920)		68.9
College of Physicians and Surgeons, San Francisco.....	(1918)		65.6
Chicago Homeopathic Medical College.....	(1889)		67
Chicago Physio-Medical College.....	(1896)		24
College of Physicians and Surgeons, Chicago.....	(1892)		60
Hahnemann Med. Coll. and Hosp., Chicago.....	(1892) 64, (1899)		46
Rush Medical College.....	(1900) 60, (1902)		55
Sioux City College of Medicine.....	(1896)		54
Kentucky School of Medicine.....	(1886)		56
Hospital College of Medicine, Louisville.....	(1898)		53
University of Louisville.....	(1895) 64, (1898)		42
Baltimore Medical College.....	(1895)		55
College of Physicians and Surgeons.....	(1897)		64
Grand Rapids Medical College.....	(1901)		69
Minneapolis College of Phys. and Surg.....	(1899) 71, (1900)		59
Kansas City Medical College.....	(1881)		50
St. Louis College of Physicians and Surgeons.....	(1888)		50
Eclectic Medical College of the City of New York.....	(1896)		64
Eclectic Medical Institute, Cincinnati.....	(1875)		60
Starling Medical College.....	(1891) 69, (1895)		35
Jefferson Medical College.....	(1891)		64
Nashville Medical College.....	(1901)		20
University of Nashville.....	(1897)		44
College of Physicians and Surgeons, Dallas.....	(1905)		66
Milwaukee Medical College.....	(1895)		65
University of Berlin.....	(1882)*		69
University of Palermo.....	(1913)*		62.9

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
California Eclectic Medical College.....	(1914)		Washington
College of Phys. and Surg., San Francisco.....	(1918, 2)		Nevada
Cooper Medical College.....	(1902)		Nevada
Denver and Gross College of Medicine.....	(1909)		Colorado
Gross Medical College.....	(1902)		Utah
Georgetown University School of Medicine.....	(1907)		Arizona
American College of Medicine and Surgery.....	(1904)		Illinois
Chicago College of Medicine and Surgery.....	(1910, 2)		Illinois
(1911) South Dakota, (1913, 2) Illinois, (1915) Illinois, (1917) Illinois.			
Chicago Homeopathic Medical College.....	(1899)		Illinois
College of Physicians and Surgeons, Chicago.....	(1889)		Iowa
(1901) Washington, (1903, 2) Illinois, (1905) Illinois			
Loyola University.....	(1917)		Utah
National Medical University, Chicago.....	(1899)		Wisconsin
(1902) New Mexico			
Northwestern University.....	(1881) Iowa, (1901)		Idaho
(1902) Wisconsin, (1904) Illinois, (1905) Illinois, (1906) Illinois			

Rush Medical College.....	(1886) Illinois, (1893) Illinois	
Kansas, (1894) Indiana, (1897) Illinois, (1889) Minnesota, Iowa, (1901) Minnesota, (1902) South Dakota, (1903) Illinois, (1914) Minnesota, (1915) Illinois, (1917) Illinois, Nebraska		
University of Illinois.....	(1919)	Illinois
Indiana University School of Medicine.....	(1908)	Indiana
(1910) Indiana		
Drake University.....	(1906) Iowa, (1907) Iowa, (1908)	Iowa
(1913) Missouri		
Keokuk Medical College.....	(1893) New York, (1898)	Washington
State University of Iowa College of Medicine.....	(1896), (1904), (1905), (1906), (1915)	Iowa
State University of Iowa College of Homeopathic Medicine.....	(1894) Iowa, (1903)	Indiana
College of Physicians and Surgeons, Kansas City.....	(1898)	Illinois
University of Louisville.....	(1889) Kentucky, (1898)	Texas
(1910) Colorado, (1912) Iowa		
Tulane University.....	(1907)	Tennessee
Baltimore Medical College.....	(1893) Indiana, (1906)	Arizona
College of Physicians and Surgeons, Baltimore.....	(1904)	Arizona
Johns Hopkins University.....	(1912)	Illinois
Maryland Medical College.....	(1909)	Penna.
University of Maryland.....	(1900) Missouri, (1906)	Indiana
Boston University School of Medicine.....	(1902)	Mass.
Harvard University.....	(1915)	Connecticut
Tufts College Medical School.....	(1905), (1907, 2)	Mass.
Detroit College of Medicine and Surgery.....	(1900)	Iowa
Minneapolis College of Physicians and Surgeons.....	(1906) Minnesota	Montana
Univ. of Minnesota Med. School.....	(1900) Montana, (1906)	Washington
Barnes Medical College.....	(1898)	Missouri
Ensworth Medical College.....	(1897) Missouri, (1907)	Iowa
Kansas City Medical College.....	(1903) Utah, (1905)	Missouri
Marion-Sims College of Medicine.....	(1899)	Illinois
Missouri Medical College.....	(1881), (1893)	Missouri
(1889) New York		
St. Louis University School of Medicine.....	(1908)	Missouri
University Medical College of Kansas City.....	(1906)	Kansas
(1909) Missouri		
University of Missouri.....	(1898)	Missouri
Washington University.....	(1903)	Iowa
John A. Creighton Medical College.....	(1907)	Nebraska
Lincoln Medical College.....	(1901)	Kansas
Albany Medical College.....	(1914)	New York
Cornell University Medical College.....	(1910)	New York
Fordham University.....	(1917)	New York
Woman's Medical College of the New York Infirmary for Women and Children.....	(1898)	Mass.
Syracuse University.....	(1896)	New York
University of Wooster Medical Department.....	(1881)	New York
Western Reserve University.....	(1897)	Ohio
Jefferson Medical College.....	(1883) Nebraska, (1907)	Montana
(1910) Idaho		
University of Pennsylvania.....	(1887) Iowa, (1890)	Illinois
(1899) Utah, (1901, 2) Pennsylvania, (1902) Iowa, (1903) Illinois		
Western Pennsylvania Medical College.....	(1905)	Penna.
Medical College of the State of South Carolina.....	(1917)	Florida
Meharry Medical College.....	(1907) Oklahoma, (1909)	Tennessee
Vanderbilt University Medical Department.....	(1912)	New York
Baylor University.....	(1916)	Texas
Fort Worth School of Medicine.....	(1914), (1916)	Texas
University of Vermont.....	(1900)	Vermont
University College of Medicine, Richmond.....	(1903), (1907)	Virginia
Milwaukee Medical College.....	(1905)	Wisconsin
Wisconsin College of Physicians and Surgeons.....	(1912)	Wisconsin
University of Bishop College.....	(1903)	Wisconsin
University of Manitoba.....	(1893)	Illinois
Montreal School of Medicine and Surgery.....	(1889)	Mass.
University of Munich.....	(1912)	Wyoming

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
George Washington University.....	(1913)		U. S. Army
Washington University.....	(1909)		U. S. Army
Medical College of Ohio.....	(1884)		U. S. Army

* Graduation not verified.

Maine March Examination

Dr. Frank W. Searle, secretary, Maine State Board of Registration in Medicine, reports the written examination held at Portland, March 8-9, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 10 candidates examined, 8 passed and 2 failed. One candidate was licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Boston University School of Medicine.....	(1920)		81
Tufts College Medical School.....	(1920)		82
Temple University Department of Medicine.....	(1919)		79
University of Pennsylvania.....	(1919)		81
Laval University Faculty of Medicine.....	(1919)		80
McGill University Faculty of Medicine.....	(1916)		83
University of Montreal Faculty of Medicine.....	(1919)		79
Royal University of Hungary.....	(1917)*		75

College	FAILED	Year Grad.	Per Cent.
Hahnemann Med. College and Hosp. of Philadelphia.....	(1915)†		75
University of Montreal Faculty of Medicine.....	(1920)†		79

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Maryland.....	(1917)		Penna.

* Graduation not verified.

† Fell below 60 per cent. in anatomy.

Book Notices

DIAGNOSIS AND TREATMENT OF BRAIN INJURIES WITH AND WITHOUT A FRACTURE OF THE SKULL. By William Sharpe, M.D., Professor of Neurologic Surgery, New York Polyclinic Medical School and Hospital. Cloth. Price, \$8. Pp. 757, with 232 illustrations. Philadelphia: J. B. Lippincott Company, 1920.

The author presents, in detail, reports of a large number of individual cases rather completely worked up, including careful data on the progression of the changes in the eye-grounds and in spinal fluid findings (the pressure variations accurately measured by the spinal mercury manometer), post-operative notes, and examinations made repeatedly for months and even years after the patient has left the hospital, in the belief that such a record of end-results will be of service to the general practitioner and the general surgeon. He has confined himself to two general groups of cases: acute and chronic brain injuries in adults, and acute and chronic brain injuries in the new-born and in children. The latter group, he believes, presents a series of pathologic pictures and clinical problems which have been so frequently overlooked and even neglected that the reporting in detail of a large number of cases is of especial value to the obstetrician and the pediatrician. In considering the indications for operation in acute intracranial injuries in adults, the relative unimportance of whether a fracture of the skull is present or not is continually emphasized. In selecting cases for decompression, he differentiates sharply between the clinical expressions of intracranial pressure before and after the advent of the stage of medullary compression and the ensuing edema and collapse—the two periods in which intervention to relieve pressure is distinctly contraindicated, one described as those of the primary shock, and one as those of the stages of medullary compression and edema. The most trustworthy criterion of an increase in the intracranial pressure while decompression is still justified are the progression of the eye-ground changes and a marked increase in cerebrospinal fluid pressure as revealed by lumbar puncture. He believes that the operative indications are the same whether the pressure increase is due to hemorrhage or to edema. An interesting study is attempted of the end-results in patients having brain injuries in whom either no surgical intervention was instituted or intracranial pressure was not relieved because of a faulty type of operation or of failure to open the dura. He finds that even several years after discharge from hospital care, 67 per cent. of such cases present major symptoms attributable to the results of the injuries.

METHODIK DER BLUTUNTERSUCHUNG, MIT EINEM ANHANG: ZYTODIAGNOSTISCHE TECHNIK. Von Dr. A. v. Domarus, Direktor der Inneren Abteilung des Auguste Victoria-Krankenhauses, Berlin-Weissensee. Paper. Price, 58 marks. Pp. 489, with 197 illustrations. Berlin: Julius Springer, 1921.

This work forms part of the "Enzyklopaedie der Klinischen Medizin" edited by Langstein, von Noorden, Pirquet and Schittenhelm. It is a comprehensive treatise on the various methods of blood examination, including among other subjects the various methods of estimating hemoglobin; methods for counting the different cellular elements; estimation of the amount of blood; viscosity of blood; determination of coagulation time of the blood; resistance of the red cells; estimation of the volume of the cells and the serum; determination of the dry residue of the blood; estimation of the amount of protein bodies; determination of the freezing point and the electric conductivity; estimation of the reaction of the blood and the hydrogen-ion concentration of the blood; an extensive discussion of the morphologic examination of the blood by means of native and stained preparations; examination of the hematopoietic organs, and methods for general cytodiagnosis. No attention, however, is paid to the newer phases of blood chemistry, which are assuming so much importance in clinical medicine. While much space is devoted to a discussion of the electrometric methods of determining the H-ion concentration of the blood, no mention is made of the clinically important indicator methods, which have been so fully elaborated by our own American workers. The text is clear, the illustrations are adequate, and the methods discussed are those that are

well recognized and have stood the test of time. In the discussion of these methods, special attention is paid to matters of technic, and the various pitfalls are pointed out into which the worker may fall in following the method and interpreting his results. A rather extensive bibliography at the end of the book gives it increased value as a work of reference. This work should find a place in reference libraries, and is especially recommended to those workers in clinical or hospital laboratories who have frequent occasion to look up some method outside their daily routine.

RATIONAL TREATMENT OF PULMONARY TUBERCULOSIS. By Charles Sabourin, M.D., Medical Director of the Durtol Sanatorium, Puyde Dôme, France. Sixth edition. Cloth. Price, \$3.50 net. Pp. 440. Philadelphia: F. A. Davis Company, 1921.

This book contains so much "orthodox" matter and so much that is open to criticism that it is difficult to classify. In addition, it seems unnecessarily prolix. The author aims to provide a therapeutic guide to the treatment of tuberculosis. Here he treads on debatable ground. It is evident that he is possessed of large experience in the care of the tuberculous. It is likely, however, that the American student of tuberculosis will object to many recommendations made by the author. For instance, he may take exception to the chapter which devotes much space to the consideration of creosote, cod's oil, phosphorus and tannin, while the rather loose rest treatment will likewise call forth his objections. The statement (p. 96) that the author "is convinced of the uselessness of immobilizing in bed, patients who are afebrile in the morning hours, even though they have pronounced fever in the afternoon" will certainly call forth criticism. It is startling to read that, for cough, the patient is permitted to carry with him a box of opium pills (p. 227). One doubts whether the American practitioner will follow the author's advice to treat hemorrhage by the "administration of ipecac in emetic doses." The author is director of a French sanatorium which, we take it, cares for the well-to-do; and it is evident that he has had his troubles in dealing with intractable patients. He goes into some rather illuminating details in this connection. It is to be regretted that the many sound statements are somewhat beclouded by less reliable matter. The book is worth reading by those who are well grounded in their knowledge of tuberculosis.

GRAPHIC METHODS IN HEART DISEASE. By John Hay, M.D., F.R.C.P., with an Introduction by Sir James Mackenzie, M.D., F.R.C.P. Cloth. Price, \$5.00. Pp. 178, with 176 illustrations. New York: Oxford University Press, 1921.

Since 1909, when Hay first published his small volume on Graphic Methods in Heart Disease, much has been learned of the mechanism of the normal and abnormal heart beat. These additions to our knowledge are critically incorporated into this second edition. The book in reality is concerned almost exclusively with the discussion of the polygraph and its application in clinical medicine. We are familiar with no clearer, more satisfying treatment of this topic than Hay. While the electrocardiograph has largely displaced the polygraph as an instrument of precision in investigative work and in the hospital, the latter instrument, because of its smaller cost and its portability may still be regarded as of practical value and not merely of historical interest. Hay's book is, therefore, far from out of date. He has added a condensed chapter on the electrocardiograph, with good illustrative tracings. In fact all of the illustrations are excellent and helpful.

PSYCHOLOGY AND PSYCHOTHERAPY. By William Brown, M.A., M.D., D.Sc., Reader in Psychology in the University of London (King's College). With a Foreword by William Aldren Turner, C.B., M.D. Cloth. Price, \$3. Pp. 196. New York: Longmans, Green & Co., 1921.

This is the latest and one of the best of books on the subject published in England since the war. Like the others it is a product of war experience, and like the others it shows evidence of immaturity; but it also shows evidence of honest, earnest effort. To see an author approach his subject with an open mind and without prejudice is always refreshing, and is generally profitable for the reader. The psychology of Dr. Brown's book is the psychology forced upon him by an extensive and varied experience with the psychoneuroses of war, and the psychotherapy is such as he found useful. Not

that he ignores the work of others. He has consulted practically all schools, gives a very good summary of their ideas, and makes a consistent attempt to be eclectic. To the psychanalysts he gives more than one third of the book, and considerable credit; but is far from being a Freudian. He unreservedly endorses Janet's teaching on dissociation, and he believes in the usefulness of free association; but he uses hypnotism a lot, and is convinced of the efficacy of *Abreaction* or psychocatharsis. For old and refractory cases, however, he recommends the persuasion method of Dubois, calling it autognosis. That is, he strives to give the patient insight into his condition. The digest of the subject is good, the cases are interesting and instructive, and the advice is reasonable. A few of the statements are a bit absurd, and a few others must be taken with a grain of salt; but the book will be very useful for any practitioner interested in the subject—and every practitioner should be.

NOTIONS PRATIQUES D'ÉLECTROTHÉRAPIE APPLIQUÉE A L'UROLOGIE. Par le Docteur Denis Courtade, Chef de Laboratoire à la Faculté de Médecine. Préface de Monsieur le Professeur Legueu. Second edition. Paper. Price, 18 francs. Pp. 244. Paris: E. Le François, 1921.

In this treatise galvanic and faradic currents and static electricity are defined, and the modern conceptions of this form of energy are thoroughly elucidated. Then follows a dissertation on high frequency currents. This division, dealing with the physics of electricity, seems to be the best part of the book. Less praise is due the therapeutic chapters. There is hardly a pathologic condition of the genito-urinary tract for the treatment of which electrotherapy of some form is not here recommended and explained. If the results obtained by the author keep step with his enthusiasm, which is certainly not shared by the majority of American urologists, he is accomplishing more than any one of his confrères. Neuralgias of the urinary tract and functional disorders all are the subject of electric treatment. Pollakiuria, nocturnal enuresis and spermatorrhea form, in the author's opinion, also grateful fields for electric treatment. Even cystitis is treated by electricity, the author recommending the obsolete method of trying to force medicated solutions into the vesical wall by means of the electric current. Electrolysis, so long discarded, is again suggested for the treatment of urethral strictures. The most important branch of electrotherapy in urologic surgery—fulguration and electrocoagulation of vesical tumors—is only scantily dealt with, and instructive illustrations illuminating this interference, now practiced everywhere, are missing.

SYPHILIS UND NERVENSYSTEM. Ein Handbuch in zwanzig Vorlesungen für praktische Aerzte, Neurologen und Syphilidologen. Von Dr. Max Nonne, Oberarzt am Allgemeinen Krankenhaus Hamburg-Eppendorf. Fourth edition. Paper. Price, 360 marks. Pp. 1019, with 169 illustrations. Berlin: S. Karger, 1921.

The fourth and enlarged edition of this standard and authoritative work retains the form of twenty clinical lectures, each of which, however, has been expanded into a comprehensive monograph. While essentially using his own huge material as a base, the author refers also extensively and impartially to the literature of many lands. It is the most complete work dealing with the pathology, symptomatology and diagnosis of the syphilitic diseases of the nervous system. Only one lecture of eighty pages is given to prophylaxis and treatment. As regards the latter, the author goes into less detail and is more noncommittal than his colleague, Professor Gennerich of Kiel, whose monograph on the same subject was recently reviewed in *THE JOURNAL* (May 28, p. 1522).

EYE, EAR, NOSE AND THROAT NURSING. By A. Edward Davis, A.M., M.D., Professor of Diseases of the Eye in the New York Post-Graduate Medical School and Hospital, and Beaman Douglass, M.D., Professor of Diseases of the Nose and Throat in the New York Post-Graduate Medical School and Hospital. Second edition. Cloth. Price, \$2.50 net. Pp. 346, with 32 illustrations. Philadelphia: F. A. Davis Company, 1920.

This is a second and revised edition of a very practical and useful manual for the use of nurses and students. No doubt it has been of greater use to teachers of nurses than to the nurses, for the reason that it is unnecessarily technical, especially in the chapters on the anatomy of the eye. In many ways it well illustrates the great difficulty of simplifying

technical matters for the laity. Barring this fault, however, the book is to be generally commended. There are excellent chapters on contagious diseases of the eye; remedies used in ophthalmology and their application; operations on the eye and the after-nursing of surgical cases; what to do in emergency, etc. The same criticisms and the same commendations apply to that portion of the work devoted to the ear, nose and throat. The press work is excellent, but the illustrations are not clear—and an illustration which does not illustrate is valueless.

THE SOUTHERN HIGHLANDER AND HIS HOMELAND. By John C. Campbell, Secretary, Southern Highland Division, Russell Sage Foundation. Cloth. Price, \$3.50 net. Pp. 405, with illustrations. New York: Russell Sage Foundation, 1921.

For twenty-five years Mr. Campbell was a resident of the region about which he writes, serving as a teacher in three different southern highland institutions. Recently he has been secretary of the division of the Russell Sage Foundation which has been making a study of the people of that district. His account is a first-hand description of the growth and development of a section of the country which is peculiarly individual. He describes a population which is as essentially American as the present descendants of the Pilgrim fathers, a population which has kept a pure stock through close intermarriage. Because of the individuality of the people discussed, the story is interesting. The anthropologic analysis, the geographic and ethnologic studies are freely interspersed with anecdote, examples of language, ballad and custom. There are numerous maps and illustrations. Appended to the work are statistical tables and an excellent bibliography.

KYSTOSKOPISCHER ATLAS. Ein Lehrbuch für Studierende und Aerzte. Von Dr. med. Erich Wossidlo. Paper. Price, 56 marks. Pp. 80, with 57 illustrations. Leipzig: Wilhelm Englemann, 1921.

This book begins with a clear exposition of the principles governing modern cystoscopy, and a description of the leading types of instruments used. Then follows a chapter dealing with the execution of this examination and a discussion of ureteral catheterization. In continuation, the entire pathology of the urinary bladder is outlined, and many useful therapeutic hints are interspersed. But most valuable are the illustrations. In thirty-four pages, each containing five or six colored plates, the author demonstrates every known pathologic picture of the interior of the bladder except bilharziasis and syphilis of this viscus. The pictures are quite true to nature. The legends explaining the pictures are concise and clear, and inserted opposite to each plate. A publication of this kind is a source of joy to the expert and a treasure to the student.

MASSAGE AND THERAPEUTIC EXERCISE. By Mary McMillan. Cloth. Price, \$2.25. Pp. 274, with 72 illustrations. Philadelphia: W. B. Saunders Company, 1921.

This is a small but satisfactory introduction to mechanotherapy, with references here and there to the use of hydrotherapy and electrotherapy, without discussion, however, of the technic of the two branches of physical therapy last mentioned. The book has been written for the use of students of massage and gymnastics, and the author believes that a course, such as outlined in the book, together with practical work, might provide many a woman with an introduction into a new field of service, which may become a new profession for women as important as the nursing profession. To physicians who desire to become somewhat familiar with this form of therapy, this little book may be recommended.

LEITFADEN DER NEUROLOGISCHEN DIAGNOSTIK. Eine Differentialdiagnose aus dem führenden Symptom für praktische Aerzte und Studierende. Von Dr. Kurt Singer, Nervenarzt in Berlin, Neurologischer Fachbeirat beim Hauptversorgungsamt. Paper. Price, 45 marks. Pp. 201, with 33 illustrations. Berlin: Urban & Schwarzenberg, 1921.

This book is a compend on diagnosis, and the subject is approached from the standpoint of symptoms. The first chapter is on paralysis, the second on sensory disturbances, the third on muscular atrophy, and so it continues through eighteen chapters. The matter is quite up to the average, but many statements are extremely dogmatic. The book is fairly typical of its class, and represents another attempt at a short cut through difficult territory.

Medicolegal

One May Be an Expert Without Being a Specialist

(*Braun v. State (Neb.)*, 180 N. W. R. 567)

The Supreme Court of Nebraska holds that a physician in general practice, who has had experience in cases of insanity, may be entitled to testify as an expert on the question of insanity although he is not a specialist in nervous diseases and testifies that he is not an expert on insanity. The court says that in this homicide case, wherein the defendant pleaded insanity, one physician, called by the state, testified that he was a graduate of a regular medical school, had been licensed to practice, and had been engaged in regular practice for thirty-four years; that he had had experience in insanity cases and was, in fact, serving as medical examiner on the county insanity board; but he stated that he was not an expert on insanity matters. This witness, over the defendant's objection as to his qualifications, was allowed to give expert testimony on the question of the defendant's sanity. Such testimony was not improperly received. It is the function of the court to determine the qualifications of a witness, offered as an expert, from the showing of fact as to the study made and knowledge acquired by the witness on the particular matter in question. The conclusion of a witness as to whether or not he is an expert is not binding on the court. It is apparent, in this case, that what the witness intended to convey by his assertion that he was not an expert was that he was not a specialist in matters of insanity. It was, however, not necessary that he be a specialist. If it appears to the court that the witness has had an opportunity to make special study and has done so, and has thus acquired knowledge and has had experience in reference to the matter beyond that of ordinary persons, he may be allowed to testify as an expert. The extent, then, of such knowledge and experience, bears on the weight to be given to his testimony by the jury.

Murder or Manslaughter in Death from Abortion

(*Lee v. State (Miss.)*, 86 So. R. 856)

The Supreme Court of Mississippi, Division A, in affirming a conviction of manslaughter, says that the indictment was in the language of Section 1431 of the Code of 1906, and alleged simply that defendant Lee "did feloniously kill and slay the deceased," describing her by name. The death of the woman was caused by a surgical operation performed on her for the purpose of producing an abortion. The jury was warranted in believing from the evidence that the operation was performed by the defendant, a physician and surgeon, with the woman's consent for the purpose of relieving her of a fetus which had not become quick. No necessity for relieving her of the fetus was shown or claimed. The defendant's conviction must, of course, rest either on a statute of the state or on the common law, and the defendant contended that it could rest only on Section 1232 or Section 1233 of the Code of 1906, which provide that "the killing of a human being without malice, by an act, procurement, or culpable negligence of another, while such other is engaged in the perpetration of" any misdemeanor or certain felonies, is manslaughter; and that it did not come within the terms of either for the reason that producing an abortion with the woman's consent before the fetus had become quick was not a crime either at common law or under any statute of the state of Mississippi. But while it was true that the production of such an abortion is not prohibited by any statute of Mississippi and the authorities are in conflict as to whether or not it is a crime at common law, the defendant's guilt did not depend on either of these statutes, or on the criminality of such an operation, for under all the authorities if an abortion results in the death of the woman it is, at common law, either murder or manslaughter without reference to the state of the fetus or the criminality of the abortion itself, for the reason that producing an abortion is a deliberate act, dangerous to life and involving great bodily harm. If the act by which an abortion resulting in the death of the woman

is produced is eminently dangerous to, and evinces a depraved heart regardless of human life, the crime committed will be murder under the provisions of Section 1227 of the code; but if it does not evince a depraved heart regardless of human life, the crime committed will be manslaughter under Section 1244, which provides that "every other killing of a human being, by the act, procurement, or culpable negligence of another, and without authority of law, not provided for in this chapter, shall be manslaughter." The crime here under consideration came within the second of these classes. No witness testified to having seen the defendant perform the operation, and he himself denied having performed it; but the verdict of the jury was on the evidence clearly right. In short, the court holds that a person producing an abortion solely for the purpose of relieving the woman of the child which results in her death, though produced with her consent, is guilty of either murder or manslaughter, regardless of whether the child with which the woman was pregnant was quick; of "murder," under Section 1227 of the code, if the act by which the abortion was produced is eminently dangerous to, or evinces a depraved heart regardless of, human life; "manslaughter," under Section 1244, if the act by which the abortion was produced is not eminently dangerous to, and does not evince a depraved heart, regardless of human life.

Time Limit to Beginning Actions for Malpractice

(*Ericson v. Charles (Kan.)*, 194 Pac. R. 652)

The Supreme Court of Kansas says that in one count the plaintiff alleged, in substance, that the defendant agreed to perform an operation on her in order to relieve her from an obstruction of the bowels, and to give her the necessary treatment following the operation, for \$100, and it was also agreed that he would not remove her vermiform appendix, uterus and ovaries, or perform any other operation on them, but that, when she submitted to the operation, in violation of his agreement he removed the appendix, and stitched the uterus to the walls of the abdomen in a manner not in accordance with the custom and practice of good and prudent surgeons, causing her to suffer great injury and pain, for which she asked judgment in the sum of \$5,468.44. In a second count the plaintiff set out the facts substantially as in the first, except that no mention was made of an employment or of an agreement as to the manner or extent of the operation; but it was alleged that the defendant, in disregard of his obligation and duties as a surgeon to perform the operation in a manner becoming a good, reputable and ordinarily prudent surgeon, had removed the appendix, which was in a good, healthy condition, and had stitched the uterus to the wall of the abdomen, contrary to the custom and practice followed by good surgeons; and, further, that the operation on the obstruction of the bowels, the ailment for which the plaintiff underwent the operation, was not properly done and afforded only partial relief. Following this were the same allegations as to the pain, mental anguish and injury which resulted from the operation as performed, with prayer for judgment, as in the first count. The action was brought more than two years after the cause of action accrued, but less than three years after that time. A demurrer to the first count was overruled on the theory that the cause of action alleged was one arising on contract, to which the three-year statute of limitations of Kansas applied. But what was treated as a demurrer to the second count was sustained on the ground that that count stated a cause of action sounding in tort and was barred by the two-year statute of limitations. The plaintiff insisted that when the defendant undertook to perform the operation an implied obligation arose on his part that he would use reasonable skill and care in its performance, and on her part that she would pay him the reasonable value of his services. She therefore contended that she was entitled to, and in her pleading did, waive the tort and sue on what she called the implied contract in the transaction. But there was no averment in the second count of an agreement between the plaintiff and the defendant, nor even of employment. It was alleged in effect that he performed the operation, but that it was negligently and unskilfully done. In this count, the

plaintiff set up no more than the violation of duty and the wrong of the defendant. It is true that in certain cases wherein the defendant derives a benefit from a tortious act the plaintiff may waive the tort and sue on the implied contract of the defendant to pay for property taken or benefit derived by him. Here, however, the averments in the count were those stated in an ordinary petition for malpractice, and were such as to characterize it as an action *ex delicto*, or for a wrongful act. Having pleaded an express contract in the first count, the plaintiff was hardly in a position to plead a contract implied by law, as the existence of an express agreement precludes the idea of the existence of an implied one. In other words, an action for malpractice in which is alleged in substance that the defendant, in disregard of his obligations as a surgeon, performed an operation on the plaintiff in a negligent manner, and not in accordance with the custom and practice followed by good, reputable and prudent surgeons, with a result that the plaintiff suffered great pain and injury, for which she asks damages, is one arising on tort, and not on contract, and the statutory limitation of two years applies to such action.

Society Proceedings

COMING MEETINGS

American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
Delaware State Medical Society, Rehoboth, Aug. 16.
Colorado Congress of Ophthalmology and Oto-Laryngology, Denver, July 29-30.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Wisconsin State Medical Society of, Milwaukee, Sept. 7-9.

AMERICAN PEDIATRIC SOCIETY

Thirty-Third Annual Meeting, held in Swampscott, Mass., June 2-4, 1921

The President, DR. JOHN HOWLAND, Baltimore, in the Chair

Prolonged Intolerance to Carbohydrates

DR. JOHN HOWLAND, Baltimore: In cases of prolonged intolerance to carbohydrates which perpetuates diarrhea it is apparently the sugar and not the fat that is responsible. The first indication in treatment is to reduce the sugar to its lowest limits in a food which furnishes the other requirements for adequate nutrition. Nothing can compare with protein milk in this respect. It allows the presence of fat, protein and salts with a minimum of disturbing sugar, and it furnishes the substances necessary for the formation of insoluble soaps. Carbohydrates must be withheld for a long time. A polysaccharid, such as farina, is not only at times well borne but may even have a marked constipating effect. Young infants will not usually tolerate this, but in the case of older infants it may be strikingly successful. In another condition, commonly known as chronic indigestion or intestinal infantilism of Herter, it has been found that of all the elements of food, carbohydrate is the one that must be excluded most rigorously. In this class of cases the diet may consist of (1) protein milk alone, continued until the stools are firm, distention is very slight, gas is not in excess, and the appetite is good; (2) protein milk as a basis reinforced by almost pure protein foods, such as curds without whey, scraped meat, certain forms of cheese, egg white and eventually whole egg. The duration of this stage may be many months, even years. This is not an ideal diet, but it is an adequate diet. (3) Carbohydrates added gradually. Bread, potato and cereals are the last articles that can be allowed.

Blood Studies in the New-Born

DRS. W. P. LUCAS, B. F. DEARING, H. R. HOOBLER, et al., San Francisco: The blood obtained a few hours after birth to the fourteenth day postpartum was studied in 150 infants. The hemoglobin was high at birth, that of the sinus blood tending to be higher than that of the peripheral blood. The red blood cells were high during the first week and then gradually decreased, corresponding closely with the decrease

in hemoglobin. The same leukocytosis was observed as has been noted by other observers, though it was by no means constant. The leukocytosis during the first week was definitely due to the polymorphonuclears; this continued to be so until the seventh day, when the polymorphonuclears gradually declined, reaching the same level as the lymphocytes on this day. The lymphocytes gradually increased and were still increasing at the close of these observations on the twelfth day. There was slight increase in the transitional cells which, toward the end of the period of observation, decreased slightly. The same was true of the eosinophils. These counts in the sinus blood again showed a slight increase over those of the peripheral blood. The platelet count during the first eight days corresponded very nearly to those of Dr. Mary E. Morse. During the period of prolonged coagulation time the serum bilirubin curve was also increased, but it did not seem to affect the coagulation time in cases of marked jaundice. During the time that the coagulation time was prolonged, the prothrombin factor was definitely diminished. After the fourth day the prothrombin factor apparently reached normal levels, though it might be delayed several days longer. The blood clot of the new-born did not seem to show any defect in retractility of the clot, and there was no fibrinolysis. This was exactly the condition that existed in hemophilia. One might conclude, that the factor involved in the ordinary case of hemorrhage in the new-born was a diminution in the prothrombin element, which is mainly derived from the platelets. We have not been able to show urobilin in the stools of new-born infants during the first twelve days of life, or in infants up to 10 weeks of age, although in older children it is easy to demonstrate its presence. Ninety cases were examined for bilirubin by a method which we propose, and of these seventy-two showed a positive reaction.

DISCUSSION

DR. ALFRED F. HESS, New York: The most remarkable thing about this study is the prolonged coagulation time. In other words, these infants have latent hemophilia. These figures make us wonder that we do not get hemorrhage in the new-born more often.

DR. FRITZ B. TALBOT, Boston: The blood sugar studies are interesting compared with the respiratory quotient. The blood sugar is low at birth and rises on the third day, and this is consistent with the respiratory quotient, which goes down immediately after birth and on the third day begins to rise. The figures for sugar in this study are low, compared with those of Folin.

Care of Premature Babies

DR. WALTER LESTER CARR, New York: The incubator room at the Manhattan Maternity is 6½ by 7 feet, with a ceiling 12 feet high and a single door. The air intake is by a flue which passes back of a radiator. The room temperature is kept at 80 F. The incubator is an aluminum tray with a hood which does not extend the entire length of the tray but allows the baby's head to be out of the hood. Over this open end there is a curtain to protect the baby's head. In the top of the incubator are three openings for electric lights placed on elbows so as not to interfere with the clothing. One 15 watt light gives the incubator a temperature of 76 F., two lights raise the temperature to 88 F., and three lights raise it to 96 F. in forty-five minutes. A moderate temperature is better than a high one. Breast milk should be given if it can be obtained; it should be drawn from the mother or wetnurse, diluted with equal parts of 5 per cent. lactose solution and fed with a medicine dropper or a Breck feeder. Premature babies do not bear high fat. Water must be given freely. The feeding interval should be about two hours, and the amount given should not exceed 1 or 2 drams each time. Whenever possible, feeding should be done without removing the baby from the incubator. Sucrose is given to babies who have a persistently low temperature, and it apparently helps in heat production. The caloric requirements of the premature baby are high. Gavage, lavage and hypodermoclysis are sometimes employed. The administration of fluid through the longitudinal sinus is not a safe means of combating loss of weight. The average

time the incubator babies were kept in the hospital was 36.8 days. The routine was to keep the babies in the hospital until they weighed about 4 pounds. Premature babies are prone to be rachitic. Three of five babies fed on Dryco showed rickets.

DISCUSSION

DR. H. D. CHAPIN, New York: In the care of premature babies two things are of importance, the temperature of the incubator and the food, and of these the food is the more important. In my experience with several hundred incubator babies I have never been able to raise one without breast milk.

DR. ISAAC A. ABT, Chicago: Ordinarily the temperatures of incubators are too high. These babies do not need a temperature of 80 degrees; a little above 75 F. is enough.

DR. L. E. LAFETRA, New York: A temperature of 76 F. is best as it permits the air to be kept moist. If the temperature is higher, the air becomes too dry. Breast milk is desirable, but when it cannot be obtained, modified milk which has been peptonized may be used. Its use is often attended with success.

DR. FRITZ B. TALBOT, Boston: The basal metabolism figures are important. The premature baby falls into the class of cold blooded animals. The temperature is dependent on the rate of the metabolic processes. When the temperature is subnormal, the basal metabolism is subnormal. Babies having a subnormal temperature do not gain until the temperature becomes normal, and when they begin to gain the temperature becomes normal and the metabolism goes up.

DR. J. P. CROZER GRIFFITH, Philadelphia: We have been using an asbestos incubator with the lights below. Premature babies must be kept warm.

Malnutrition in Children of the Well-to-Do

DRS. CHARLES GILMORE KERLEY, EDWARD J. LORENZA, JR., and ROGER DUBOSE, New York: In the majority of these cases two features stand out prominently, namely, deficient food intake or imperfect digestion. In one group are those cases in which there is a maladjustment of the different food elements. Usually butter, cream and 4 per cent. milk fat have been crowded. The essential foods are taken indifferently. In the management of these children the fact must be recognized that there must be a healthy desire for food and this is created by the withdrawal of fats and sugars in large measure. Three meals are given daily, at five hour intervals, and nothing but water is allowed between meals. A low fat and sugar diet is given, and skimmed milk, from 16 to 20 ounces only, is allowed. In a second group, hyperacidity of the stomach juices causes defective food intake. The chief symptom of hyperacidity is a lack of desire for food. In cases of long standing, nausea and vomiting are prominent symptoms. Among the etiologic factors in this group are candy, ice cream, irregularity in meal hours, and faulty feeding. This type of patient usually responds to dietetic treatment. Extremes as regards temperature of foods and drink are to be avoided. Condiments, candy, pastry and raw fruits are excluded. A powder consisting of sodium bicarbonate, 2 grains, bismuth subnitrate, 2 grains, and magnesium carbonate, is given fifteen minutes before meals. A third group of cases is that in which defective intestinal mechanics delay stomach emptying. One usually finds defective food intake and poor appetite in those who show a stomach residue after four and one-half hours. In order for a child to have a normal desire for food, there must be an interdigestive period of one hour. Retention is often due to pylorospasm occasioned by an anomaly or lesion lower down in the intestinal tract. It is impossible to outline a plan of treatment that will suit all these cases. In the ptosis cases a snug-fitting abdominal belt with a pad or projecting shelf is worn for months. In cases of dilated cecum, massage and liquid petrolatum have been employed successfully. A fourth group, comparatively small, contains the greatest number of failures. These are the underweight, overactive, anemic, physically retarded, precocious children that one sees only occasionally before the third year. In 125 of these cases with varying degrees of malnutrition I

have used yeast. Analysis of the histories fails to show that it has been of any benefit. In fact, the administration of yeast was attended by no signal success in any of the four groups of cases. Likewise, endocrine therapy, with the exception of the use of thyroid in the cretin, has been unsatisfactory. A large majority of our cases of faulty development relate to food intake and utilization. For success in management we must supply the requirements.

DISCUSSION

DR. L. EMMETT HOLT, New York: Heretofore most of our attention has been directed to the quality of food, but quantity must also be considered. When the child has never been hungry I instruct that if he does not eat the food placed before him it shall be taken away and that he shall have nothing to eat until the next meal time. When a child finds that if he does not eat his food it will be taken away, he soon learns to take it.

DR. H. D. CHAPIN, New York: Dr. Kerley is one of the first to report results from the use of yeast. The newspapers are advertising yeast and advising people to eat it. Whatever we say about it will have some good effect on these advertisers.

DR. LANGLEY PORTER, San Francisco: If these children are put to bed and given proper rest they often improve quickly. It is astonishing what a change of nurses will sometimes do. A nurse skilled in the psychology of childhood, often will in a few days, without change of diet, get the child well.

DR. ISAAC A. ABT, Chicago: We have been using large doses of calcium phosphate and lactate and have obtained some good results.

Pneumococcus Peritonitis in Infancy and Childhood

DR. HENRY HEIMAN, New York: During five years, 125 cases of genuine peritonitis were admitted to the children's wards at Mount Sinai Hospital, and the pneumococcus was present in only fifteen. It was Type I in five cases; Type II in one case; Type III in no case, and Type IV in three cases. In five out of eight cases the blood cultures were positive for pneumococcus. A high leukocyte count is characteristic. The course of the disease is divided into three phases: (1) Sudden onset with severe abdominal pain, usually generalized, but most marked in the lower right quadrant, rise in temperature, rapid pulse and prostration. The degree of abdominal rigidity is not as marked as in other forms of peritonitis. Signs of fluid are not often elicited. (2) In this phase the condition improves. (3) This stage is characterized by the presence of a circumscribed mass in the abdomen, usually in the umbilical or hypogastric region. The temperature rise becomes intermittent and the patient gradually loses strength from the toxemia. Death ensues from toxemia, or recovery may follow spontaneous rupture through the abdominal wall, or operation. At Dr. Howard Lilienthal's suggestion, abdominal aspiration was done in all suspicious cases. The point of preference for puncture is 1 inch below and 1 inch to the left of the umbilicus; this penetrates an area over the small intestine only. The prognosis depends on the localization of the inflammatory process and the involvement of other organs. We have injected antipneumococcus serum intensively in four cases without avail. The best treatment is to give an abundance of fluid by hyperdermoclysis and proctoclysis, and to keep the patient under the influence of opium during the acute onset of the diffuse process. If toxemia tends to lessen, it is advisable to wait for abscess formation before opening the abdomen. If, however, under supportive treatment no signs of improvement appear, it is best to resort to surgery.

DR. L. EMMETT HOLT, New York: One type of pneumococcus peritonitis occurs in those cases in young infants in which the peritonitis is a part of a general pneumonitis. Frequently it gives no symptoms and is found only at necropsy. It is a question not yet settled whether these children should be subjected to operation.

DR. ISAAC A. ABT, Chicago: These cases usually run a malignant course and are difficult to differentiate from appendicitis. A peculiar condition may occur during the course of a pneumococcus peritonitis. The disease starts

with a stormy onset. After two or three days of high fever and great toxemia, the patient lapses into a calm, semicomatose state that reminds one of the condition one sees when an appendix has ruptured. The patient remains in that state for a day or two, rapidly gets worse, and dies. An exploratory operation may be justified in these cases.

DR. CHARLES G. KERLEY, New York: I have seen quite a number of cases of pneumococcus peritonitis, all of the fulminating type. One of my patients developed a paralytic ileus and died within three days.

DR. P. J. CROZER GRIFFITH, Philadelphia: It is better not to operate until you find whether the trouble is in the abdominal cavity. I know of patients operated on early who died.

Diet in Infancy; Czerny and Kleinschmidt Butter-Flour Mixture

DR. J. P. CROZER GRIFFITH, Philadelphia: Czerny and Kleinschmidt devised a food which permits the employment of a high fat percentage in combination with a high percentage of carbohydrates, but with the protein reduced to approximately that of human milk. They insist on the importance of having the ratio of fat and carbohydrate a fixed one. The proportions recommended by them consist of 7 gm. of butter; 7 gm. of flour; 5 gm. sugar and 100 c.c. of water, to be mixed with varying amounts of milk, according to the age of the patient. The butter is placed in a pan and heated gently over a gentle fire until foaming takes place and until any odor of volatile fatty acids has disappeared. This requires from five to eight minutes. Fine wheat flour is then added. The whole is boiled and rubbed through a fine sieve, and then mixed with the desired amount of previously boiled, cooled milk and the whole kept cool until needed. For children under 3,000 gm. in weight, one-third milk is added to two-thirds butter-flour mixture; for those 3,000 gm. or over, two-fifths milk and three-fifths butter-flour mixture. Children fed by this method resemble healthy breast fed children. The results were particularly fine in weakly and premature infants weighing less than 3,000 gm.

DR. A. GRAEME MITCHELL, Philadelphia: It is important to follow the formula closely. In whatever way the mixture is modified, the amounts of butter and flour remain equal. In certain cases it is an advantage to reduce the amounts of butter to less than 20 gm. each to 300 c.c. of water. In some cases the sugar should be decreased in amount or omitted entirely. The mixture may be used for substitute or complementary feedings. The mixture containing two-thirds of the stock solution and one-third milk may be said to represent: fat, 4.6 per cent.; carbohydrate, 8.2 per cent.; protein, 1.5 per cent., with a caloric of 24.6 to the fluidounce. The fat of the stock solution consists entirely of neutral fat, the fatty acids having been eliminated. This mixture, like other foods, has its indications and contraindications, and success in feeding depends on the proper selection of cases. The food should be given cautiously, if at all, to infants suffering from infantile atrophy. Some cases that one does not expect to respond favorably nevertheless do so. In analyzing the histories of the infants that failed to gain on the butter-flour mixture, it was found that in seven the type of feeding was not responsible for the failure. The two great lessons which the study teaches are that (1) when fed with butter-flour infants may tolerate fat in a manner which can be accomplished probably by no other means known to us, and (2) the remarkable results which so often follow are a strong proof of the great need which the infant's anatomy possesses for a food containing a sufficiently large amount of fat.

DISCUSSION

DR. CHARLES G. KERLEY, New York: This method appears to have been very successful. We should follow it up. It is a rather involved proposition, however, to put into the average family, and it seems to me that we are striving unnecessarily for new procedures. We are using too many proprietary preparations and too much Dryco. These things are being used by men too lazy to study up the suitable formula for the individual child.

DR. OSCAR M. SCHLOSS, New York: I have used the butter-flour mixture and have had the identical experience

that Dr. Griffith and Dr. Mitchell report. I think that many babies do much better on this mixture than when fed by the routine methods. The babies do much better than when the same amount of fat is given in an ordinary formula.

DR. HENRY D. CHAPIN, New York: There is a tendency to cut fats off too much. Years ago it was all high fats; now it is low fats or no fats. I think one reason for this is the caloric estimate of food requirements. The different food elements are not interchangeable, particularly in early life.

DR. L. EMMETT HOLT, New York: One element in this formula makes it evident that it is not adapted for long use. I cannot conceive of a child thriving on such a low protein diet for a long time. I think that the failure of condensed milk and of the dry milk preparations is due to their low protein content. One cannot insist too strongly that these unbalanced formulas are not suited to permanent use.

DR. ALFRED F. HESS, New York: The diets which the babies do best on in the infant asylum is Schlüss milk, which is made of 160 c.c. of cream and 160 c.c. of milk to the liter, with a certain amount of flour and sugar. It is similar to this, except that in this mixture the fatty acids are driven off. On this diet not only do the children thrive, but the texture of the skin and muscles is much better than that of the average bottle fed baby. The mixture we use seems to work, in spite of the fact that it contains fatty acids.

DR. J. CLAXTON GITTINGS, Philadelphia: It does not seem rational to reduce the percentage of volatile fatty acids. I have had a gain in weight when the volatile fatty acids were present in the food that I did not get in any other way.

DR. J. P. CROZER GRIFFITH, Philadelphia: Twenty-five men who have used this mixture admit that the results are surprisingly good, and they are better than I have seen with any other method. It is not a new mixture; it was used long before physicians took it up. I am a percentage feeder, but I think there is a great deal more involved in this method than simply percentages. It is not meant for temporary feeding, but for prolonged feeding. I have followed out this method of feeding long enough to be convinced of its advantages.

DR. A. GRAEME MITCHELL, Philadelphia: This is a percentage method. It simply means a way to get the infant to take more fat. I cannot say that it is a food to be used indefinitely. If you search the stools you find no fatty acids. It is simply a method that helps those infants that do not get along well on cow's milk mixtures, and it may be true that it can be used indefinitely.

Use of Thick Cereal Mixtures in Difficult Feeding Cases

DR. HENRY D. CHAPIN, New York: Observations were made on twenty infants with obstinate indigestion which had resulted in distinct malnutrition and pointed to the hopeless marasmus which finally resists all aid. Three mixtures were employed. The first was composed of 4 ounces from one quart of milk, 2 ounces of skimmed milk, 7 ounces of water, and 3 level tablespoonfuls of farina, with 1 level tablespoonful of granulated sugar. The mixture was boiled one-half hour, and the children were given 3 ounces every four hours, and water alternately. The second formula was similar to this, except that it called for 15 ounces of skimmed milk and 6 ounces of water, and the baby was fed 3½ ounces every four hours. The third formula called for 4 ounces of top milk from a quart of milk, 28 ounces of skimmed milk, 9 ounces of water, 4½ level tablespoonfuls of farina, 1 level tablespoonful of granulated sugar and 1 level tablespoonful of malt sugar. From 4 to 6 ounces were fed every four hours, and water every four hours alternately. When vomiting was a feature, the thick cereal mixture did better than liquid food and were always tried first with a spoon. They might be given by the bottle by enlarging the hole in the rubber nipple. The effects of this feeding were occasionally uncertain, usually good and sometimes remarkable. Laboratory analysis of the stools shows that the percentage utilization of carbohydrates in these children is practically equal to that of normal children and adults.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

May, 1921, 1, No. 3

- Physiology of Reproduction in Domestic Fowl. XIX. Influence of Free Choice of Food Materials on Winter Egg Production and Body Weight. R. Pearl and T. E. Fairchild, Baltimore.—p. 253.
- Certain Minimums and Maximums in Tuberculosis Control. D. B. Armstrong.—p. 278.
- *Antipneumococcus Protective Substances in Normal Chicken Serum. C. G. Bull and C. M. McKee, Baltimore.—p. 284.
- *Significance of Albumin and of Albumin with Casts in Urine. L. I. Dublin, New York.—p. 301.
- *Toxic Substance Obtained by Growing Hemolytic Streptococci in a Special Medium. L. C. Havens and M. L. Taylor, Baltimore.—p. 311.
- Life History of *Vahlkampfia Patuxent N. Sp.*, Parasitic in Oyster with Experiments Regarding Its Pathogenicity. M. J. Hegue, Baltimore.—p. 321.
- *Natural and Acquired Antisheep Hemolysins of Rabbit as Regards Thermolability. R. R. Hyde, Baltimore.—p. 346.
- Reactivation of Natural Hemolytic Antibody in Chicken Serum. R. R. Hyde, Baltimore.—p. 358.

Antipneumococcus Protective Substances.—It is shown by Bull and McKee that the serum of normal chickens is capable of protecting mice and guinea-pigs against infection with pneumococci. The protective substances are found in the water-insoluble fraction of the serum globulin. Chicken serum contains particular protective substances for each serologic type of pneumococcus. These substances are selectively removed from the serum by the process of bacterial adsorption. In terms of the protective substances in chicken serum, Types II and II B pneumococci constitute two distinct main groups and Type II strains form a subgroup to both of them.

Significance of Albumin and Casts in Urine.—A study was undertaken by Dublin to determine, if possible, the importance of persistent albumin and of albumin with casts as a physical defect measured in terms of mortality. It is based on the after-life history of about 5,200 persons who were rejected for insurance in the period between 1905 and 1915. So far as it was possible the study was limited to cases in which there were no other serious complications which are often found in connection with albuminuria. The first group studied consisted of 2,073 persons who showed albumin on several examinations in amounts exceeding the slightest possible trace. A total of 161 deaths occurred among them during this period. This is the actual mortality. According to Glover's table, 141 deaths should have occurred among these people. The actual deaths were, therefore, 114 per cent. of the expected according to the table. On the American men table, only eighty-eight deaths would have occurred as against 161. The actual mortality was, therefore, 183 per cent. of that which might have been expected in a group of insured people at the same ages who were presumably free from serious defects. It would appear, therefore, that the persistent presence of albumin in quantities above the slightest possible trace is a serious impairment. Cases with albumin and casts numbered 3,264 persons with 452 deaths. The death rate, therefore, was 20.5 per thousand for those having albumin only. The seriousness of the presence of albumin with casts is reflected also in the death rates for the various diseases. The mortality rate is high for virtually every important cause of death. The cancer rate is twice as high; diabetes is almost three times as high; tuberculosis is over three times as high. The extra mortality from this disease is not influenced so much by age as by the amount of albumin. Apoplexy and cerebral hemorrhage give rates four times as high as in the ordinary experience; organic heart disease, over four times and Bright's disease, twelve times. Over 40 per cent. of the deaths of persons showing a large amount of albumin with casts at the ages over 40 were from Bright's disease and the death rate from this disease alone was 3,103 per hundred thousand. These persons would, therefore, appear to have been at the time of examination already suffering from Bright's disease or well on the road to this condition. The gravity of the impairment varies directly with the amount of albumin and not quite so regularly with

the advancing age of the applicant. The presence of casts adds materially to the gravity of the impairment and granular casts add more to the defects than do hyaline casts. At the older ages, the presence of casts, together with albumin, is indicative of a condition of the greatest seriousness. At the younger ages, the presence of a trace or more of albumin or of albumin with casts, suggests the existence of tuberculosis in many cases.

Special Culture Medium for Hemolytic Streptococci.—A special medium is described by Havens and Taylor in which a specific toxic substance has been produced during the growth of certain strains of hemolytic streptococci. This toxic product is filtrable and the filtrates have a definite pathogenic action when injected into mice, rabbits and guinea-pigs. The poison possesses definite antigenic properties and the serum of rabbits immunized with such toxic filtrates gives protection both against infection with the cultures and against intoxication with the filtrates. The medium used consisted of 1 per cent. peptone, 1 per cent. disodium phosphate and 0.5 or 1 per cent. glucose added to an ordinary meat infusion made with distilled water, and the reaction adjusted to a pH of from 8.0 to 8.2. The medium is tubed, about 10 c.c. to a tube, and autoclaved at ten pounds' pressure for ten minutes. A fragment of sterile rabbit kidney and 1 c.c. of defibrinated sheep or rabbit blood are now put in each tube. The medium is then ready for use and, to obtain the best results, should be inoculated at once, without incubation to determine sterility. In this medium the hemolytic streptococcus grows readily and abundantly.

Natural Hemolysins.—Hyde found that the natural hemolysins of the rabbit for sheep corpuscles are as heat resistant as the corresponding immune hemolysins. The apparent difference in the thermolability of natural and immune hemolysins is due to the relative potency of the serum, the more potent serum apparently being more resistant to heat. Hemolysins are just as resistant to heat when in salt solution as in undiluted serum.

American Journal of Ophthalmology, Chicago

June, 1921, 4, No. 6

- Advantages of Trifocal Lenses and Reasons Why They Should be Worn. J. A. Spengler, Geneva, N. Y.—p. 401.
- The Nature and Treatment of Strabismus. C. Deloge, Nice, France.—p. 407.
- Metastatic Infiltration of Cornea (Ring Abscess). A. C. Snell, Rochester, N. Y.—p. 419.
- Foreign Body Impacted in the Sclera and Retina, Loosened Under Direct Observation with Ophthalmoscope and Removed. J. M. Patton, Omaha.—p. 422.
- Glaucoma after Cataract Extraction. E. Stieren, Pittsburgh.—p. 424.
- Clinical Observations with Slit Lamp of Gullstrand. H. S. Gradle.—p. 427.
- Radium Applicator for Cataracts. W. C. Franklin and F. C. Cordes, San Francisco.—p. 429.
- Ocular Conditions Associated with Arthritis Deformans. H. Friedenwald, Baltimore.—p. 431.
- Extreme Hypermetropia. A. O. Pfingst, Louisville.—p. 436.
- Objective and Subjective Tremors as Functional Disorders Due to Eyestrain. W. W. Kahn, Detroit.—p. 438.
- Blocking of Facial Nerve in Cataract Operations. R. E. Wright, Madras, India.—p. 445.
- Release of Iritic Adhesions to Anterior Capsule of Lens by Suction Pump Massage. H. V. Würdemann, Seattle, Wash.—p. 446.
- Proper Treatment of Acute Suppurative Dacryocystitis. J. M. Ball, St. Louis.—p. 447.
- New Operation for Treatment of Lacrimal Obstruction. J. A. Mac-Millan, Montreal.—p. 448.
- Subconjunctival Injections of Drugs for Intensive Action on Iris. W. B. Doherty, New York.—p. 450.

American Journal of Public Health, Boston

June, 1921, 11, No. 6

- Health Education in Industry. C. E. Ford, New York City.—p. 489.
- Some Aspects of Pollution as Affecting Oyster Propagation. T. C. Nelson, New Brunswick, N. J.—p. 498.
- Infant Mortality in Detroit. G. T. Palmer and G. A. Blakeslee, Detroit.—p. 502.
- Cholera Prevention Campaign in Foochow. W. W. Peter.—p. 508.
- Phenol Coefficients. F. W. Tilley, Washington, D. C.—p. 513.
- Special Objectives of Physical Education with Relationships to Public Health. C. W. Hetherington, Sacramento, Calif.—p. 520.
- Review of Our Knowledge of Bacterium *Tularensis*. C. W. Chapin, Washington, D. C.—p. 529.
- Comparison of Two Methods of Adjusting Hemolytic System for Use in the Complement Fixation Test for Syphilis. H. V. Langworthy and F. L. Willson.—p. 532.

The Family Doctor and the General Hospital in the Anti-Tuberculosis Campaign. F. C. Smith, Washington, D. C.—p. 534.
Conquest of Mosquito-Borne Diseases. C. V. Craster, Newark, N. J.—p. 538.

American Review of Tuberculosis, Baltimore

June, 1921, 5, No. 4

Tuberculosis: Rationale of Research. G. B. Webb, Colorado Springs, Colo.—p. 271.

Comparative Study of Pathology and Roentgen Ray Densities of Tuberculosis Lung Lesions. H. K. Dunham and J. H. Skavlem, Cincinnati.—p. 278.

*Apical Pleuritis and Its Relationship to Pulmonary Tuberculosis: Statistical Study of Stereoscopic Roentgenograms of 366 Consecutive Adult Chests. J. G. Van Zwaluwenburg and G. P. Grabfield, Ann Arbor, Mich.—p. 323.

*Tuberculous Empyema. G. B. Kalb, Monrovia, Calif.—p. 339.
Campaign Against Tuberculosis. J. M. Anders, Philadelphia.—p. 345.
Are Eating Utensils Carriers of Tubercle Bacilli? H. L. Taylor, St. Paul.—p. 351.

Relationship of Pulmonary Tuberculosis to Apical Pleuritis.

—Van Zwaluwenburg and Grabfield found that pleural shadows over the apices in various forms occur with great frequency. By insensible gradations these shadows pass into those of frank pulmonary tuberculosis. The demonstrated association with pulmonary tuberculosis demonstrates a pre-eminently tuberculous nature. Chronologically the apical pleuritis precedes the pulmonary involvement. The prevailing tendency to spread is to the opposite apex and to the underlying lung. The infection probably reaches the pleurae through the cervical lymphatics.

Tuberculous Empyema.—Ten cases are analyzed by Kalb. Two of these patients were treated by thoracotomy and both died with their complication unbenefited. In fact, the end was hastened by the very means taken to cure them. Of the seven remaining, all are alive, and all have been relieved of their complication. Two of these were what may be termed cases of spontaneous empyema, and five occurred during the course of treatment by artificial pneumothorax. The patients were all treated by the method instituted by Murphy. All of the purulent material that is possible is removed by aspiration or siphonage or both combined, using a large needle. Then a 2 per cent. solution of liquor formaldehyd in glycerin is injected, the amount varying according to the amount of fluid withdrawn.

Archives of Neurology and Psychiatry, Chicago

July, 1921, 6, No. 1

*Sensory Changes in Subacute Combined Degeneration of Pernicious Anemia. A. S. Hamilton and C. E. Nixon, Minneapolis.—p. 1.

*Myelitis and Myelomalacia. P. Bassoe and G. B. Hassin, Chicago.—p. 32.

Epidemic Encephalitis: Clinical and Pathologic Study of Twenty-Five Cases. M. E. Alexander, Waterbury, Conn.—p. 44.

History of Lumbar Puncture (Rachicentesis). H. Gray, Boston.—p. 61.
Preparation of Colloidal Gold Solution for Testing Spinal Fluid. E. O. Gettler and J. W. Jackson, New York.—p. 70.

Sensory Changes in Pernicious Anemia.—Changes in the nervous system, Hamilton and Nixon state, occur in pernicious anemia in from 70 to 80 per cent. of the patients as they present themselves in the ordinary physician's practice. The frequency of these changes is ordinarily underestimated. Subjective sensory disturbances constitute the earliest and most frequent evidence of involvement of the nervous system. These, with the objective signs also, are often the earliest evidence of the development of pernicious anemia. The most characteristic sensory findings are the relatively greater loss of deep as compared with superficial sensibility, but there is by no means normal sensibility to touch, prick and other forms of superficial sensibility. Almost equally as characteristic as the change in deep sensibility, is the complaint of subjective sensory disturbances. There is a distinct lack of parallelism between the severity of the blood and nervous phenomena, and either may precede the other by a long period of time. Moreover, marked remissions in the blood picture, either with or without splenectomy, may fail to show a betterment in the sensory disturbances equal to that in the blood, and may show none at all. Contrary to the generally expressed opinion, degenerative changes in the peripheral nerves are common in pernicious anemia and constitute an important part of the pathologic anatomy of that disease. These changes in the peripheral nerves may serve to explain

the disharmony between the sensory phenomena and the changes in the spinal cord existing in certain cases, and in all cases have to do with the production of sensory disturbances; they are especially important in those cases in which marked remissions of sensory phenomena occur. Vibration sensibility may be lost without loss of sense of passive joint movement and vice versa, and it is possible that the long fibers carrying these two forms of sensibility pass up the cord sufficiently separated so that beginning lesion in the posterior column may involve either one or the other alone at an early stage or, in accordance with Petren's view, it may be that the fibers subserving joint sensibility, at least, may pass up the cord in two pathways.

Myelitis and Myelomalacia.—A clinicopathologic study was made by Bassoe and Hassin, especially as to the fate of gitter cells. In one of the cases recorded the morbid phenomena were most probably due to a pure inflammatory condition of the spinal cord, myelitis, while the second case with the clinical picture of transverse myelitis was due to an extensive softening of the spinal cord with interesting histologic features. The histopathologic findings in a typical case of so-called "yellow" softening of the spinal cord, myelomalacia, are analogous to those found in acute softening of the brain, encephalomalacia. Myelomalacia, the authors claim, is not an inflammation, but a degeneration of the spinal cord. The degenerative or regressive nerve fiber changes are associated with progressive glia phenomena, principally in the form of gitter cell formation. The gitter cells in this as in any other type of secondary degeneration, are gliogenous formations. Their task is to transform destroyed nerve tissue into fatlike substances and to transport these substances to mesodermic structures, such as blood vessels and the pia. Reaching these structures, they are actively taken up by the proliferating adventitial and pial elements. From the adventitial and pial spaces they are carried to the subarachnoid space and thence to the blood for final elimination. The subarachnoid space is to be looked on as the "dumping ground" for any waste accumulated in the central nervous system.

California State Journal of Medicine, San Francisco

June, 1921, 19, No. 6

Medical Aspects of Visceroptosis. G. E. Ebricht, San Francisco.—p. 221.

Another Problem in Surgery. W. A. Clark, Oakland.—p. 223.

Treatment of Tuberculosis with Partigens (after Muchdeycke). M. Rothschild, San Francisco.—p. 226.

Protection of Perineum by Episiotomy in Delivery at Term. D. L. Martin, San Francisco.—p. 229.

Problems in Plastic Surgery. G. W. Pierce, San Francisco.—p. 230.

Influence of Epinephrin on Nephritis and Its Complications by Injection into Kidneys. G. L. Eaton, San Francisco.—p. 233.

New Obesity Cures for Old or the Chiropractic Thurst. L. H. Peters, Los Angeles.—p. 237.

Amebic Abscess of Liver. P. K. Gilman, San Francisco.—p. 239.

Treatment of Bladder Tumors by Radiation and Fulguration. R. L. Rigdon, San Francisco.—p. 243.

Peripheral Nerve Surgery. C. L. Tranter, San Francisco.—p. 244.

Organized Medicine for Masses a Feature of Present-Day Medical Practice. E. W. Cleary, San Francisco.—p. 245.

Endocrines and Their Influence on Skin. A. Davidson, Los Angeles.—p. 248.

Clinical Usefulness of Orthocardiogram and Cardiac Pattern. H. Spiro, San Francisco.—p. 251.

Canadian Journal of Mental Hygiene, Toronto

April, 1921, 3, No. 1

Application of Binet-Simon Tests (Stanford Revision) to Toronto Public School. E. J. Pratt, Toronto.—p. 95.

Vancouver's Subnormal Problem. A. J. Dauphinee, Vancouver.—p. 117.

Iowa State Medical Society Journal, Des Moines

June 15, 1921, 11, No. 6

Some Aphorisms of Endocrines. H. M. Brown, Milwaukee.—p. 189.

Cerebral Arteriosclerosis. F. A. Ely, Des Moines.—p. 195.

How Are We Treating the Eustachian Tube? F. W. Sallender, Sioux City.—p. 199.

Treatment of Eustachian Tube and Middle Ear. H. M. Ivins, Cedar Rapids.—p. 201.

Use of Roentgen Rays and Radium in Treatment of Certain Nonmalignant Conditions. A. W. Erskine, Cedar Rapids.—p. 203.

Acute Appendicitis in Children. G. T. McCauliff, Webster City.—p. 205.

Treatment of Tuberculosis, Based on Its Clinical Cause. W. H. Ross, Waterloo.—p. 207.

*Case of Cardiospasm with Enormous Dilatation of Esophagus. T. J. Snodgrass, Janesville, Wis.—p. 212.

Cardiospasm with Dilatation of Esophagus.—Snodgrass' patient, aged 66, had had trouble in swallowing since he was 14. Food would stay in his esophagus several hours and then he would have to spit it out. This continued without treatment for forty years. Seven years ago, he had influenza, and from that time he grew steadily worse in regard to his swallowing. It required enormous pressure to force food into the stomach. He found that he could eat practically a whole meal before swallowing it. It would then be necessary for him to leave the table, throw his arms back, grasp something firmly, take a drink of water, throw his head back and thus, with enormous pressure, force the food into his stomach. It would shoot in with a very audible whistling sound. The esophagus, however, was never entirely emptied and every morning he would throw out a large amount of food that had been taken the night before. He had no particular distress after eating; he never vomited. His bowels were regular; he had a slight brassy cough; no pain; was somewhat nervous and ill-nourished. On giving him a bismuth meal it was found that no food passed into his stomach; the esophagus was enormously dilated, was narrowed down by a small stricture in the region of the cardia about $1\frac{1}{2}$ inches long and $\frac{1}{8}$ inch wide. By means of bougies and a hydrostatic dilator the stricture was gradually stretched so that normal function of the gastro-intestinal tract was secured.

Journal of Experimental Medicine, Baltimore

July 1, 1921, 34, No. 1

- *Experimental Studies of Nasopharyngeal Secretions from Influenza Patients. P. K. Olitsky and F. L. Gates, New York.—p. 1.
- *Reactions of Nasal Cavity and Postnasal Space to Chilling of Body Surface. S. Mudd, A. Goldman and S. B. Grant, St. Louis.—p. 11.
- *Concentrating Activity of Gallbladder. P. Rous and P. D. McMaster, New York.—p. 47.
- *Physiologic Causes for Varied Character of Stasis Bile. P. Rous and P. D. McMaster, New York.—p. 75.
- Studies on Bacterial Nutrition. Growth Accessory Substances in Cultivation of Hemophilic Bacilli. T. Thjötta and O. T. Avery, New York.—p. 97.
- Studies on the D'Herelle Phenomenon. A. Gratia, New York.—p. 115.

Experimental Influenza.—During the course of animal experiments with the anaerobic filterpassing organisms cultivated from epidemic influenzal sources, certain pulmonary infections with ordinary bacteria have been observed by Olitsky and Gates. The experiments have also shown that the lungs of animals infected with *Bacterium pneumosintes* are less resistant than normal lungs to infection with ordinary bacteria. These observations furnish additional proof of the identity of *B. pneumosintes* and the active agent derived from the nasopharyngeal secretions of patients in the early hours of epidemic influenza.

Mucous Membranes and Chilling.—Chilling of the body surface has been shown by Mudd et al to cause reflex vasoconstriction and ischemia in the mucous membranes of the palate, palatine tonsils and pharynx. The present study demonstrates a like reflex diminution in the blood supply of the nasal cavity and postnasal space (nasopharynx).

Concentrating Activity of Gallbladder.—Rous and McMaster state that a gallbladder emptied at the beginning of one experiment and left to fill from the liver concentrated the 49.8 c.c. of bile reaching it in twenty-two and a half hours to 4.6 c.c., that is to say, reduced its bulk 10.8 times; while another bladder left distended with a bile of known constitution and receiving in addition fresh increments from the liver concentrated the secretion 8.9 times in twenty-two hours. A series of five emptied bladders concentrated the bile coming to them in about twenty-four hours on the average 7.1 times or a little more than the 6.4 times of seven organs left full. The rapidity with which fluid is withdrawn through the wall of the bladder may be judged from some experiments in which a bag was connected with the tip of the organ by a large cannula. Merely in its passage through the bladder, the bile was concentrated from 2.3 to 4.8 times. The finding indicates a potential source of error in observations upon samples of bile obtained from fistulous channels of which the bladder forms a part. The authors found that the bile ducts do not withdraw fluid from the secretion they convey but tend to dilute it; hence concluded that the restriction of the concentrating activity to the receptaculum chyli is good

evidence that the latter has special significance for the organism. The nature of this significance is briefly discussed.

Stasis Bile.—The gallbladder and ducts exert opposite influences on the bile. The ducts fail to concentrate and thicken it with mucus as the bladder does, but dilute it slightly with a thin secretion of their own that is colorless and devoid of cholates even when the organism is heavily jaundiced. In obstructed ducts separated from the gallbladder, or connecting with one so changed pathologically that the concentrating faculty has been lost, such fluid gradually replaces the small amount of bile originally pent up. It is the so-called "white bile" of surgeons. When obstructed ducts connect with an approximately normal gallbladder the stasis fluid is entirely different, owing to the bladder activity. At first, there accumulates in quantity a true bile much inspissated by loss of fluid through the bladder wall, darkened by change in the pigment, and progressively thickened with bladder mucus. As time passes, duct secretion mingles with the tarry accumulation and very gradually replaces it. The inspissation of the bile, as indicated by the pigment content, is at its greatest after only a day or two of stasis. Rous and McMaster are convinced that the differing influences of the ducts and bladder on the bile must obviously have much to do with the site of origin of calculi and their clinical consequences. The concentrating activity of the bladder cannot but be a potent element in the formation of stones. The hemophilic bacteria, of which *B. influenzae* serves as a type, Thjötta and Avery state, require for their growth two distinct and separable substances, both of which are present in blood and neither of which alone suffices. These substances are (a) a vitamin-like substance which can be extracted from red blood corpuscles, from yeast, and from vegetable cells, which is relatively heat-labile and absorbed from solution by certain agents; (b) a so-called X substance which is present in red blood cells, is heat-stable, and acts in minute amounts.

Journal of General Physiology, Baltimore

May 20, 1921, 3, No. 5

- Methods of Studying Respiratory Exchange in Small Aquatic Organisms, with Particular Reference to Use of Flagellates as an Indicator for Oxygen Consumption. H. M. Fox, Cairo, Egypt.—p. 565.
- Phagocytosis of Solid Particles. W. O. Fenn, Boston.—p. 575.
- Sucrolytic Actions of Bananas. K. G. Falk and G. McGuire, New York.—p. 595.
- Theory of Injury and Recovery. III. Repeated Exposures to Toxic Solutions. W. J. V. Osterhout, Cambridge, Mass.—p. 611.
- Rate of Growth of Dairy Cow. S. Brody and A. C. Ragsdale, Columbia, Mo.—p. 623.
- Casein Viscosity Studies. H. F. Zoller, Washington, D. C.—p. 635.
- Significance of Latency Time in Enzyme Determination. L. G. M. Baas-Becking, Pacific Grove, Calif.—p. 653.
- Associative Bacterial Action in Propionic Acid Fermentation. J. M. Sherman and R. H. Shaw, Washington, D. C.—p. 657.
- Physiological Zero: Explanation of Departure from Linear Graph of Reaction Rate Values at Lower Temperatures. J. Krafka, Jr., Athens, Ga.—p. 659.
- Decreased Respiration and Recovery. O. L. Inman, Cambridge, Mass.—p. 663.
- Donnan Equilibrium and Physical Properties of Proteins. I. Membrane Potentials. J. Loeb, New York.—p. 667.

Journal of Laboratory and Clinical Medicine, St. Louis

June, 1921, 6, No. 9

- Relation of Differentiation and Lymphocytic Infiltration to Postoperative Longevity in Gastric Carcinoma. W. C. MacCarty and A. E. Mahle, Rochester, Minn.—p. 473.
- *Alkali Reserve of Blood Plasma During Protein Shock. A. A. Eggstein, New York.—p. 481.
- *Resistance of Red Blood Cells. In Disease to Hemolytic Action of Sapotoxin. C. H. Neilson and H. Wheelon, St. Louis.—p. 487.
- System of Laboratory Examinations and Records. J. A. Kolmer, Philadelphia.—p. 505.
- Modification of Technic of Vividiffusion Method of Abel. H. C. Van der Heyde and W. Morse, Morgantown, W. Va.—p. 520.

Alkali Reserve of Blood Plasma During Protein Shock.—Secondary proteoses and typhoid bacteria were the toxic substances used by Eggstein to produce shock in dogs and humans. The alkali reserve of the blood plasma was greatly decreased and there was a definite relationship between the decrease in the alkaline reserve of the plasma and the lowered blood pressure in toxemic shock. When the alkali reserve of the blood falls below 30 volumes per cent., following protein shock, the animal's life is in danger. The admin-

istration of sodium bicarbonate preliminary to the injection of a toxic protein retards the fall of the blood alkalis to this critical point. When the alkali reserve has been lowered in protein shock, it may be restored by the intravenous administration of sodium bicarbonate, which apparently relieves distressing symptoms.

Resistance of Blood Cells.—The resistance of the red cells to sapotoxin solutions Neilson and Wheelon state varies in different diseases and this variation is intimately associated with alterations in the metabolism of cholesterol. Pregnancy, pulmonary tuberculosis, lead poisoning and cardiorenal diseases are associated usually with an increased resistance of the red cells to sapotoxin. Syphilis and anemia associated with syphilis and hemolytic jaundice show a lessened degree of resistance of the red cells to sapotoxin. Typhoid appears to alter but little the resistance of the red cells.

Kansas Medical Society Journal, Topeka

June, 1921, 21, No. 6

Problems in Surgery of Gallbladder and of Bile Ducts. E. S. Judl, Rochester, Minn.—p. 186.
Focal Infection. L. J. Wheeler, Great Bend.—p. 190.
Hormones and Hormone Action. C. F. Nelson, Lawrence.—p. 192.

Kentucky Medical Journal, Bowling Green

June, 1921, 19, No. 6

Disturbance in Cardiac Functions. J. E. Greiwe, Cincinnati.—p. 295.
*Hydatidiform Mole; Report of Case. E. L. Henderson and J. G. Sherrill, Louisville.—p. 301.
Value of Blood Urea Determination in Medical and Surgical Cases. M. S. Grant, Berea.—p. 303.
*Complete Traumatic Rupture of Kidney: Report of Case. S. Graves and J. A. Casper, Louisville.—p. 304.
Hypertrophic Pyloric Stenosis Operation: Recovery: Case Report. G. Fulton, Louisville.—p. 306.
*Paralysis Agitans; Sequel of Influenza. J. J. Moren, Louisville.—p. 308.
Invagination of Ileum: Resection: Recovery: Case Report. J. G. Sherrill, Louisville.—p. 310.
Present Methods in Treatment of Fractures. J. G. Sherrill, Louisville.—p. 310.
Perforated Duodenal Ulcer: Closure: Gastro-Enterostomy: Recovery: Case Report. L. W. Frank, Louisville.—p. 318.
Radium. C. J. Broeman, Cincinnati.—p. 320.
Brain Tumor (Glioma): Report of Case. B. F. Zimmerman, Louisville.—p. 327.
Case of Extra-Uterine Pregnancy at End of Third Month with Rupture. F. I. Koontz, Louisville.—p. 331.
Successful Ligation of Common Femoral Artery; Case Report. L. R. Ellars, Louisville.—p. 334.
Operative Relief of Congenital Pyloric Stenosis. T. D. Smith, Louisville.—p. 335.
Lethargic Encephalitis. S. J. Myers, Louisville.—p. 338.
Heart and Its Capacity for Work; Guide in Diagnosis and Treatment. H. P. Sights, Paducah.—p. 343.
Bacillus Coli Infection of Prostate and Seminal Vesicles: Report of Five Cases. C. G. Hoffman, Louisville.—p. 356.
Treatment of Gonorrhea in Female. T. C. Holloway, Lexington.—p. 360.
Measles. G. P. Bailey, Harlan.—p. 369.

Case of Hydatiform Mole.—The interesting features connected with this case are the fact that none of the hydatiform mass escaped from the uterus which would have made the diagnosis easy. Two features, however, seemed to be important signs of missed pregnancy or mole, namely: the discharge of a large amount of clear fluid and the soft emifluxuant feel of the uterus with only slight effort at contraction and the absence of fetal heart sounds. Hysterotomy was done and the hydatiform mole, the result of a missed pregnancy, was removed. The mole was separated with difficulty from the mucosa. The hydatiform mass about filled a quart cup.

Case of Complete Traumatic Rupture of Kidney.—Graves and Casper's patient sustained a rupture of the right kidney as the result of a fall down stairs. After being picked up he complained of pain in his back and right side and soon fainted. He was aroused in a few minutes and during the night complained of pain. He could not urinate and a small amount of bloody urine was obtained by catheterization. Patient was evidently in shock. Physical examination showed dullness and marked tenderness over right loin at level of the third and fourth lumbar vertebrae. There was general tenderness over his abdomen; no fluid in abdomen. He had intense thirst since the accident and had been extremely restless. He died about twenty-four hours after the accident. The

necropsy disclosed a complete transverse rupture of the right kidney.

Paralysis Agitans; Sequel of Influenza.—Moren's patient was 7 years of age. Following an attack of influenza she developed paralysis agitans, the right side being involved to a greater extent than the left. There was practically no tremor so long as she remained quiet, but on attempting to walk typical symptoms of paralysis agitans were noted.

Maine Medical Association Journal, Portland

June, 1921, 11, No. 11

Type of Operation in Appendicitis. E. H. Risley, Waterville.—p. 327.
Lymphatic Leukemia—Report of Two Cases. M. Warren, Portland.—p. 333.

Laryngoscope, St. Louis

May, 1921, 31, No. 5

Some Indications for Operation on Nasal Sinuses in Children. L. W. Dean and M. Armstrong, Iowa City.—p. 273.
Mosher-Toti Operation on Lachrymal Sac. H. P. Mosher, Boston.—p. 284.
Juvenile Nasopharyngeal Fibroma—Report of Case Treated by Kocher's Osteoplastic Method. G. A. Wall, Tulsa, Okla.—p. 287.
Polypoid Degeneration of Lining of Antrum of Highmore. F. P. Emerson, Boston.—p. 292.
Diagnosis and Treatment of Maxillary Sinusitis. H. V. Dutrow, Dayton, Ohio.—p. 296.
Acute Bilateral Mastoiditis, Meningitis Aseptic. Operation. Recovery. H. M. Hays, New York.—p. 302.
Principles Involved in Roentgen-Ray Treatment of Tonsils. W. D. Witherbee, New York.—p. 305.
Chronic Mastoiditis with Extensive Cholesteatoma. H. F. Lampe, New York.—p. 307.
Chronic Purulent Otitis Media. A. A. Schwartz, New York.—p. 311.
Primary Mastoiditis with Perisinus and Extradural Abscess—Operation—Recovery. O. Glogau, New York.—p. 318.
Dislocation of Epiglottis. F. T. Hill, Waterville, Maine.—p. 320.

Medical Record, New York

June 18, 1921, 99, No. 25

Moral Center in Brain. W. Browning, Brooklyn.—p. 1043.
Vaccination Against Tuberculosis. K. von Ruck and R. E. Flack, Asheville, N. C.—p. 1048.
Treatment of Sterility by Means of Organic Extracts. A. Bercovitch, Winnipeg, Manitoba.—p. 1052.
Insanity. S. Block, Brooklyn.—p. 1055.
Urology: Its Place in Medicine. H. W. E. Walther, New Orleans.—p. 1058.
Case of Chronic Nephritis with Renal Neoplasm. C. G. Cumston, Geneva, Switzerland.—p. 1060.

June 25, 1921, 99, No. 26

Moral Center in Brain. W. Browning, Brooklyn.—p. 1090.
Suprapubic Prostatectomy. E. H. Eising, New York.—p. 1094.
Why Not Elimination? G. L. Servoss, Reno, Nev.—p. 1097.
Diphtheria. L. Curtis, Chicago.—p. 1098.
Concept of Roentgen-Ray Pathology: XV. Roentgen-Ray Literature. A. J. Pacini, Washington, D. C.—p. 1099.

Nebraska State Medical Journal, Norfolk

June, 1921, 6, No. 6

Physician as a Citizen. M. S. Moore, Gothenburg.—p. 161.
Neurocirculatory Asthenia. Review of Literature and Reports of Cases in Discharged Soldiers. M. J. Breuer, Lincoln.—p. 163.
Technic for Complete Appendectomy. K. S. J. Hohlen, Lincoln.—p. 174.
Civilian Surgeon's Story of Great War. H. W. Orr, Lincoln.—p. 176.
Etiology, Treatment and Results in One Hundred Cases of Backache. A. L. Smith, Lincoln.—p. 179.
Focal Infection and Its Relationship to Systemic Disease. A. F. Tyler, Omaha.—p. 181.
Medical Drainage of Gallbladder. A. Sachs, Omaha.—p. 184.

New Jersey Medical Society Journal, Orange

June, 1921, 18, No. 6

Stomach Case. G. K. Dickinson, Jersey City.—p. 171.
Reminiscences or Thoughts and Impressions from a Study of Mental Diseases. T. J. Smith, Bridgeton.—p. 174.
Bronchial Asthma. H. L. Alexander, Newark.—p. 179.
Sporadic Cretinism (Infantile Myxedema.) H. I. Golstein, Camden.—p. 184.
Psychiatric Institute. F. M. Allen.—p. 189.

New Orleans Medical and Surgical Journal

June, 1921, 73, No. 12

Missed Abortion. E. L. King, New Orleans.—p. 502.
Corrective Rhinoplasty. A. I. Weil, New Orleans.—p. 507.
Nineteen Radical Sinus Operations (Knapp) Done Under Local Anesthesia. M. P. Boebinger, New Orleans.—p. 518.
Hero Doctor. H. Dupuy, New Orleans.—p. 529.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

June 11, 1921, 1, No. 315

- *Limps in Children. J. Fraser, Edinburgh.—p. 843.
 *Residual Vaccines. C. E. Jenkins.—p. 846.
 Lethargic Encephalitis. G. S. Haynes, Cambridge.—p. 849.
 Ocular Symptoms in Slighter Cases of Lethargic Encephalitis. R. Pickard, Exeter.—p. 851.
 *New Growth and Reducing Substance in Blood. A. S. Leyton and H. G. Leyton, Cambridge.—p. 852.
 Path of Toxins to Central Nervous System. M. Button, Rye, Sussex.—p. 853.

May, 1921, 2, No. 5

- Problems in Neurology: Argyl Robertson Pupil. S. A. K. Wilson.—p. 1.
 Analytical Interpretations. M. Nicoll.—p. 26.

Limps in Children.—Fraser divided these limps into functional limps, painful limps, flaccid limps, spastic limps, mechanical limps and stiff limps. The diagnosis can be made by means of observation alone. Each individual condition must be treated on independent and special lines. If the limp is functional the less attention paid to it the better. Sympathy and local treatment will probably intensify and prolong it. Painful limps call for early and careful treatment by rest and immobilization of the painful part. Flaccid limps usually owe their origin to poliomyelitis hence prevention is better than cure. When the limp has become established mechanical treatment and operative treatment offer the most promising lines of treatment. Mechanical treatment by splints in children is often disappointing. Spastic limps call especially for educational efforts. Occasionally surgery steps in beneficially with such simple procedures as tenotomy and tendon lengthening, but the intelligent use of corrective splints applied at night and careful education during the day produce good results. The common essential feature of most mechanical limps is shortening and the aim should be to correct, if possible, the mechanical error, which is producing the shortening rather than to disguise it by such a procedure as heightening the boot sole. This should only be done as a final stage in treatment and after all other errors, such as adduction, etc., have been corrected. If raising the boot sole is the only remedy adopted, it may lead to a progressive increase in shortening. Stiff limps generally call for little in the way of treatment. It is essential, however, that the part affected should be in the best possible position for subsequent ambulation.

Residual Vaccines.—A new technic for the preparation of residual vaccines is described by Jenkins which embodies the principle of Thomson's and Dean's methods. The term "detoxicated" he thinks, is unfortunately somewhat misleading and has even caused this type of vaccine to be looked on with a certain amount of suspicion. It has been thought that a preparation which is itself nontoxic cannot be expected to stimulate a protective reaction on the part of the tissue. If this were so, these vaccines might with reason be suspected. But they possess a toxicity of a definite type, and this toxicity is contained in the bacterial residue which remains after the complete removal of the toxins and endotoxins. Therefore Jenkins prefers to call them vaccines of the bacterial residue, or more briefly residual vaccines. The clinical results from the use of these vaccines are said to have been good especially in cases of uncomplicated chronic bronchitis.

Reducing Substance in Blood and Tumors.—While searching for further light on the problems of immunity, the Leytons tried the effect of transplanting in succession each of the endocrine glands to see if any one of them by their secretions caused or accelerated the growth of tumors. The only one that appeared to affect the growth of inoculated sarcoma in rats was the parotid. The blood sugar content of patients suffering from malignant disease was also investigated and the reducing substances invariably were increased. Further, in most of the cases which have been under observation for any length of time a definite excretion of sugar

in the urine has appeared from time to time. So consistent have been the results that to rely on this test to differentiate between simple and malignant cases. The experiment of feeding rats on sugar after they have been injected with a bacillus with filtrable spores isolated from a case of human sarcoma was successful. Rats inoculated with the same culture, but not fed on sugar, showed no evidence of growth locally or in the lungs after three months. Six other rats fed on sugar, but not inoculated with bacteria, likewise remained healthy.

Indian Journal of Medical Research, Calcutta

July, 1920, 8, No. 1

- Arthropods of Medical and Veterinary Importance in Mesopotamia and Their Relation to Disease: III. Bot Flies. W. S. Patton.—p. 1.
 Indiana Calliphorinae: I. Chrysomya Bezziana Villeneuve, Common Indian Calliphorine Whose Larvae Cause Cutaneous Myiasis in Man and Animals. W. S. Patton.—p. 17.
 Passeromyia Heterochaeta Villeneuve in India. W. S. Patton.—p. 30.
 Reproductive System of Cimex; Behavior of Spermatozoa. F. W. Cragg.—p. 32.
 Bionomics of Houseflies: IV. Life-History of Musca. P. R. Awati.—p. 80.
 Genitalia of Portchinsky's Species M. Corvisa (Vivipara) and M. Corvina (Ovipara). P. R. Awati.—p. 89.
 Progress Report on Surgery of Freshwater Gastropod Molluscs of Indian Empire and of Their Trematode Parasites. N. Annandale and R. B. S. Sewell.—p. 93.
 *Correlation Between Chemical Composition of Anthelmintics and Their Therapeutic Values in Connection with Hookworm Inquiry in Madras Presidency: VI. Oieum Terebinthinae, J. F. Gaius, and K. S. Mhaskar.—p. 125.
 Dilution of Reagents. W. F. Harvey.—p. 131.
 *Value of Wassermann Test in Malaria. K. R. K. Iyengar.—p. 136.
 Kala-Azar: I. Interim Report on Kala-Azar Work from 1917 to 1919. R. Knowles.—p. 140.
 Id. II. Peripheral Blood in Kala-Azar. R. Knowles.—p. 162.
 Id. III. Spleen Puncture Findings. R. Knowles.—p. 177.
 Id. IV. Experimental Work and Possible Methods of Transmission of Kala-Azar. R. Knowles.—p. 186.

Therapeutic Values of Anthelmintics in Hookworm.—Healthy male prisoners were treated by Caius and Mhaskar with increasing doses of turpentine shaken with gum acacia emulsion and administered in two portions at half an hour interval. This treatment was preceded by an overnight dose of magnesium sulphate and followed by another dose of salts administered two hours after the second portion of the oil. No food was allowed until the bowels had moved. Occasional giddiness was noted with a 75 minims dosage of the highly resinified oil, while no toxic symptoms of any kind developed with a 180 minims dosage of the unresinified oil. In a series of seventy-nine cases treated with varying dosages of oil of turpentine, eleven hookworms were removed out of a total of 1,316. Moreover no ascarids were expelled, though roundworms were found present in twenty-five cases and whipworms in sixteen. Therefore, the authors conclude that oil of turpentine cannot be recommended as an anthelmintic.

Value of Wassermann Test in Malaria.—Iyengar examined the serum in eighty-four cases of undoubted malaria in adults and fourteen in children. Seven gave a positive Wassermann reaction. He concludes that malaria is not a cause of a positive reaction and quinin does not affect the Wassermann reaction.

International Journal of Psycho-Analysis, London

1920, 1, No. 2

- Psychogenesis of Case of Female Homosexuality. S. Freud.—p. 125.
 Primary Somatic Factors in Compulsive and Obsessive Neuroses. L. P. Clark.—p. 150.
 Recent Advances in Psycho-Analysis. E. Jones.—p. 161.
 Relation of Elder Sister to Developement of Electra Complex. E. R. Mason-Thompson.—p. 186.
 William Blake's Lyrics. J. W. Preger.—p. 196.
 Three Notes. J. Riviere.—p. 200.
 Symbolism of Being Run Over. E. Jones.—p. 203.
 Ambivalence in Slip of Tongue. C. P. Oberndorf.—p. 204.

1920, 1, No. 3

- *Reaction to Personal Names. C. P. Oberndorf.—p. 223.
 Reversal of Libido Sign in Delusions of Persecution. A. Stürcke.—p. 231.
 Origin of Feeling of Persecution. J. H. W. Ophuijsen.—p. 235.
 Case of War Shock Resulting from Sex-Inversion. C. W. S. Davies-Jones.—p. 240.
 Dreams on Symbolism of Water and Fire. H. Flournoy.—p. 245.

Linguistic Factor is English Characterology. E. Jones.—p. 256.
Wish to be a Man. H. Sachs.—p. 262.
Instance of Care Needed in Drawing Conclusions. D. Bryan.—p. 268.
Revived Sensation Memory. B. Low.—p. 271.
Substitutive Memory. E. Jones.—p. 273.

Medical Journal of Australia, Sydney

May 21, 1921, 1, No. 21

Ether Anesthesia. F. L. Davies.—p. 413.
Anesthetic Notes. R. W. Hornabrook.—p. 415.
Gas-Oxygen Anesthesia. S. O. Cowen.—p. 416.
Rectal Anesthesia. R. Howden.—p. 418.
Modern Obstetrics: Case for Nature. F. Meyer.—p. 419.
Clinical Reports of Two Unusual Cases. G. Doyle.—p. 421.

May 28, 1921, 1, No. 22

Recent Advances in Diseases of Eye as Affecting General Practitioner. W. W. Hoare.—p. 435.
Recent Advances in Ear, Nose and Throat Specialty from Point of View of General Practitioner. R. G. Brown.—p. 437.
Huon Pine Oil. W. A. Harrison.—p. 440.
A Broth of a Boy. C. H. E. Lawes.—p. 441.

Unusually Large Baby.—Lawes' patient had the following dimensions at birth: weight, 15 pounds; height, 21.5 inches; chest, 16 inches; head: occipito-frontal circumference, 15.5 inches; occipito-mental diameter, 6.09 inches.

Annales de Médecine, Paris

April, 1921, 9, No. 4

*Liver and Kidney with Gastric Ulcer. P. Le Noir et al.—p. 225.
Pleural Effusions with Induced Pneumothorax. F. Dumarest and F. Parodi.—p. 243.
Action of Thyroid and Parathyroids on Respiratory Interchanges. M. Labbé and H. Stévenin.—p. 264.
*Boveri Test of Spinal Fluid. G. Guillaïn and E. Libert.—p. 271.
Physicochemical Factors in Regeneration of Peripheral Nerves. J. Lhermitte.—p. 275.

Liver and Kidney Disease Secondary to Gastric Ulcer.

Extremely pathologic conditions in liver or kidneys or both were found in 5 patients who had died from three to eleven days after a successful gastro-enterostomy. There had been no appreciable symptoms to attract attention to liver or kidneys during life. These surprising experiences impelled Le Noir and his co-workers to apply functional tests to 43 other patients with gastric ulcer, and they found evidence of insufficiency of the liver by one or more of the tests in all of the 23 tested for alimentary glycosuria, coagulation time, digestion hemoclasia after ingestion of 200 c.c. of milk, and urobilinuria. Other causes for the liver impairment could be excluded, so that the defect in the stomach wall seemed to be the only explanation, especially as the insufficiency of the liver was most pronounced in the cases of long standing ulcers, and especially with ulcers on the most highly vascularized part of the stomach, the lesser curvature. Bleeding from the ulcer seemed to be more frequent, more intense and to last longer in the cases with impaired liver functioning. In 5 cases described in detail there was uncontrollable vomiting, liable to mislead to an operation for stenosis of the pylorus unless the signs of liver or kidney insufficiency were needed. In 2 other cases what was supposed to be fatal operative shock was cleared up by discovery of unsuspected fatty degeneration of the liver. Operative shock may be merely the manifestation of an acute liver or kidney injury, the anesthetic the last straw breaking down the diseased organs. Dyspeptic coma with acidosis, and grave jaundice are the other forms in which this secondary liver or kidney disease may manifest itself in gastric ulcer cases. Among the practical deductions from these findings is the advantage of limiting intervention to gastro-enterostomy instead of resection in these cases with evidence that the liver or kidney or both are below par. Also that anesthetics which injure the liver should be avoided. Also the necessity for special care to ward off inanition acidosis when hematemeses compels restriction of mouth feeding. The most important lesson, however, is the necessity for not delaying the operation on the gastric ulcer until the liver is damaged beyond repair. The open ulcer in the stomach generates local septic complications, and allows the passage into the blood, and hence the arrival in the liver and kidneys, of foreign proteins on which the gastric juice has not had a chance to act. The resulting damage of liver or kidneys modifies the symptoms, the course and the prognosis of the gastric ulcer.

Boveri's Test of Spinal Fluid.—Guillaïn and Libert found a positive response to the Boveri test in every one of their forty subjects with various diseases whenever the albumin content of the cerebrospinal fluid was above the normal. It throws no light on the cause of the hyperalbuminosis. The test is made by pouring 1 c.c. of a 0.1 per thousand solution of potassium permanganate on the walls of a tube containing 1 c.c. of the cerebrospinal fluid. With normal fluid there is no change in tint; in pathologic conditions a yellow line appears at the junction of the two fluids, and on agitating the tube, the fluid turns a clear yellow.

Archives de Médecine des Enfants, Paris

April, 1921, 24, No. 4

*Hutinel's Cardiocirrhosis. J. C. Navarro (Buenos Aires).—p. 201.
*The Pretuberculous State in Children. P. Richard.—p. 215.
Gallop Sound in Two Children with Intact Kidneys. A. d'Espine.—p. 237.
Median Upper Hare-Lip. V. Veau and C. Ruppe.—p. 241.
Medical Treatment of Stenosis of Pylorus. J. Comby.—p. 244.

May, 1921, 24, No. 5

*Anemia in Infants. E. Weill and A. Dufourt.—p. 265.
*Osteitis Deformans. L. de Castro Freire (Lisbon).—p. 289.
Bilateral Hydronephrosis in Young Infant. Variot and Walter.—p. 297.
*Idiocy from Parathyroid Insufficiency. J. Comby.—p. 303.

Hutinel's Cardiocirrhosis.—Navarro recalls that various causes may be responsible for this association of heart and liver disease in children. Syphilis was undoubtedly a factor in the first of two cases he reports. The large liver and asystolia without valvular disease dominated the clinical picture in this child of 6. In the other case, the child of 10 was supposed to have tuberculous peritonitis. The liver and abdomen were much enlarged but the heart seemed to be normal. Necropsy after intercurrent pneumonia revealed the unsuspected degeneration of the heart. Each of the thirty times the abdomen had been tapped, an average of 10 liters of fluid had escaped.

The Pretuberculosis Stage in Children.—Richard reviews various ways and means to detect the soil on which tuberculosis is most liable to take root. Tuberculous parents transmit a demineralization diathesis to their children, and the latter are poorly nourished, as a rule, with low blood pressure, the blood showing high viscosity. Roentgenology supplements the clinical findings, and gives a basis for insisting on preventive measures. A combination of pituitary and suprarenal treatment often renders good service.

Anemia in Young Children.—Weill and Dufourt discuss the features that distinguish anemia from lack of iron, from injury or inadequate production of blood corpuscles, and from anemia from changes in the plasma. They discuss further the causes.

Deforming Fibrous Osteitis.—An illustrated description is given of a severe case of this kind in a man of 27. A previous report of the same case was published in the *Archives* ten years ago. The limbs and trunk have continued to shrivel and atrophy but the head has grown very large; the circumference now is 66 cm. while the total height is 118 cm. In this and in Riedinger's case, inherited syphilis may possibly be a factor.

Curable Idiocy of Parathyroid Origin.—Comby declares that evidence is accumulating to prove that an acquired idiocy of parathyroid origin is not uncommon. Fortunately it seems to differ from thyroid idiocy, myxedematous idiocy, in that it is amenable to parathyroid treatment. G. H. Clark has recently reported three cases of this kind. The apathy, tremor and convulsions recalled to his memory the effects of parathyroidectomy in animals, and suggested treating them with parathyroid extract. This was followed by prompt improvement in the young children. He published the cases recently under the heading "An Undescribed Condition of Infancy."

Médecine, Paris

May, 1921, 2, No. 8

*Early Diagnosis of Pulmonary Tuberculosis. L. Rénon.—p. 581.
*Vaccination of Cattle Against Tuberculosis. A. Calmette.—p. 590.
*Overlapping Asthma. F. Bezançon and S. I. De Jong.—p. 592.
*Prophylaxis of Tuberculosis. L. Granjux.—p. 597.
Diagnosis of Pulmonary Abscesses. J. Chalié.—p. 601.

- Technic for Artificial Pneumothorax Treatment. G. Kuss.—p. 603.
 Indications for Sanatorium Treatment. L. Guinard.—p. 608.
 Bronchitic Sowers of Bacilli. A. Pissavy.—p. 613.
 *Preventive Heliotherapy. P. F. Armand-Delille.—p. 615.
 *Examination of Sputum. A. Philibert.—p. 620.
 Diagnosis of Tuberculosis in Infants. R. Debré.—p. 626.
 *Acid-Resisting Bacteria. A. Vaudremer.—p. 631.
 Iodin Internally in Treatment of Tuberculosis. H. Dufour.—p. 634.
 *Diarrhea in the Tuberculous. P. Lassablière.—p. 640.

Early Diagnosis of Pulmonary Tuberculosis.—Rénon concludes his review of the early diagnosis at different ages by advocating that legislation in all countries should command the only truly effectual means for the early diagnosis, that is, strict and compulsory bacteriologic examination of the sputum, in all cases.

Vaccination of Cattle Against Tuberculosis.—Calmette has been much encouraged with the results of inoculating calves with cultures of tubercle bacilli cultivated on a culture medium consisting of potato cooked in beef gall with 5 per cent. glycerin. Bacilli thus cultivated are only slightly virulent—small laboratory animals bearing them even by intravenous injection—but they confer a manifest resistance not only to natural infection but to experimental intravenous inoculation with violent bacilli. It is still a question how long this immunity lasts.

Asthma.—There are usually three phases in the course of asthma, first the paroxysms with long intervals, due to some local lesion which has influenced the localization of the disturbance, and later subsided. Then comes a period in which some respiratory infection invites the asthma again; it is less violent but more frequent, and there are attacks of dyspnea from the congestion in the air passages. The third stage is when heart and kidney disease entail further dyspnea, but this is usually labelled asthma, like the preceding phases.

Prophylaxis of Tuberculosis.—Granjux describes the workings of the Grancher system. It was described in THE JOURNAL, July 6, 1918, p. 1.

Preventive Heliotherapy.—Of all plants the human plant needs sunlight most. This is Armand-Delille's text, and he has been much gratified with the success of his "sun school." The children, with no clothing but trunks, left home at 8 a. m., each carrying his folding desk on his back, and under the leadership of the teacher sought in the fields and woods a place for the class, selecting different locations according to the wind, the heat and the sunshine. The mothers of the children in this school were all under treatment for tuberculosis in the sanatorium. In order to obtain such fine results as he records, the children have to be trained to live in the sunlight, exposing the body progressively. The main point is to accustom the skin gradually to the action of the sun. Such children acquire remarkable resistance to all physical agents, sleeping in winter with open windows and light bed clothing, and none of the children had colds during the winter. He adds that the effect already realized with these hundreds of children should encourage the application of this preventive heliotherapy as a stimulant for nutrition of all children, and especially for those in cities where conditions are so unfavorable to the physiologic development of the child.

Examination of Sputum.—Philibert urges the importance of homogeneity of sputum as the number of bacilli may be so small that they escape direct examination. He has found sodium hydroxid the most effectual solvent for the mucin. Centrifugation is greatly facilitated by reducing the density of the fluid by adding alcohol; this renders the fluid lighter than the bacilli, which aids in collecting the bacilli in the sediment. If no sputum is available, he gives an expectorant.

Acid-Resisting Bacteria.—Vaudremer relates that by cultivating tubercle bacilli in mediums free from glycerin they lose their acid-resisting properties, but acquire them again if glycerin is added anew. The resistance to acids thus seems to be traceable to the fats and carbohydrates which the tubercle bacillus has at its disposal.

Treatment of Diarrhea in the Tuberculous.—Lassablière calls attention to the efficacy of the treatment which he has applied to 142 patients. It consists solely in restricting the patients exclusively to sweetened condensed milk, diluted with four parts of rice water; 1 or 2 liters are taken during the

twenty-four hours, a teacupful every two or three hours, with nothing else, fluid or solid.

Paris Médical

May 28, 1921, 11, No. 22

- *Acidosis in the Pregnant. M. Labbé, J. Hutinel and F. Nepveux.—p. 421.
 Ionometric Dosage in Radiotherapy. P. Schrumph-Pierron.—p. 424.
 *Spondylosis Versus Spondylitis. P. Modinos.—p. 429.

Acidosis in the Pregnant.—The woman developed unexplainable dyspnea, tachycardia, uncontrollable vomiting and other symptoms of acidosis at the seventh month of pregnancy. Sodium bicarbonate improved conditions temporarily, but emptying the uterus aggravated conditions. The woman died, and the microscope showed profound degeneration of the liver in both mother and fetus, while the other viscera were sound. In a second similar case the woman recovered. Such cases teach the importance of examining the urine for insufficiency of the liver in pregnancy disturbances.

Spondylosis and Spondylitis.—Modinos ranks rhizomelic spondylosis with osteomalacia and acromegaly, as a kind of trophoneurosis, an endocrine disturbance. It is in this direction that therapeutic efforts should be directed. He describes two cases in which everything else was tried but without avail. Spondylitis subsides under merely symptomatic measures.

Presse Médicale, Paris

May 28, 1921, 29, No. 43

- *Fracture of Neck of Femur. C. Dujarier.—p. 421.
 *Insufficiency of the Liver in Pregnancy. A. Crainicianu and M. Popper.—p. 424.
 *Nongonococcus Ophthalmia Neonatorum. A. Cantonnet.—p. 426.
 *Quinidin in Treatment of Arrhythmia. L. Cheinisse.—p. 426.

Fracture of Neck of Femur.—Dujarier has modified somewhat Delbet's method of driving a screw axially into the neck of the femur, and describes with ten illustrations, the exact technic as he applied it in eighteen cases under roentgen control. The results on the whole were incomparably superior to those obtained with the classic methods of treatment. Radiograms taken at regular intervals show that the bone pushes inward in time, the head of the screw finally protruding from the bone. Some of the patients walk without limping, but there is always some atrophy of muscles. It is less pronounced in those who exercised their muscles as ordered. All but one of the eighteen cases were fracture of the neck of the femur alone.

Pregnancy Insufficiency of the Liver.—The urine was examined daily and the test for digestion hemoclasia applied to ascertain the functional condition of the liver in forty-seven women with supposedly sound livers, a month or two before term. Retention of bile salts was found in 20 per cent. and of urobilin in 12 per cent. The digestion hemoclasia tests gave positive findings testifying to insufficiency of the liver in 33 per cent. Among the practical conclusions from the research are that choloroform should not be used for the pregnant, as it superposes further toxic action on the liver, and ether also had better be avoided.

Purulent Conjunctivitis in the New-Born.—Cantonnet found gonococci in only 18.5 per cent. of forty-two cases of purulent conjunctivitis in new-born infants since last October. In 12.5 per cent. ordinary micro-organisms were discovered, but in 69 per cent. the conjunctivitis seemed free from micro-organisms, although inclusions were found in the epithelial cells. These inclusions were encapsulated, and similar ones were found in the mother's vagina and in the male urethra. The conjunctivitis does not differ materially from that caused by gonococcus except that it develops later, not until the third to the twelfth day, and it lasts from fifteen to twenty days, and exceptionally up to six or eight weeks. Silver nitrate has no effect in warding it off, but can be used in treatment if the secretion is profuse. As it subsides, a 1 per cent. solution of zinc sulphate may be preferable.

Quinidin in Treatment of Arrhythmia.—Cheinisse reviews twelve recent French and German works on this subject. It is evident, he says, that quinidin can be counted on in certain cases to arrest the arrhythmia, and force it back into an earlier stage. But the day always comes, sooner or later, when the drug ceases to act, and the fibrillation will persist thereafter.

June 1, 1921, 29, No. 44

- *Tuberculosis of Glands in Cheek. C. Lenormant.—p. 433.
*The Blood During Spa Treatment. A. Grigaut et al.—p. 434.
*Serologic Tests in Surgical Tuberculosis. B. Fried and M. Mozer.—p. 436.

Tuberculosis of Glands in Cheek.—The genal glands may be scattered along the facial artery and vein, and the different groups may be the seat of acute inflammation or of a tuberculous process, as in a case described by Lenormant with illustrations. The treatment is that of tuberculous glands in the neck in general, only that a disfiguring scar would be of more moment in the cheek. All the cases he has encountered were in women. He has never seen a case of cancer originating in these glands.

Influence of Mineral Waters on Composition of the Blood.—The research here related was done during courses of treatment with the mineral waters of Contrexéville. The metabolic and other findings are tabulated from twelve of the eighty-nine cases studied. These waters are recommended for chronic nephritis and rheumatism, lithiasis, gout and obesity, and the benefit derived is explained in part by the drop in the cholesterolin and the urea content of the blood, and the progressive change toward normal of the Ambard index of urea excretion. The latter is a reliable guide for conducting the treatment. Uric acid deposits are swept out into the circulation by the modifications induced by the mineral waters. This phase is followed by tardy elimination through the urine, and this can be accelerated by massage of muscles and other forms of physiotherapy under strict medical supervision.

Serologic Tests for Tuberculosis.—Fried and Mozer insist that tests for both syphilis and tuberculosis should be applied as the routine procedure to all serums sent in for examination. By this means incipient tuberculous processes in bone, joints, glands or lungs can be detected long before they are clinically manifest. In sixty-eight tuberculous children the reaction was positive in from 70 to 77 per cent. of those with a known tuberculous process in vertebrae, knee, hip joint, etc., of less than two or three years' standing, but only in from 26 to 34 per cent. longer than this. In grave cases with fistulas the reaction occurred less frequently. In 105 children with rachitis the percentage was only 7.5.

June 4, 1921, 29, No. 45

- *Diazo Test for Bilirubin in Blood. A. A. Hijmans van den Bergh.—p. 441.
*Vaccine Therapy of Colibacilluria. A. Mauté.—p. 443.
*Traumatic Separation of Skull Sutures. J. Murard.—p. 445.

June 8, 1921, 29, No. 46

- *Nature of "White Bile" A. Gosset, G. Loewy and Mestrezat.—p. 453.
*The Sympathetic Nervous System. P. Desfosses.—p. 455.

Bilirubin in the Blood Serum.—Van den Bergh states that continued experience with the test he published in 1913 has proved its reliability even in a concentration as low as 1:1,500,000, while no other substances give the same reaction with this diazo method. The rapid or delayed response shows further whether bilirubin in the blood serum is the result of obstruction or of impaired liver functioning. The reagent is made fresh with 25 c.c. of a 1 per thousand solution of sulphanyl acid; 15 c.c. of concentrated hydrochloric acid, and 0.75 c.c. of a 0.5 per cent. solution of sodium nitrite. The serum is treated with twice its volume of alcohol and the albumin centrifuged out. The supernatant fluid is taken up with a pipet and the reagent is added in the proportion of 25 per cent. by volume. The fluid turns red with a violet tinge in the presence of bilirubin. The test can be applied with as little as 0.5 c.c. of clear serum, or even 0.25 c.c.

Traumatic Separation of Skull Sutures.—Murard relates that callus is forming in the gap of 0.5 cm. where the coronal suture of the boy of 13 separated after a fall from a second story. Recovery was smooth, and the facial paralysis subsided by the third month. His review of the literature confirms the wisdom of trying to force the bones to close the gap, but this is a difficult matter. Possibly agrafes might aid.

White Bile.—In the three cases described, the cystic duct was completely obstructed, and the fluid found in the gall-bladder was evidently the result of dialysis of the plasma, with no trace of bile salts or pigments. In each case the gall-bladder showed fibrous degeneration.

The Sympathetic Nervous System.—This is the first of a series of special articles on this great *système de correlation* as Desfosses calls it, saying, "In man the heart beats, the lungs ventilate, the intestines digest, and the liver works—all solely for the purpose of providing for the brain a constant internal environment to supply it with energy. The only beneficiary of all this work that is done without its assistance *c'est notre intelligence.*"

Revue de Chirurgie, Paris

1920, 39, No. 11

- *Enterostomy in Peritonitis. X. Delore and Conrozier.—p. 605.
*Chronic Occlusion of Duodenum by Mesentery. J. Leveuf.—p. 616.
Strangulated Prehemia Lipomas. J. P. Tourneux.—p. 653.

1920, 39, No. 12

- Pressure in Cerebrospinal Fluid in Jacksonian Epilepsy. R. Leriche.—p. 679.
Circulation in Carotids After Ligation. Marquis and Lefevre.—p. 689.
Pathologic Physiology of Jacksonian Epilepsy. Wertheimer.—p. 695.

Enterostomy in Peritonitis.—Postoperative or other paralysis of the bowel entails peritonitis, but the danger is less from the peritonitis than from the bowel itself. In 22 such cases reported here, 12 of the patients were saved by the enterostomy. All died of the 7 with diffuse septic peritonitis, and one of the 3 with acute and rapidly spreading peritonitis. All recovered of the 4 with localized or circumscribed peritonitis, and all but 2 of 8 with peritonitis secondary to ileus. Any more extensive intervention would certainly have proved fatal, it is stated. In 2 of the cases, the enterostomy had to be repeated at another point before relief was obtained; in 1 case on the transverse colon, in another on the descending colon. A suture thread is run around the peak of the intestine drawn out, and this thread is drawn tight as the catheter is worked into the tip of the peak. As the catheter is pushed in, the wall is thus invaginated with it, protecting the mucosa against contact with the catheter. The ends of the thread are tied around the catheter and fastened to the abdominal wall.

Chronic Occlusion of the Duodenum from Compression by the Mesentery.—Leveuf concludes his study of this subject with the details of two cases, summarizing twenty-eight from the records. "If change of position and other medical measures fail, colopexy, with or without duodenojejunoanastomosis, is indicated." In his first case the occlusion, of varying degrees, was of four years' standing and required entero-anastomosis. In the other case, of four days' standing, and it yielded to postural treatment.

Revue Franç. de Gynécologie et d'Obstét., Paris

January, 1921, 15, No. 11

- *Pregnancies After Cesarean Section. P. Balard and J. Planès.—p. 437.
*Partial Symphysiotomy. R. Costa.—p. 445.
Complicated Old Salpingitis. G. Deverre.—p. 449.

Pregnancies After Cesarean Section.—Balard and Planès have compiled 419 cases of pregnancy after cesarean section; in 47 delivery proceeded spontaneously by the natural routes. The pregnancy continued to term in all but 2 or 3 per cent. of 319 cases, in which abortion occurred, and 7 per cent. of the women were delivered at the eighth month. Rupture of the uterus occurred in 2.5 per cent. of the cases, but 86 per cent. of the women in this group recovered and 50 per cent. of the children were saved. There is absolutely no way of telling whether the uterus is anatomically and functionally capable of standing the strain, and they insist that during the last month at least the woman should enter an institution, under close medical supervision. Spontaneous delivery should be waited for but it should usually be aided with forceps to prevent violent efforts. If anything suggests apprehension, the patient had better stay in bed after the uterus has reached a certain size.

Partial Symphysiotomy.—Costa cuts out the upper part of the symphysis when the stenosis is limited to the superior inlet only, with abnormally short true conjugate diameter. This partial symphysiotomy is free from danger of hemorrhage, and is so simple and easy, he says, that it can be done at any time during the pregnancy or in labor. It leaves a permanent depression, which definitely enlarges the pelvis. In the two cases in which he has applied this method, the

operation was done at the fourth month in one case, and the pregnancy proceeded unmolested. In the other case the stage of expulsion at term had lasted for four hours with no signs of progress. The true conjugate measured 8 cm. The contractions began again after the partial symphysiotomy, and in an hour and a half the child reached the perineum and was delivered in good condition. His experience indicates that this operation increases the true diameter from 2.5 to 3 cm. Another advantage, he says, is that the slant thus provided facilitates the mechanism of delivery, while there is nothing to interfere with the gait later or invite complications. "The rectus muscles are divided 1 cm. to right and left of the median line, just above the symphysis. Then the periosteum of the pubic symphysis is worked loose from the front and rear aspects of the symphysis down to half its height. Then with a long slender knife the bone and cartilage are cut away from above downward slanting back from the front down to half the height of the symphysis. . . . With a curet the surface can be scraped smooth. The posterior periosteum is not sutured with the rest. A slanting depression is thus left where the bone and cartilage have been cut out, thus enlarging the pelvis permanently to this extent. No illustrations accompany the description.

Schweizerische medizinische Wochenschrift, Basel

May 19, 1921, 51, No. 20

- Antagonistic Action of Calcium and Potassium. K. Spiro.—p. 457.
 *Radium Treatment of Cancer of the Esophagus. G. Hotz.—p. 460.
 Tuberculosis in Mountain Districts. A. Wolff-Eisner.—p. 461.
 Nature and Origin of Scotoma Scintillans. J. Strebel.—p. 464.
 Virus of Febrile Herpes. R. Doerr and A. Schnabel.—p. 469.

Radium Treatment of Cancer of the Esophagus.—Hotz extols the fine results he has obtained with radium treatment. The long and narrow applicator is swallowed to the correct depth, marked on the silk thread, and after the first eight-hour sitting the esophagus often becomes permeable for fluid foods. Applicators of progressive sizes are used, and roentgen exposures supplement the radium treatment. Exploratory excision has shown in a number of cases the complete cure of the cancer, as also necropsy of one patient. Roentgenoscopy also confirms the disappearance of the tumor. As soon as the course is completed, efforts must follow to prevent cicatricial stenosis. This is accomplished by the patient's swallowing a similarly shaped lead weight, nickel plated. The weights are from 4 to 10 mm. in diameter, and their weight and the active swallowing drives them slowly and harmlessly through the stenosis. The lumen was enlarged to 10 mm. in several of the cases, and the patients then refused further treatment, but these had to return later for correction of the stenosis. Each patient is given a set of these lead weights, and swallows them one after the other until one sticks. In case of hemorrhage, swallowing one of these weights arrests the bleeding by direct compression. He has been equally successful with radium in cancer of the pharynx and tonsils and pyriform sinus, but the interval since has not been over eighteen months in any instance. The danger of after-hemorrhage with cancer in the pharynx forbids the application of this method to outpatients.

Pediatrics, Naples

May 1, 1921, 29, No. 9

- *Pneumococcus Peritonitis. U. Provinciali.—p. 385.
 *Jacksonian Epilepsy from Ascaridiasis. L. Sironi.—p. 397.
 *Infant Mortality at Messina. G. Bonfiglio.—p. 401.
 Epidemic Encephalitis in Girl of Six. R. Spanò.—p. 413.

Pneumococcus Peritonitis in Children.—Provinciali suspected the pneumococcus infection from the herpes on the lips. The clinical picture otherwise was that of acute and grave peritonitis without known cause in a boy of 8 and girl of 9. The boy recovered after exploratory puncture had shown the pneumococcus, and a laparotomy had evacuated 2 liters of pus. The girl succumbed not long after the laparotomy revealing the purulent pneumococcus peritonitis limited to the lower abdomen. Nothing was found in either case demonstrating involvement of the lungs or tuberculosis, but the boy had a transient complicating pericarditis. This subsided with the peritonitis, the cure being complete in two months from the first symptoms. The sudden stormy onset of

the peritonitis, herpes labialis, high leukocyte count, with polynuclears predominating, and negative serologic tests for typhoid and paratyphoid call for bacteriologic examination of the pus for pneumococci.

Jacksonian Epilepsy from Ascarids.—The girl of nearly 4 had been having the attacks in the left arm for ten days, recurring from one to four times a day. The child seemed otherwise normal, and the discovery of ascarids in the stools and a course of worm medicine were followed by a complete cure. Sironi theorizes that some relic of some infectious or toxic process in the brain had left a point of lesser resistance; the toxins from the helminths acting on this spot were responsible for the spasms in the region innervated from this point.

Infantile Mortality at Messina.—Bonfiglio states that while Naples has a death rate from infectious diseases of 4.92 per thousand, Messina's rate is 19.7. In every thousand deaths in Messina, 402.58 are of children under 5.

Crónica Médica, Lima

March, 1921, 38, No. 693

- Icterohemorrhagic Spirochetosis. J. Arce.—p. 65.
 Hoover's Definitive Percussion of the Heart. J. B. Menéndez.—p. 75.

Semana Médica, Buenos Aires

April 21, 1921, 28, No. 16

- *Hypertrophy of the Prostate. F. Mastro Simone.—p. 445.
 *The Diagnostic-Therapeutic Tuberculin Test. J. J. Vitón.—p. 473.
 *Parabiosis for Research on Endocrine Glands. D. Rubinstein.—p. 477.

Hypertrophy of the Prostate.—Mastro Simone discusses from various standpoints the cases of hypertrophy of the prostate in which no operation should be attempted, those in which operative measures are imperative, and those in which they are optional. All the evidence, he says, is in favor of the transvesical technic, at one or two sittings, as the routine procedure, although occasionally subtotal perineal prostatectomy may be preferable, or even Bottini's intra-urethral electric cauterization. Under exceptional circumstances, Isnardi's resection of the vasa deferentia may prove useful. In conclusion he warns that the care before and after the operation often requires more attention and solicitude than with any other class of patients.

The Diagnostic-Therapeutic Tuberculin Test.—Vitón's success in treating latent and active tuberculosis with extremely minute doses of tuberculin has been repeatedly mentioned in these columns. He argues that occult, dormant and masked infection with the tubercle bacillus is extremely frequent, and that most of the infections in adults are merely the transient flaring up anew of this infection acquired in early childhood. This unsuspected latent bacillary infection has extraordinary consequences, but they have hitherto not been traced to their primary cause. By treating the manifestations with extremely minute doses of tuberculin, the primary infection is benefited, and as this factor in the clinical picture disappears, the rest of the symptoms generally become attenuated or vanish likewise.

Parabiosis for Study of Factors Affecting Growth.—With parabiosis induced, for example, by suturing side to side two puppies from the same litter, if the hypophysis of one is removed, the hypophysis of the other will hypertrophy. This puppy, by the end of the year, will show the effects of excessive hypophysis secretion, while the other puppy will show the effects of inadequate secretion.

Siglo Médico, Madrid

May 14, 1921, 68, No. 3518

- *Manifestations of Arteriosclerosis in the Eye. E. Fuchs.—p. 453.
 *Suture for Herniotomy. J. Blanc Fortacin.—p. 457.
 Decortication of the Lung. Idem.—p. 458.
 Share of Syphilis in Epilepsy. C. A. Bambarén.—p. 460. Conc'n No. 3519.

Manifestations of Arteriosclerosis in the Eye.—Fuchs expatiates on the numerous lesions in the eye and the optic nerve for which arteriosclerosis may be responsible, and the importance of detecting them as an aid to the early diagnosis of arteriosclerosis, especially of the brain, and of nephritis, diabetes and syphilis. There is usually a history of slight hemorrhage in the retina at some time in cases of fatal apoplexy. He has never found the internal carotid or the

ophthalmic artery normal at necropsy after 70. Syphilitic arteritis is always accompanied with a lymphocyte infiltration of the wall of the vessel at various points, while senile arteriosclerosis is merely a degenerative process. He has found isolated foci of atrophy in the optic nerve after 70. These foci are strung along the nerve from the chiasm to its entrance into the eye, and he gives four photomicrograms of these findings, saying that they have never been described before.

Suture After Herniotomy.—Blanc has had so many unfavorable experiences with catgut at herniotomies that he has abandoned it almost completely with these operations. His technic for coaptating extensive surfaces is shown in two sketches. The first layer is sutured with silkworm gut, two needles working separately from the ends of the incision, for a femoral hernia for example. The outer end of each thread is tied over a small segment of rubber tubing; the other ends are brought out through the skin near the middle and tied together. After replacing the spermatic cord, the aponeurosis is sutured above it in a zigzag suture from each end of the incision. Eight or ten days later he removes the silkworm gut by cutting it each side of the central knot and pulling on the outer ends. The coaptation realized by pulling thus on each end of each suture on each plane is exceptionally firm.

Tohoku Journal of Experimental Medicine, Tokyo

May 3, 1921, 2, No. 1

*Effect of Ergot on Hemoptysis. M. Maeda.—p. 1.

*Hyperglycemia and Glycosuria in Frightened Rabbits. I. Fujii.—p. 9.
Agglutination of Typhoid Strains. K. Aoki and T. Konno.—p. 65.

*Intravenous Alcohol Anesthesia. K. Nakagawa.—p. 81.

Effect of Ergot on Hemoptysis.—Maeda explains the contradictory effect of ergot on pulmonary hemorrhage by the contraction of the bronchial muscle which it induces, with a secondary increase in the blood pressure in the lung. (In English).

Hyperglycemia and Glycosuria in Frightened Rabbits.—Fujii gives details of the results of research on the sugar content of the blood in the urine of eighty-three rabbits fastened to the experiment table, with and without division of the splanchnic nerve. There is always a rise in the sugar content of the blood as the rabbit is fastened to the operating table. It reaches its height in three to six hours, and this *fesselungshyperglykämie* is accompanied by glycosuria, as a rule, and the amount of chromaffin substance in the suprarenals becomes reduced. These effects are less pronounced when the animal is protected against chilling.

Intravenous Alcohol Anesthesia.—Nakagawa gives the details of experiments with forty-eight rabbits and five dogs in which general anesthesia was induced by injection of a 5 to 15 per cent. solution of alcohol directly into the vein. About 4 or 5 c.c. of alcohol per kg. was required; the breathing continued tranquil, and no pathologic changes were found in the animals dying soon after. The anesthesia allowed surgical intervention with convenience, but complete anesthesia was late in developing and persisted longer than with ether. Satisfactory results were obtained with a mixture of alcohol and ether in saline, infusing 2.2 c.c. of alcohol and 1.4 c.c. of ether per kg. at the rate of 4 c.c. of the 10 per cent. solution per minute; the anesthesia could be maintained with only 0.8 c.c. of the solution. It began the eighteenth minute and could be kept up for forty minutes.

Archiv für Kinderheilkunde, Stuttgart

April 16, 1921, 69, No. 3-4

*Increase of Helminthiasis in Children. J. von Gottberg.—p. 161.

*Etiology of Infectious Diseases. A. Tobieitz.—p. 185.

*Hematology of Varicella in Infants. G. Baer.—p. 198.

*Influence of Reaction of the Food. Gertrud Baumgardt.—p. 209.

*Gastric Digestion in Infants. H. Davidsohn.—p. 239.

*Serotherapy of Scarlet Fever. P. Bode.—p. 256.

*Bacillary Dysentery in Children. P. Schultz-Bascho.—p. 269.

*Suppurative Parotitis in the New-Born. W. Plewka.—p. 279.

*Pseudotetanus and Identity of Forms of Tetanus. G. Kaulen.—p. 284.

Helminths in Children at Bonn.—Gottberg found ascarids in 40 per cent. of 200 schoolchildren examined during 1919; the trichocephalus in 4 per cent. and oxyurids in 32 per cent. Thus a total of 62.5 per cent. were infested. None of the

children seemed to have any disturbance from their helminthiasis. He compares his figures with those in other cities and countries.

Etiology of Infectious Diseases.—Tobieitz is convinced that, besides the direct transmission of bacteria from person to person, there must be other factors, individual or external, which explain the onset of an infectious disease. That it is not the bacteria alone is amply demonstrated, he asserts, by the comparative infrequency of hospital contagion although the close crowding and other factors would seem to invite it. He is chief of the infectious department of the Graz public hospital, and gives the figures in regard to hospital contagion of the principal infectious diseases there. Another argument is the development of scarlet fever after a burn, which he has repeatedly had occasion to observe, in the absence apparently of all sources of contagion. He assumes a facultative auto-genesis, and deplores that conditions in man and animals are so widely diverse that this is one of the problems that cannot be settled by experimental research.

Relation Between Bases and Acids in the Food.—Baumgardt discusses the effect which changes in the reaction of the food can exert on the transformations of matter and energy in children. The metabolic findings compared with the acid or alkaline reaction of the food are tabulated as determined in four healthy boys between 11 and 13 kept apart from other inmates of the orphan asylum. The alkalinity of the blood and the mineral content of the body showed no changes under extreme artificial alkalization or acidification of the ordinary food of the institution.

Serotherapy of Scarlet Fever.—Bode injected intramuscularly 30 scarlet fever patients with about 60 c.c. of convalescents' serum, and reports defervescence with a crisis in 9 in less than twenty-four hours; remissions in 4, rapid lysis in 6, and remissions plus lysis in 11. The effect on the temperature of the injection was pronounced in every case, and no less surprising, he says, was the effect on the general condition, the children dropping to sleep after a few hours, sometimes in the midst of wild delirium, and waking with their minds clear. One boy of 12 with convulsions had no return of them after the injection. The circulation improved likewise, but the eruption was not modified nor complications warded off. The serotherapy has a purely antitoxic action.

Archiv für klinische Chirurgie, Berlin

March 21, 1921, 115, No. 3

*Neuropathic Joint Affections. O. Hildebrand.—p. 443.

*Operative Treatment of Hypernephroma. E. Michaëlsson.—p. 494.

*Cholelithiasis and Achylia. F. Rydgaard.—p. 511.

*Displaced Horse-Shoe Kidney. Raeschke.—p. 531.

*Hernia on Linea Alba. F. Mandl.—p. 537.

*Complications of Perforated Gastric Ulcer. H. Steindl.—p. 562.

*Excision of Edges of Wounds. L. Schönbauer and H. Brunner.—p. 581.

*Hypertonic Saline in Treatment of Wounds. H. Landau.—p. 621.

*Traumatic Pseudohydronephrosis. E. Picard.—p. 636.

*Intestinal Functioning Under Experimental Intravenous Vaccine Therapy. O. Orth.—p. 644.

*Anatomy of Stomach Arteries. L. Hofmann and K. Nather.—p. 650.

*Postoperative Thrombosis and Pulmonary Embolism. A. Rupp.—p. 672.

*Localization of Pulmonary Embolism. A. Rupp.—p. 689.

*Resection of Parasitic Monster. F. Franke.—p. 691.

*Correction of Displaced Canthus. J. F. S. Esser.—p. 704.

*Anatomy of Vessels of Dura Mater. R. Demel.—p. 714.

*Stomach Behavior in Cholelithiasis. C. Rohde.—p. 727.

*Fistula Between Esophagus and Trachea. E. Picard.—p. 744.

Neuropathic Joint Disease.—In all Hildebrand's research he has never found any evidence that cerebral paralysis is able to induce changes in joints such as we find in tabes and syringomyelia. But injury of peripheral nerves entailed identical changes of an extreme type in two cases described, and he theorizes to explain the mechanism of this as the consequence of vasomotor derangement. One of the cases was an actual neuromatous elephantiasis of one leg, for which spina bifida was responsible. The patient was a man of 33; talipes developed at the age of 3, and paralysis of that leg at 25. Healing after an operation on a neuropathic joint affection is liable to be defective; in tabes the bones show but scant tendency to repair.

Hypernephroma.—Michaëlsson analyzes thirty operative cases of hypernephroma with seven surviving from four to

fifteen years to date. The youngest of the patients was 34 at the time of the operation, and the group of survivors includes one man now 74. Even microscopic evidence of nonmalignancy does not guarantee against malignant recurrence, although this is not inevitable.

Achylia in Cholelithiasis.—Rydgaard found achylia in 47.4 per cent. of 158 operative gallstone cases in Rovsings' service since 1907. He tabulates similar data from other clinics, the whole showing achylia in 34.4 per cent. of 471 operative cases, and hypochylia in 17.6 per cent. Gastric secretion was normal in only 27 per cent. of the 26 male gallstone patients and in 57.6 per cent. of the 132 women patients. Rydgaard's data confirm anew the wisdom of early operative treatment in cholelithiasis to arrest progressing secretory disturbance and ward off achylia. Achylia is almost certain to occur when there is incontinence of the sphincter papillae from gallstone obstruction of the cystic duct. If this sphincter keeps continent, gastric secretion is not modified. The experiences related testify further that it is better to save the gallbladder, as conditions after cholecystotomy may favor the restoration of normal gastric secretion. Fully 74 per cent. of the cases of obstruction of the cystic duct were accompanied by achylia. Reflex action explains the achylia from the irritating effect of the gastric juice passing into the duodenum without the normal neutralization by bile.

Hernia on Linea Alba.—Mandl discusses hernias along the median line as connected with ulcerative processes in stomach and duodenum.

Postoperative Thrombosis and Pulmonary Embolism.—Rupp found embolism or infarcts in the lungs in 5 per cent. of the 12,971 cadavers examined in eighteen years. The 22,689 operative cases during eighteen years were followed by fatal thrombo-embolism in 0.26 per cent., while 1.1 per cent. succumbed to this cause of the patients with internal diseases. Changes in the force and speed of the blood stream and injury of vessel walls are factors common to all the cases. The data impose the necessity for thorough preparation of the patient in respect to heart, lungs and kidneys before an operation, and scrupulous care to avoid any injury of vessels or chilling, etc., with measures to keep the blood circulating properly, including gymnastic exercising of the lungs by movements of arms and legs, heart tonics, massage, etc.

Localization of Pulmonary Embolism.—In 659 cases of pulmonary embolism the lower lobes were affected four times oftener than the upper.

Parasitic Monster.—The xiphopagus was of the epigastrius parasiticus type, the limbs and trunk well developed, but without a head or spine. The junction was from the navel to the sternum, and the connection was of soft parts and peritoneum which Franke severed, leaving ample skin flaps to cover the large defect. The child was only 2 days old at the time, and has developed apparently normally since, with scarcely a trace of the operation. This is the fourth successful case of an operation on a xiphopagus to be recorded, he says.

Behavior of Stomach in Cholelithiasis.—Rohde found normal gastric secretion in 25.81 per cent. of sixty-two operative gallstone cases and achylia in 46.77 per cent. In fully 74 per cent. of the cases there was deficient gastric secretion, and this was pronounced in 88 per cent. of the cases in which the bile passages had been obstructed. After removal of the gallstones or other operation, the achylia or hypochylia has persisted unmodified through the years in the twenty cases reexamined; only two show normal gastric secretion. He ascribes this gastric deficiency to the loss of gallbladder functioning, and expatiates on the manifold secondary disturbances from a diseased gallbladder. The common innervation of both bile apparatus and stomach explains the pains in the stomach with gallstones, and the frequent mistaken diagnosis of stomach disease in cholelithiasis. Adhesions and traction from the gallstone process modify both motor and secretory function. He urges as the routine procedure, cholecystectomy plus T drainage. Discovery of deficient gastric secretion may turn the scale for differential diagnosis of cholelithiasis.

Deutsche medizinische Wochenschrift, Berlin

May 19, 1921, 47, No. 20

- Puerperal Eclampsia. W. Zangemeister.—p. 549.
Lipoid Antibodies and Wassermann Test. Much and Schmidt.—p. 552.
Persistent Severe Spinal Cord Injuries After Lumbar Anesthesia. A. Müller.—p. 553.
Artificial Pneumothorax in Treatment of Pleuropericarditis and Pleuritis Sicca. F. O. Hess.—p. 555.
Tetanus Following Ear Trauma. A. Seligmann.—p. 555.
Precipitin Reaction in Darkfield and Hanging Drop and Its Forensic Import. G. Strassmann.—p. 556.
*Pertussis Serum. G. Stern.—p. 557.
Paratyphoid and Symptoms of Tetanus. O. Bossert.—p. 558.
Combined Sachs-Georgi and Wassermann Reaction. Stühmer and Merzweiler.—p. 559.
Open Botalli's Duct with Hypertrophy of Left Ventricle. R. Gassul.—p. 559.
Radical Operation for Perforated Gastric Ulcer. Dewes.—p. 560.
*Nature and Treatment of So-Called Epicondylitis. Dubs.—p. 561.
Renal Hemorrhage. P. Schäfer.—p. 562.
The Chin-Shoulder Maneuver as a Prophylactic Measure to Prevent Asphyxia in Anesthesia. W. Kühl.—p. 563.
Abdominal Massage. A. Müller.—p. 563.
Effectiveness of the Most Common Stimulants Applied to the Hematopoietic Organs. G. J. Lührs.—p. 564.
Extension Apparatus for Crooked Fingers. L. Schmidt.—p. 564.
Interrelationship of Eye and Dental Disease. A. Gutmann.—p. 565.
Anorexia in Children. L. Langstein.—p. 566.

Pertussis Serum.—Stern reports the results of investigations undertaken to show the value of bovine serum injections in pertussis. He first demonstrated that injections of normal bovine serum had no effect on the course of pertussis. The serum of young bovines previously inoculated with vaccine was also frequently ineffective. Especially adapted smallpox strains must be employed, and the serum must be procured at just a certain time to prove effective. Beginning with smaller quantities, he found that 20 c.c. of the serum were required to bring about a distinct therapeutic effect. He injected usually 10 c.c. subcutaneously in each thigh of the children (also infants) and then prescribed rest in bed. After the injections fever ranging between 28 and 39.5 C. commonly rose but always receded within a few hours. No bad effects were observed. The benefit from the serum injections in some twenty cases was very marked. Either the coughing paroxysms were checked absolutely or the vomiting ceased and the coughing became less frequent and less intense. The duration of the disease was much shortened. In a few instances a second dose of 20 c.c. was given a week after the first, with prompt effect.

The Nature and Treatment of So-Called Epicondylitis.—Dubs says that there is no such thing as epicondylitis in the real sense of the word. The condition that goes by this name has nothing to do with the epicondyle. It is not associated with inflammation or any local change in the epicondyle. The real basis of the clinical symptoms of so-called epicondylitis is doubtless an isolated capsule injury of the humero-radial or the tibiofibular joint, the result of repeated occupational injuries which arise from the fact that certain maneuvers have to be carried out with the forearm flexed and supinated at the same time. From the standpoint of health insurance, such injuries cannot therefore be regarded as traumatic. A small proportion of the capsule injuries may, however, be the result of trauma and may arise from an isolated sprain of the humeroradial joint. By way of treatment, hot air and rest are most effective. The joint should not be immobilized, but the joint should be favored, and supinating and flexing movements involving the joint should be avoided. No heavy weights should be lifted. Healing is slow, but after four or five weeks patients may cautiously resume work.

Deutsche Zeitschrift für Chirurgie, Leipzig

May, 1921, 162, No. 5-6

- Treatment of Periceal Abscesses. K. Griep.—p. 289.
*Resection of Stomach by Billroth II. W. F. Suermondt.—p. 299.
*Treatment of Infected Wounds. H. Hellendall.—p. 322.
*Fate of Fascia-Fat Flaps in Brain-Dura Defects. W. Kocnncke.—p. 342.
*Tardy Rachitis. H. Sauer.—p. 356.
*Irradiation of Spleen in Prophylaxis of Hemorrhage. Kurtzahn.—p. 373.
*Local Temperature in Differential Diagnosis. E. Seitz.—p. 383.
Fracture of Both Sesamoid Bones of Big Toe. E. Müller.—p. 392.
*Projectiles Left in Thorax. W. Jehn and K. Mayer.—p. 398.
*Gastro-Enterostomy with Loop of Ileum. J. Dubs.—p. 424.

Billroth II and Its Results.—Suermondt has been able to trace to date eighty-two of 100 patients treated by resection

of the stomach for ulcer at the Leiden surgical clinic. The list includes twelve transverse resections, twenty by Billroth I and fifty by Billroth II. The present condition was ascertained by a test breakfast and the roentgen findings. The outcome is incomparably better in the Billroth II cases; the stomach empties itself more rapidly and more completely than with the other methods, and the patients have all gained materially in weight. The test meal showed normal findings in all but one case in which occult blood was found in the stools for which no explanation could be found. As the food passes more rapidly out of the stomach, there is less stimulus to production of gastric juice, which may partially explain the less tendency to hyperchlorhydria.

Treatment of Infected Wounds.—Hellendall describes his favorable experiences with a slight modification of the Carrel-Dakin solution technic.

Fascia-Fat Flaps for Brain-Dura Defects.—Koennecke comments on the conflicting views that prevail as to the best method for closing defects in the brain, reporting here the ultimate outcome in seven cases in which, three or four months after healing of the wound of the brain, he implanted a flap of fascia and fat taken from the rectus or thigh. The defect in the skull was closed from three to six months later. He has now a total record of ten cases of the kind, besides considerable experimental experience. The flap undergoes structural changes which adapt it still better for the purpose. The fat has retained its vitality, and the fascia become transformed mainly into connective tissue, with an abundance of elastic fibers.

Tardy Rachitis.—Sauer writes from Hamburg to describe twelve cases of rachitis developing in youths and young men, from 15 to 22, in the last three years, all with pains in the legs, difficulty in walking, especially in climbing stairs, curvature of long bones or spine, and cramps and tetany. Most of them had had rachitis in childhood but without deformity at that time. Severe tetany was manifest in six and in the others there were unmistakable signs of latent tetany. He calls attention to this coincidence of rachitis and tetany, urging further investigation in this line. One young man of 22 presented signs in addition indicating malfunction of the pituitary, suprarenals and parathyroids, but the tetany was the predominant symptom. Sauer theorizes that the parathyroids are mainly responsible for tardy rachitis, with a defective diet as the occasional cause.

Preliminary Irradiation of the Spleen to Prevent Hemorrhage at Operations.—Kurtzahn's experiments were negative in that exposure of the spleen to the roentgen rays before an operation did not prevent the usual large losses of blood. But it reduced small parenchymatous bleeding. To estimate the effect, he induced the patients to allow the removal of a rectangular piece of skin, 1 by 2 cm., under local anesthesia, with care not to cut down into the subcutis. As the scrap of skin was removed, a stop-watch was started, and the blood from the small raw area was mopped up with sponges applied just below the raw area on the thigh. The sponges were weighed beforehand and again at the end of the given period for the experiment, the difference showing the amount of blood that had been lost.

Local Temperature in Differential Diagnosis.—Seitz announces as the conclusion of tests on thirty women with salpingitis, a number with appendicitis, and healthy women, that the temperature in the vagina is higher with gynecologic inflammatory processes than with processes elsewhere, as compared with the temperature in the rectum. A higher vaginal temperature tends to incriminate an ovary or tube, while a higher rectal temperature points rather to the appendix. This difference is most instructive when it persists or is particularly striking, but the possible participation of the adnexa in the appendicitic process limits the significance of the finding. In one case stenosis in the upper rectum was traced to a parametric process by the higher vaginal temperature when the symptoms and an excised scrap had suggested malignant disease.

Projectiles Left in the Thorax.—Jehn and Mayer report some cases in which the projectiles had been left in lung or

chest wall as apparently doing no harm, but they suddenly roused a year or more later and induced fatal gangrene.

Gastro-Enterostomy with Loop of Ileum.—The anastomosis with a loop taken too low down on the bowel entailed profuse diarrhea, extreme emaciation, debility and other disturbances in the two cases reported by Dubs. He operated two or more years later to relieve the unbearable condition, and discovered that the preceding gastro-enterostomy, done elsewhere, had been done with the wrong loop by mistake. Conditions had been only aggravated by the intervention.

Jahrbuch für Kinderheilkunde, Berlin

1921, 94, No. 6

*Idiopathic Hemorrhages in the Skin. L. F. Meyer and E. Nassau.—p. 341.

*Kidney Functioning in Infants. III. E. Stransky.—p. 361.

*Pseudohemophilia in Female Infants. H. Opitz and M. Frei.—p. 374.

Idiopathic Hemorrhages in the Skin.—Meyer and Nassau describe a hemorrhagic disease in infants and young children which does not fit into the frame of any known derangement of the blood or vessels. The minute extravasations in skin and mucous membranes occurred without known cause and without material disturbance of the general health. The article is based on over thirty-five cases, with from three to seven attacks of these minimal hemorrhages. The extravasations in the skin were mostly the size of a pinhead; sometimes they were raised a little above the level of the skin; at some points there were larger patches of extravasation but it never extended into the subcutis. A tendency to symmetrical arrangement was evident, and the suddenness with which the extravasations occurred was striking, as also their abrupt retrogression. They lasted from less than one day to eighteen days. The hemorrhages occurred also in mucous membranes, bladder and kidney, mouth, eyes and nose, but there was actual epistaxis only in one case. They regard this tendency to hemorrhages in the skin and mucous membranes as of the nature of scurvy, and advise systematic addition of more vitamins to the diet. Nearly 40 per cent. of twenty-eight of these children died later from pneumonia, anemia, tuberculosis or other intercurrent disease, suggesting a substandard constitution.

Kidney Functioning in Infants.—Stransky gave twelve infants urea, and he then recorded its elimination and the elimination of chlorids, spontaneously and under the influence of thyroid treatment and of treatment with theobromin, etc. Among the other findings is that infants eliminate urea better than others, the output per kg. being three or four times that of adults.

Pseudohemophilia.—The female infant of nearly 9 months had displayed a hemorrhagic tendency from birth, and had succumbed to the recurring losses of blood. The blood had not shown the least tendency to coagulate, and this was explained by the total lack of fibrinogen in the blood. Rabe and Salomon have reported a similar case, listing it as hemophilia, but Opitz and Frei reject this classification, saying that this sporadic absolute absence of fibrinogen places these cases in a class apart.

Mitt. a. d. Grenzgeb. d. Med. u. Chir., Jena

1921, 33, No. 3

*Occupational Deformity of Hand. K. Pichler.—p. 249.

Chest Wall-Supporting Function of Lung. E. Beeher.—p. 257.

*Air Embolism. W. Gundermann.—p. 261.

*Muscle Symptom with Chronic Appendicitis. N. Wolkowitsch.—p. 283.

Safety Precautions in Transfusion of Blood. K. Behne and K. Lieber.—p. 291.

Shock. H. Knorr.—p. 326.

Deformity of Hand from Work.—Pichler refers to the slanting outward of the fingers in persons who have done much hard work. This shape of the hand is common with old articular rheumatism and in gout, but manual labor, such as carpenter work, is liable to induce it in the healthy.

Air Embolism.—Gundermann's experiments on dogs demonstrated that a small amount of air that does no apparent harm in the right heart kills infallibly when in the left heart. The foam churned up gets into the minuter vessels of the heart and blocks them, with consequent arrest of the heart. The millwheel distance murmur, the *mühlengeräusch*, with

contusion or other injury of the chest, can be accepted as pathognomonic for air embolism in the right heart. Air in the left heart kills before the sound can become apparent. Air embolism always occurs through a vein, and the lung acts as a filter to prevent the passage of air from the right into the left heart. We can ward off danger of air embolism into the right heart by postural measures, but we have no means of warding it off from the left heart. If air embolism has occurred, we must stimulate the heart action with all our energies. With death from air embolism there is no recourse, as all our measures are unable to restore function to the left ventricle. In conclusion he warns to have necropsy follow the death as soon as possible.

The Muscle Sign of Chronic Appendicitis.—Wolkowitsch has found the abdominal wall muscles abnormally relaxed, especially on the right side, in cases of chronic appendicitis. The muscles seem to have shrunk and to have grown less elastic. This is in marked contrast to acute appendicitis. With a tonometer it is easy to determine the difference in the tonus of the muscles on the two sides.

Münchener medizinische Wochenschrift, Munich

April 15, 1921, 68, No. 15

- Causal Treatment of Arteriosclerosis. E. Heilner.—p. 443.
- Classification of Pulmonary Tuberculosis Cases. Fraenkel.—p. 445.
- Pathogenesis of Catatonic Stupor. H. Berger.—p. 448.
- Is Friedmann's Tuberculosis Treatment Specific? Rietschel.—p. 450.
- Epidemic Encephalitis in Children. Progulski and Gröbel.—p. 451.
- Symptoms of Meningitis in Early Stage of Syphilis, Under Arsphenamin Treatment. E. Jaffé.—p. 454.
- Modified Operation for Flatfoot. A. Wachter.—p. 456.
- Red Blood Corpuscles in Darkfield Illumination. A. Dietrich.—p. 457.
- Addendum to My Article on Hoffmann's Darkfield Method. E. Keining.—p. 458.
- Filter for Deep Roentgen Therapy. Baumeister.—p. 458.
- Rupture of Aorta. H. Schöppler.—p. 459.
- Late Intubation and Tentative Extubation. J. Trumpp.—p. 460.
- Congenital Lateral Fistulas of the Neck. Griessmann.—p. 460.
- Treatment of Eczema. L. von Zumbusch.—p. 461.

Wiener klinische Wochenschrift, Vienna

May 12, 1921, 34, No. 19

- Vagus Involvement and Gastric Ulcer. G. Holler.—p. 223.
- Hypernephroma. K. Gagstatter.—p. 225.
- Local Effect of Dimethylsulphate. J. Bodenstein.—p. 226.
- Intravenous Therapy; Hypertonic Solutions. J. Bauer.—p. 229.

Zeitschrift für Tuberkulose, Leipzig

April, 1921, 34, No. 1

- *Influence of Food on Tuberculosis Mortality. H. Selter and Nehring.—p. 1.
- *Tuberculosis in the Young. F. Ickert.—p. 7.
- Constitutional Anomalies in the Tuberculous. K. Eichwald.—p. 17.
- Partial Antigens in Treatment of Tuberculosis. H. Feibes.—p. 29.
- *Allergy to Tuberculin. K. Dietl.—p. 38.
- Official Measures Against Bovine Tuberculosis. H. Haupt.—p. 43.

Influence of Food on Tuberculosis Mortality.—Selter and Nehring present tables which confirm the decline in mortality from tuberculosis as conditions in respect to food have improved in the last two years. Their tables show further that the highest peak of mortality is generally in the first months of summer. They explain this as the result of the poorer quality of the food toward the close of winter, when the vegetables, etc., have been kept so long that their vitamin content is low. As soon as fresh vegetables come into the market, the mortality drops, and it is lowest in the fall. Their charts show that the question of food is more important even than the housing question, although the housing question, they remark—the overcrowding in the cities—has in many places reached an actually frightful stage.

Tuberculosis in the Young.—Ickert analyzes the conditions in regard to tuberculosis at Stettin during the last ten years, comparing them with similar figures from other German cities and Holland. During the war the mortality from tuberculosis among young children increased by 100 per cent.; in school children only by 50 per cent.; between the ages of 15 and 20 it increased by 200 per cent. The infants suffered from the mothers becoming wage-earners, and the youths from their becoming wage-earners themselves. Fully 62 per cent. of the tuberculous youths were known to have a familial taint. His figures confirm the great tendency toward healing of tuber-

culous processes during the school age. They show further the necessity for guarding youths with special care, but above all, he declares, the protection against familial contagion of the younger children is the alpha and omega of the fight against tuberculosis.

Allergy to Tuberculin.—Dietl has collected various data bearing on the general and continuous allergy to tuberculin. They suggest that the protecting function of the skin in the fight against tuberculosis has not been appreciated to the full. A lively allergy on the part of the skin is not only a sign of the presence of large quantities of antibodies but it is a sign of a vigorously functioning skin organ. We are justified, he asserts, in ascribing an important rôle to the internal-secretion function of the skin organ; like all the endocrine glands, it is able to exert an action on distant organs, and thus may reinforce the lungs in their struggle against the disease.

May, 1921, 34, No. 2

- *Pulmonary Tuberculosis in the Aged. W. Stephan.—p. 81.
- *Tuberculin Treatment. A. Offrem.—p. 94.
- *Urine Test for Tuberculosis. E. Liebhardt.—p. 99.
- Apparatus for Artificial Pneumothorax. R. Lubojacky.—p. 102.
- Artificial Plus Spontaneous Pneumothorax. H. Maendl.—p. 105.
- Recent Treatments of Tuberculosis. G. Schröder.—p. 107.

Pulmonary Tuberculosis in the Elderly.—Stephan analyzes his experience with pulmonary tuberculosis in 338 men and 138 women over 40 years of age. The early emaciation and anemia and absence of fever in the elderly may mislead the diagnosis. Low blood pressure is also a special feature of tuberculosis in the elderly. The blood pressure is an important aid in differentiating tuberculosis from other diseases of the lungs after 40. Sclerosis of the kidneys may be responsible for the hypertrophy and dilatation of the left ventricle often noted in chronic pulmonary tuberculosis in the elderly. The tuberculous process in the lung also shows a special tendency to fibrous processes.

Tuberculin Treatment.—Offrem explains the tuberculin reaction as a consequence of the disproportion between the amounts of antigen and of antibodies. This entails the production of anaphylatoxic substances, and these induce the fever and general and focal reaction. The logical conclusion is to give more of the antigen, that is, of the tuberculin to induce production of an excess of antibodies. He describes a few cases to show the benefit from this. In one young man, for instance, the tuberculin treatment caused depression, headache, and slightly febrile temperature, but at the fifth injection the amount was increased from 0.1 to 0.7 c.c. and at once all subjective symptoms subsided and the temperature kept persistently normal.

Urine Reaction in Tuberculosis.—Liebhardt applied the urine test in fifty-one cases, and confirms that there is a specific reaction with active tuberculosis, but says that it is so slight and so inconstant that he does not ascribe much importance to this own-urine test by Wildbolz' technic.

Zentralblatt für Chirurgie, Leipzig

May 14, 1921, 48, No. 19

- Traction Diverticulum of Duodenum. Hofmann and Kauffmann.—p. 650.
- Sacral Anesthesia in Difficult Cystoscopy. H. Brütt.—p. 653.
- *Fatal Hemorrhage After Puncture of Spleen. Wohlgemuth.—p. 655.
- *Treatment of Paronychia. A. Schlesinger.—p. 656.

Fatal Hemorrhage Following Puncture of the Spleen.—Wohlgemuth states that in various affections of the spleen (abscesses, hydatid and other cysts, tumors) many authors practice and recommend puncture of this organ for diagnostic purposes. There are few references in the literature to the danger of serious hemorrhage after puncture of the spleen. He therefore reports this fatal case. A young woman, aged 26, had been admitted to the surgical ward with the tentative diagnosis of a subphrenic abscess on the left side. A diagnostic puncture beneath the left costal arch in the anterior axillary line was made. No pus was aspirated, and only a small quantity of blood, containing hemolytic streptococci. After the puncture the patient showed signs of weakness; the pulse was small and thready; the extremities began to get cold and pale, and death ensued at the end of ten hours. At necropsy the abdomen was found to contain 2,500 c.c. of blood, partly coagulated and partly in a fluid state. The

blood was for the most part in the small pelvis and in the region of the spleen. On the lateral side of the spleen there were three puncture injuries about 1 cm. apart. The splenic pulp showed signs of sepsis, and pea-sized abscesses were scattered through the left kidney. From the three small puncture holes in the spleen, $2\frac{1}{2}$ liters of blood had escaped into the abdominal cavity within a few hours. In this case the puncture of the spleen was accidental, but in any event when the left subphrenic space is punctured, the possibility of striking the spleen must be taken into account. Therefore, Wohlgemuth concludes: puncture of the spleen through the abdominal walls is not advisable, mainly because of the danger of hemorrhage, but there are other dangers; in the presence of septic affections puncture of the spleen is especially dangerous; if the spleen has been punctured, either intentionally or by accident, the patient should be carefully watched for the next twenty-four hours, so as to take the proper action if there are any signs of hemorrhage.

Treatment of Whitlow.—Schlesinger has found that if in whitlow of the finger the whole nail, or in case of a lateral starting point, even half of the nail, is removed, an unpleasant condition arises, specially for patients who have to use their fingers for delicate work, because of the resulting sensitiveness of the matrix. For some time past he has prevented this condition by removing only the central portion of the nail, the root, if the starting point was centrally located. With the shears he cuts into the nail on one side a little peripherad from the root; he cuts the nail transversely to the other side, holding the shears somewhat slantingly; and with the pinchers he grasps the root and removes it with a twisting motion. If, as often happens, the suppuration begins near the root, it is not necessary to remove more than the root, even though the suppuration has extended some distance peripherad. Even though almost the whole nail is loosened though suppuration, the body may usually be preserved for a time, until it is gradually replaced by the new nail. Patients are able to use the finger sooner and the healing process is much shorter than as if the whole nail were removed.

Zentralblatt für Gynäkologie, Leipzig

May 7, 1921, 45, No. 18

Effect of Pregnancy on Cancer of the Uterus. A. Mayer.—p. 629.

Rupture of Uterus in Diverticulum Pregnancy. M. Müller.—p. 638.

*Free Autoplastic Peritoneal Grafts. H. Fuchs.—p. 643.

Diagnostic Value of Vaginal Smear Cultures. Lehmann.—p. 647.

Autoplastic Peritoneal Grafts in Gynecologic Operations.

Fuchs relates his experiences with unpedunculated grafts of peritoneum to cover defects in the peritoneum or reenforce a suture, instead of drawing down omentum for this purpose. Omentum contains adipose tissue and it does not belong in the gynecologic area. Furthermore, resection of omentum not infrequently entails embolism in the intestinal vessels, and there is the well known tendency for adhesions to develop. Experiments on animals had shown conclusively that transplanted peritoneum became actually incorporated with the receiving tissue, and was not merely replaced by growing connective tissue. The tissue character of the transplant seems to be fully preserved. He describes several cases in which he has used free peritoneal grafts with success in gynecologic practice. While admitting that, owing to the fewness of his clinical cases, his experience can be regarded only as stimulative, he thinks the procedure might possibly be further developed to advantage.

May 14, 1921, 45, No. 19

A Case of Placenta Diffusa. R. Kapferer.—p. 661.

Remarks on Iso-Agglutination. K. Landsteiner.—p. 662.

*A Rectovesical Plus Rectovaginal Fistula. H. R. Schmidt.—p. 665.

Extravesical Opening of Nonsupernumerary Ureter. Puppel.—p. 667.

Abdominal Route in Operation on Vesicovaginal Fistulas Difficult of Access. C. U. von Klein.—p. 672.

Bladder Stone as Hindrance in Childbirth. Ebbinghaus.—p. 676.

Fistula of the Posterior Cervix Wall. G. Seiss.—p. 679.

*Turpentine Treatment in Puerperal Sepsis. A. Hermstein.—p. 683.

Turpentine Injections in Adnexa Affections. C. Hartog.—p. 686.

Symphysiotomy Versus Cesarean Section. F. Engelmann.—p. 689.

Criticism of "Nerve Changes in Eclampsia." T. Fahr.—p. 690.

Operative Correction of a Rectovesical Plus Rectovaginal

Fistula.—Schmidt describes a remarkable case from the Bonn Woman's Hospital. In a girl of 8 part of the feces

had passed through the vagina since the child was 3 years old, according to the mother's statement; another portion of the feces passed with the urine through the bladder. A safety pin had been found in the vagina when the child was a year old, and Schmidt assumes that it must have been in the bladder first, and passed thence to the rectum and escaped from there into the vagina, leaving residua of peritonitis in its track. From the vagina fecal matter was oozing and on catheterization dark-colored urine mixed with gas and feces was evacuated from the bladder. A longitudinal slit, 1.5 cm. long, led directly from the posterior vaginal wall into the rectum. Through the rectum a second roundish opening was discovered 10 cm. from the rectovaginal fistula, at the level of the upper edge of the symphysis. A curved sound was passed from the bladder into the rectum. The eczema was allowed to heal and the rectovesical fistula was closed through a laparotomy. Adhesions between the flexure, uterus and pelvic wall were either loosened or divided. Two slits in the large intestine from 2 to 3 cm. long resulted and through one of these the fistula was located, and the bladder separated from the rectum. The fistula and the tears in the intestine were closed by button-hole sutures. The closed tube on the right side was removed and the abdomen was closed without draining. The second operation to close the rectovaginal fistula was not done until six weeks later. Normal relations are restored and the child is perfectly healthy, the urine being clear and containing no pathologic material.

Turpentine Treatment in Puerperal Sepsis.—Hermstein reports his experience with turpentine and camphor in the treatment of thirty cases of septic puerperal infection. Following the example of Wederhake, who highly recommends turpentine and camphor in the treatment of staphylococcus and streptococcus infections, he injected 1 c.c. of a 20 per cent. solution of turpentine in olive oil with 0.2 gm. of procain under the periosteum of the iliac fossa. Of the thirty patients, twenty-four showed more or less pronounced symptoms of puerperal sepsis. He saw no evidence of a remarkable effect such as Wederhake and Zöppritz describe. There was no improvement in the general status, nor in the appetite. The chills did not abate; the icterus did not disappear; the heart became weaker and weaker, and death ensued: in seven cases after the first injection, in six, after the second; once after the third, and once after the seventh, the period of treatment extending over from two to forty-seven days. In nine cases ending in recovery, there was no drop in the high temperature even after two or three injections. Defervescence did not occur for two or three weeks, and then only by lysis with occasional exacerbations. In four of the remaining six patients the temperature (as high as 40.2 C. in the evening) suddenly fell to normal the second day after an injection. This phenomenon was so surprising that he was beginning to regard it as a possible effect of the treatment, but doubts arose when in one case after three days of normalcy the temperature shot up to 39 and even 39.9 C. but three days later dropped spontaneously just as another turpentine injection was about to be given.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

April 16, 1921, 1, No. 16

Present Status of Vaccine Therapy. C. H. H. Spronck.—p. 2116.

*Vitamins. E. C. van Leersum.—p. 2137.

*Chronic Arsenic Poisoning. M. Elzas.—p. 2154.

Vaccine Prophylaxis of Typhoid. L. Schaap.—p. 2158.

Vitamins.—Van Leersum reviews the research on accessory food factors in America, saying that on his recent trip to America "the rat colonies where vitamins are being studied, were my principal objective." "And what I saw of Donaldson's work at Philadelphia, McCollum's at Baltimore, Hart and Steenbock's at Madison, and Osborne's at New Haven, to mention only a few, far surpassed my anticipations." He describes their methods, and remarks that a standard rat cage for scientific research should be imposed by international agreement, as exercise is necessary for the rats.

Chronic Arsenic Poisoning.—Elzas recalls De Haas' numerous cases of optic neuritis in which arsenic was found in the urine, and says that the reason why others do not report

this coincidence oftener is because no one thinks of examining the urine for arsenic in cases of optic neuritis. The necessity for more frequent examination for arsenic poisoning has been impressed on him anew by the recent death of a man of 30, healthy until 1918, when he developed polyneuritis, edema and an eruption, and 0.0005 gm. of arsenic per thousand was found in the urine. He died six months after he had married and had his house repapered, and 3 mg. of arsenic per square meter was found in one of the wall papers.

Acta Chirurgica Scandinavica, Stockholm

April 20, 1921, 53, No. 5

*Peritoneal Pseudomyxoma. E. Michaëlsson.—p. 441.

*Resection of Calcaneum. S. Johansson.—p. 466.

*Local Eosinophilia. P. Kühnel.—p. 476.

War Wounds of Knee. W. Körte.—p. 514. (In German.)

Peritoneal Pseudomyxoma.—Michaëlsson describes (in French) with seven illustrations four cases of pseudomyxoma originating from the appendix.

Resection of the Heel-Bone.—In one of Johansson's two cases the calcaneum had been destroyed by a tuberculous process. In the other case, in a boy of 12, the destructive process was a septic osteomyelitis. He urges the importance of getting the patient on his feet as soon as possible after the operation, but free from weight bearing. (In German.)

Local Eosinophilia.—Kühnel refers to the local eosinophilia in the vermiform appendix. It occurs in the normal as well as in the diseased appendix, but the eosinophil cells seem to vary in number and in arrangement in different pathologic conditions in a characteristic and instructively differential manner, as he shows in four colored plates. (In English.)

Hospitalstidende, Copenhagen

April 27, 1921, 64, No. 17

*Paratyphoid Epidemic in Hospital. O. Rosing-Schow.—p. 257. Conc'n.

*Pernicious Anemia with Stricture in Intestine. E. Meulengracht.—p. 263.

Paratyphoid.—The paratyphoid in the recurring epidemics at the Viborg Hospital was so mild that in some of the cases only the positive agglutination reaction demonstrated that the subjects had been having the disease. Rosing-Schow has found a record of a similar mild paratyphoid in a company of 849 soldiers in 1911. Only forty-nine presented the clinical picture of paratyphoid, but 204 responded positively to agglutination tests. His own research has confirmed that persons may be left paratyphoid bacilli carriers, like the typhoid carriers. Possibly the presence of gallstones may be the only cause for the lingering of the bacilli, but these mild cases and carriers may spread the contagion.

Intestinal Stricture and Pernicious Anemia.—Meulengracht summarizes five cases of pernicious anemia in which during life or at necropsy a stricture had been found at one or more points in the bowel. All but one of the cases were published in Scandinavian literature, and he adds a case personally observed to the list, and refers to four other cases published with only meager details. This coincidence of bowel stricture and the development of pernicious anemia—both such rare conditions—seems to be more than casual. The strictures seem to be relics of old healed tuberculous ulcers; there was no evidence of recent tuberculosis. The diagnosis was made during life in only the English case. The stagnation and decomposition of feces above the stricture, with absorption through the bowel wall of toxic substances with a special destructive action on the blood explains the development of the pernicious anemia. The familial occurrence of pernicious anemia and other facts suggest that a predisposition is a necessary factor. This assumption of mechanical obstruction in the intestines as the primary cause of pernicious anemia is sustained by cases in which the pernicious anemia develops in the pregnant, in subjects with tapeworm, and with gastric achylia. The latter was evident in the five cases here described in which it had been tested. The data presented all sustain the theory of the intestinal origin of pernicious anemia.

May 4, 1921, 64, No. 18

*Megacolon in Adults. T. Iversen.—p. 273. Conc'n No. 19, p. 289.

Megacolon in Adults.—In Iversen's two cases the enlargement was restricted to the sigmoid flexure and the rectum.

Resection of the enlarged sigmoid loop was done in the first case but the stump of the rectum could not be sutured end-to-end to the colon as intended, on account of the huge size of the lumen of the rectum. The oral stump was brought out through the skin for a temporary anus, but the man died in collapse three days later. In the second case no attempt at suturing was made. The enlarged intestine was brought out and opened and a drain tube introduced, deferring the resection till later, merely making an artificial anus. Thirteen days later the exposed loop was resected with the actual cautery. The rectum contracted spontaneously and the artificial anus could be closed the sixty-third day. The man of 61 was restored to complete health by the end of the third month, and has been free from all intestinal disturbances during the more than two years since. Iversen compares his experience with that of others in such cases, adding that the length of the three months' course of treatment was amply outbalanced by the perfect outcome.

May 11, 1921, 64, No. 19

*Microcytosis with Hemolytic Jaundice. H. C. Gram.—p. 294.

Hemolytic Jaundice.—Gram explains how the hemoglobin percentage can be normal in cases of hemolytic jaundice although the diameter of the erythrocytes averages less than normal. In two cases described in girls of 12 and 18, the erythrocytes although abnormally small in diameter were much thicker than usual, so the total bulk was normal.

Norsk Magazin for Lægevidenskaben, Christiania

June, 1921, 82, No. 6

Schick Reaction in Course of Diphtheria. G. Ræder.—p. 409.

*Trigeminal Neuralgia. V. Magnus.—p. 420.

Transient Hypermetropia in Diabetes. S. Hagen.—p. 424.

*Splenectomy in Hemolytic Jaundice. S. Widerøe and O. Jervell.—p. 428.

Cerebral Hemianesthesia. L. Nicolaysen.—p. 434.

*Transfusion in Pernicious Anemia. C. Müller and F. Jervell.—p. 442.

Trigeminal Neuralgia.—Magnus reports recurrence in twelve to eighteen months in all of the 29 cases in which he resected a peripheral portion of the nerve. In 211 of the 248 injections of alcohol, in 118 cases, the pain subsided at once after the injection, and one patient has had no recurrence for eight years and 4 for five years. In the others the pain returned in a year or year and a half. It was banished anew by injection of alcohol, but the respite was only temporary and operative measures were finally applied. In 24 of the patients two or three of the branches were affected and hence no attempt at alcohol injection was made, and the sensory pontine root of the nerve was resected at once. In 4 cases he partially resected the gasserian ganglion, with return of the pain in one case after a four year interval. In 4 of the 31 root-resection cases a corneal ulcer developed, but he ascribes this to the patients' neglect to heed instructions to wear protecting glasses when exposed to wind, or disregard of early signs of irritation in the eye.

Splenectomy with Inherited Hemolytic Jaundice.—Another case is described here of pronounced benefit after splenectomy in chronic inherited hemolytic jaundice. The patient was a woman of 30 and during the attacks of jaundice there were pains, fever and other symptoms of cholangitis. The jaundice appeared first after an attack of typhoid at 17, this evidently having aroused the latent inherited tendency. An operation for the assumed gallstones revealed normal anatomic conditions in the biliary apparatus, and the attacks of pain returned afterward as before until the splenectomy seven months later. In ninety-three cases on record there were four fatalities. In the case here reported the woman five months later still has occasional periods of slight jaundice, and Botzian has reported a similar case of not complete cure after the splenectomy.

Transfusion of Blood in Pernicious Anemia.—This communication describes a case in a man of 58 almost moribund from pernicious anemia who improved remarkably after infusion of 1,000 c.c. of citrated blood from four of his five sons. The improvement did not last long, and he died the seventh month. The length of survival of the infused erythrocytes is recorded for each infusion.

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INTERRELATIONSHIP OF FUNCTION OF THE THYROID GLAND

AND OF ITS ACTIVE AGENT, THYROXIN, IN THE
TISSUES OF THE BODY *

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The highly essential function of the thyroid is the elaboration and delivery to the body of thyroxin. The gland secretes and stores in its acini the so-called colloid. It seems highly probable that the latter function is an accessory to the production and storage of thyroxin, and that in it is stored iodine for the elaboration of this agent. There is no definite evidence that the thyroid has any other function.

THYROXIN

In 1914 Kendall separated from the thyroid gland the pure chemical compound thyroxin. He proved thyroxin to be its active agent. In 1915, in attempting to correlate the available data with regard to the function of the thyroid gland and of its active agent, thyroxin, in the tissues of the body, I formulated these deductions:

1. Thyroxin is active directly or indirectly in the cells throughout the tissues of the body.
2. Thyroxin is an agent hastening the rate of formation of a quantum of potential energy available for transformation on excitation of the cell.
3. Hyperthyroidism is the physiologic status of an individual otherwise normal when the thyroxin in the tissues is sufficient to hold the basal metabolism above normal.
4. Hypothyroidism is the opposite of hyperthyroidism.
5. All the phenomena in pure hyperthyroidism are those that must attend a sustained elevation of the basal metabolism.
6. The status of the hyperfunctioning adenomatous goiter is the result of a pure hyperthyroidism.
7. The status of exophthalmic goiter is not accounted for by a pure hyperthyroidism.

Various observations correlated on these working hypotheses led me, in 1917, without previous estimates of the basal metabolism following the administration of thyroxin, to give intravenously to a myxedematous patient, supposedly having no thyroid gland, 22 mg. of thyroxin and to anticipate the reaction which followed. The reaction was approximately the average of those obtained from several hundred doses since administered. From these studies the following deductions may be drawn:

1. After the administration of a single dose of thyroxin sufficient to bring the basal metabolism to normal, the physiologic status of a thyroidless patient becomes normal in from ten to twelve days, remains approximately normal for ten days, and returns to the preexisting status in from five to seven weeks.

2. The amount of thyroxin in the tissues (exclusive of the thyroid) of the average normal man is approximately 14 mg. Kendall, from an analysis of the iodine content in the tissues, recently estimated the amount to be 14 mg.

3. The average daily exhaustion of thyroxin in the tissues is between 0.50 and 1 mg.

4. A shift of 1 mg. of thyroxin in the tissues of the body is accompanied by a corresponding rise or fall of between 2 and 3 per cent. in the basal metabolism.

5. Fourteen milligrams of thyroxin given to a thyroidless person is not fully exhausted until from the end of the fifth to the eighth week.

Two milligrams of thyroxin a day may hold the basal metabolism from 20 to 30 per cent. above normal; 3 mg. a day may hold the basal metabolism 50 per cent. above normal.

Fifteen milligrams of thyroxin given intravenously to patients with exophthalmic goiter who have a basal metabolism above + 65 may not cause notable reaction; when given to patients having large colloid goiter with bruit, the bruit disappears and the thyroid shrinks rapidly, but constitutional reaction may be absent. With these two exceptions a sustained elevation of the basal metabolism has followed every intravenous dose of more than 1 mg. of thyroxin.

The drop in the basal metabolism following the traumatic destruction of the entire thyroid, its resection for hyperfunctioning adenomatous goiter, the administration of a large dose of thyroxin or the withdrawal of this agent after a period of daily administration is always gradual, extending over days. These observations indicate that the thyroid under average normal conditions maintains an approximately constant level of thyroxin in the body, and that an elevation of basal metabolism of more than 5 per cent., followed within twenty-four hours by a corresponding drop, cannot, except possibly in relatively high degrees of hyperthyroidism, be attributed to fluctuation in the thyroxin content of the body.

Without knowing the exact mechanism of the normal stimulation of the thyroid we can assume that it is brought into play by a drop in the amount of thyroxin in the tissues of the body. This being true, the daily administration of 1 mg. or more of thyroxin should place the thyroid at partial or complete rest, at least so far as the production of this agent is concerned. Following this hypothesis, the daily administration of from 0.5 to 1 mg. of thyroxin to a normal person might not be attended by any general physiologic reaction. We have given a daily dose of 1

* Address of the chairman of the Section on Practice of Medicine, read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* This paper and those by Drs. Lusk, Benedict and Boothby which follow are a part of a symposium on "Basal Metabolism." The remaining papers, by Drs. Means and Du Bois, together with the discussion, will appear next week. After publication in THE JOURNAL, the complete symposium will be republished in pamphlet form.

mg. to a number of persons, apparently having a normal thyroid function, for months without any deflection of the basal metabolism from the normal. There are some objections to drawing definite conclusions from these results and from other observations which indicate that the thyroid gland is placed at rest by the administration of thyroxin; however, the mass of evidence supports the hypothesis.

There are approximately 10 mg. of thyroxin in 150 grams of desiccated thyroid. The physiologic reaction following the administration of thyroxin is, so far as we have made any observation, identical with that following the administration of the fresh or desiccated thyroid gland containing this agent. Absorption from the intestinal tract is, however, very erratic, and desiccated thyroid cannot be given intravenously.

A daily oral dose of 1.6 mg. of thyroxin will hold the basal metabolism of most thyroidless individuals within the normal limits. In most instances the dose established two or three years ago has not had to be changed, the basal metabolism estimates being within 5 per cent. of the average normal each time the patient has returned for observation. A daily dose of from 2 to 3 mg. of thyroxin or 20 grams of desiccated thyroid given by mouth will not fluctuate the basal metabolism or cause any physiologic reaction in many patients in whom this dose given intravenously causes the quantitative reaction almost standard for myxedematous patients. In isolated cases, 250 grams of desiccated thyroid has not caused any reaction. This failure of absorption or destruction of thyroxin before reaching the general circulation is characteristic of a considerable percentage of patients who have diffuse colloid goiter and of patients in the various groups having low basal metabolism readings not attributable to a primary hypothyroidism. This failure of absorption, the difficulty of carrying out daily intravenous administration over a long period, the probability that the thyroid is placed at partial or complete rest, and evidence that under certain conditions the thyroid picks up and stores part of the thyroxin, have been most baffling in the attempt to study quantitatively the reactions of persons having functioning thyroids.

As thyroxin, other factors remaining constant, determines the rate of transformation of energy in the organism, it can be assumed that the rate of exhaustion of thyroxin for a given period is determined, to a large extent at least, by the total transformation of energy. That the rate of exhaustion relative to the total metabolism is not the same in all the organs or reactions of the organism is probable. There is much to suggest that the rate of exhaustion of thyroxin in the female is higher than in the male.

It seems probable that the relation of the rate of exhaustion to the total metabolism for a given period might be roughly determined by fluctuating stress on a thyroidless person whose basal metabolism has been held at normal sufficiently long to permit of readjustment of physiologic functions. We have not, up to the present, been able to control such a patient for the required time.

It is quite probable that there is a gradual adaptation downward in the thyroxin content of the tissues, and hence in the thyroid activity in some of the classifiable and unclassifiable conditions not primarily hypothyroid, with which a low basal metabolism is associated. The clearest evidence of this is the gradual adaptation downward of the basal metabolism to long

continued low food intake. The term secondary hypothyroidism might, though perhaps inadvisably, be applied to such a status. That a disuse atrophy may result is possible, if not probable. Assuming that the rate of exhaustion of thyroxin in the tissues should be determined largely by the total energy transformation, and hence that disuse atrophy and inability of the thyroid to respond to a suddenly increased demand might follow a prolonged low food intake, three patients with hysterical dysphagia, who had lived and worked hard on a very limited liquid diet for a number of years, were held under observation following the sudden relief of the dysphagia and return to a normal diet. As anticipated, the basal metabolism of each patient dropped from 10 to 22 per cent. below normal in three weeks, and the edema, the skin changes, and other minor evidence of myxedema developed. This observation has added significance in the light of the following facts.

The basal metabolism of a thyroidless individual is from 30 to 40 per cent. below the average normal. The edema of myxedema develops, or at least becomes recognizable, when the basal metabolism drops from 15 to 17 per cent. below the average normal. In a myxedematous person having a basal metabolism ranging near this point, the edema may appear after stress, and disappear after rest. Sustained stress exhausts the thyroxin more rapidly than it can be produced by the thyroid and the basal metabolism drops a few points. A recognizable edema may disappear and reappear with a shift of 1 mg. or less of thyroxin in the tissues of the body. A drop in the basal metabolism to 40 per cent. below normal does not cause edema in the classifiable and unclassifiable conditions not due primarily to hypothyroidism. This relation of edema to the basal metabolism is of the highest significance in the differential diagnosis of primary hypothyroidism and of the other conditions with which a low metabolism is associated.

If we are right in the inference that the amount of thyroxin in the tissues of the body throughout the range of normal or near normal conditions is fairly constant, and that the rate of exhaustion is determined to a high degree by the total metabolism or fluctuations in specific metabolic reactions, the thyroid is subject to the greatest stimulation when the amount of this agent in the body is lowest, that is, when the tendency is toward hypothyroidism. This indicates that increased vascularity and histologic evidence of increased activity in the thyroid should not be accepted, without hesitation, as evidence of hyperthyroidization of the tissues of the body. This, of course, does not apply if the stimulus to the thyroid is not originating in the demands of the organism, as is probably true in pathologic conditions, such as exophthalmic goiter and hyperfunctioning adenomatous goiter.

The ease with which the phenomena attending an elevation of the metabolism and an increased rate of exhaustion of thyroxin in the tissues from stimulation originating in the central nervous system and the resulting evidence of stress on the thyroid may be confused with the phenomena of hyperthyroidism is apparent when we recognize that but for the transformation of part of the energy to motion, the phenomena of physical exertion and the resulting fatigue could be distinguished only with difficulty from those of pure hyperthyroidism. The phenomena of mild exophthal-

nic goiter are so much like the psychoneurotic manifestations due to lack of assurance that the thyroid is frequently resected for the latter condition. The lack of assurance is frequently cut out, and both the physician and patient satisfied; the latter enjoys a period of ease after demanding restitution of fees from previous consultants.

THYROID GLAND

The normal thyroid gland is constituted of acini containing colloid and lined with relatively dormant appearing cuboidal or low columnar epithelium supported by the sustentacular tissue common to gland structure. Various interpretations have been placed on the groups of cells in the stroma of the gland; however, they are not known to have any definite specific function peculiar to the thyroid.

Three departures from this somewhat conventional picture of the normal thyroid gland dominate the study of the relationships of the anatomic changes and functional activity of the thyroid, and form the basis for the classification of conditions grouped under the term goiter: (1) hypertrophy of the alveolar epithelium; (2) an increase of the intra-alveolar colloid, and (3) the development of new alveoli. On these changes, goiter may be primarily classified as hypertrophic, colloid and adenomatous.

Diffuse colloid goiter and diffuse hypertrophic goiter may be considered anatomic expressions of functional disturbance in prenatally developed thyroid acini. Adenomatous goiter is new tissue developing postnatally from the stimulation of embryonic cells. All these types may be present in the same gland. Adenomatous tissue may be either encapsulated or nonencapsulated.

Three clear-cut abnormal physiologic states are associated with anatomic changes in the thyroid: (1) pure hyperthyroidism; (2) pure hypothyroidism, and (3) exophthalmic goiter.

A definite syndrome of hyperthyroidism is, with rare exceptions, associated with diffuse hypertrophic or adenomatous goiter, or follows the administration of thyroxin.

The assumption that the status of adenomatous goiter is attributable simply to an excess of the normal thyroid product (pure hyperthyroidism) rests largely on a correlation of at least approximately accurate observations. They are:

1. The physiologic status of a thyroidless individual returns to normal when the basal metabolism is brought to normal by the administration of thyroxin.
2. The phenomena induced by the administration of thyroxin and the phenomena associated with adenomatous goiter are identical and are those that must attend a sustained elevation of the metabolism.
3. These phenomena disappear with the dropping of the basal metabolism to normal within three weeks after the resection of the adenoma.

The status of exophthalmic goiter, while in the main hyperthyroid, cannot be attributed wholly to an excess of the normal thyroid product. The characteristics of exophthalmic goiter may be due to an incomplete thyroxin molecule.

The capacity of the normal thyroid to elaborate thyroxin without notable histologic change is evidenced by the failure to demonstrate such changes after the resection of at least three fourths of the thyroid. That the thyroid is subject to the laws of rest and repose; that it stores thyroxin, iodine and colloid, and that dur-

ing periods of stress it absorbs a portion of the colloid, utilizes the stored iodine, and delivers thyroxin to the blood stream; that hypertrophy is indicative of a relatively high degree of stimulation; that intensive stimulation will cause hypertrophy and hyperfunction; and that the intracellular changes are indicative of the secretory processes of the thyroid vesicles functioning under normal conditions can be accepted with little, if any, reserve. However, several themes that pervade, if they do not dominate, the literature on the thyroid gland are open to question: (1) Hypertrophy is indicative of the production of the active agent of the thyroid in excess of the average normal; (2) the storage of colloid in excess of the normal is indicative of a resting phase of the thyroid and is a result of damage from preexisting hypertrophy and the thyroid at rest.

hyperplasia; and (3) the administration of iodine places For evident reasons we might anticipate that the administration of thyroxin to the point of supplying the demands of the organism would place the thyroid at rest and that the administration of iodine, if the supply of this element were otherwise deficient, would favor thyroid productivity.

Areas of hypertrophy, "some hypertrophy" (MacCarty), are present in such a percentage of all thyroids resected that this degree of hypertrophy has little, if any, tangible significance. In exophthalmic goiter, diffuse hypertrophy of the thyroid is rarely absent, but even in severe cases it varies from the most marked degree to the vanishing point. Diffuse hypertrophy unassociated with a syndrome that is or is not distinguishable from that of exophthalmic goiter is present in approximately only one or two of each thousand human thyroids resected. Many patients in this group later develop frank exophthalmic goiter. That all such thyroids are a part of this complex is possible, if not probable. Whatever their significance, the incidence demonstrates that they have no relation to pregnancy, to adolescence, and to the conditions supposed to throw stress on the thyroid and produce diffuse hypertrophy. On the other hand, in each thousand thyroids resected for exophthalmic goiter in patients with a high basal metabolism and moderate exophthalmos, from one to three show only pure diffuse colloid goiter. I am confident that hypertrophy was present at the time the exophthalmos developed.

The thyroids of many domestic and wild animals become markedly hypertrophic with changes such as of surroundings and diet, without any detectable constitutional disturbances. When hypertrophy is present, the findings are often more readily attributable to causes throwing stress on the thyroid than to an excess of thyroxin in the tissues. This hypertrophy can be prevented or caused to disappear by the administration of iodine. The same is true of the hypertrophic goiter of fish (Gaylord). The goiters of pig cretins are hypertrophic and the inference that they are under high stimulation is warranted. Iodine administered to the mothers prevents this type of goiter and the hypothyroidism, the immediate cause of the goiter, not the result.

The remnant of the thyroid in human cretins, if present, is usually distended with colloid. Diffuse hypertrophy is sometimes present. The nodules found in cretins usually shrink rapidly following the administration of thyroxin. Nodules 5 cm. in diameter may be reduced

within three or four weeks to the point of being barely palpable. It has long been known that iodine favors the disappearance of colloid goiter. Marine has demonstrated that iodine administration prevents the development of diffuse colloid goiter in man. What may be considered the acme of diffuse colloid goiter is most prevalent from the seventeenth to the twenty-first year. Each lateral lobe may be as large as a good sized fist. The thyroid arteries are distended and roll under the finger like a large lead pencil; bruit and loud thrill are present, and in the majority of cases the basal metabolism is from 8 to 15 per cent. below the average normal. In from twelve to twenty-four hours following the administration of thyroxine, the thyroid vessels are not palpable, and the bruit and thrill are no longer audible. The gland rapidly shrinks in size, in some instances becoming barely palpable in three weeks. The continuous administration of thyroxine prevents the reappearance of the goiter; however, on withdrawal of the drug, the thyroid may rapidly attain its original size. After absorption of the colloid, iodine in many instances at least will prevent its redeposition. That colloid goiters are capable of producing thyroxine if sufficiently stimulated is demonstrated by the fact that the basal metabolism drops but little, if any, following a resection of the gland.

The majority of diffuse colloid goiters that have come under our observation since we have fully recognized the fallacy in the absorption of thyroid preparations have been made to disappear or become barely palpable. The thyroid of the human cretin distended with colloid reacts as does the colloid goiter of adolescences. The preceding observation on the occurrence of colloid and hypertrophic goiter and their reactions to thyroxine and iodine administration can be correlated on the hypothesis which, if correct, is essential to our understanding of the relation of functional activity to anatomic changes in the thyroid: Without definite knowledge of the exact mechanism we can assume that the normal stimulation of the thyroid is brought into play by partial exhaustion of the thyroxine in the tissues. Factors interfering with the production of this agent lower the amount delivered from the thyroid. There may be several such factors. The one known factor is an actual or relative shortage of iodine. A thyroid so handicapped, if sufficiently stimulated, can produce a normal amount or even an excessive amount of thyroxine; however, relative to the normally functioning gland, it tends to lag behind the demands of the tissues, that is, it does not respond quantitatively to stimulation as does the normal thyroid. The degree of stimulation of such a gland is above the average and probably increases as the thyroid content of the tissues drops. Basal metabolism estimations suggest that this lag expressed as the amount of thyroxine in the tissues never exceeds 4 mg. The human gland acting under these conditions deposits an excess of colloid in its acini. This constitutes the diffuse colloid goiter of adolescence. Diffuse colloid considered as an entity probably never hyperfunctions. That glands of most animals acting under the same or similar conditions develop diffuse hypertrophy seems probable.

It might be contended that the deposit of colloid interferes with the function of the thyroid and thus causes a shortage of thyroxine in the tissues. The mass of data does not correlate with this theory as it does with the theory attributing the mild hypo-

thyroidism and colloid deposit to a common factor: namely, stimulation of the thyroid acini which are in some way handicapped in their functional ability. A hypothyroidism of sufficient degree to cause edema is, according to our observations, never due to goiter.

ADENOMATOUS GOITERS

Goiters usually classified under the terms "simple," "endemic," "adolescent," and so forth, are diffuse colloid, adenomatous, or a combination, particularly at their inception, of the two types. The majority of such goiters are first noticed during the latter half of the second decade. The colloid goiter usually disappears before the twenty-fifth year; however, there is a tendency for a thyroid once overloaded with colloid, irrespective of its functional activity, to retain more than the normal amount, that is, sufficient to make the gland easily palpable throughout life. The adenomatous nodules, often during the early part of their history buried in colloid goiter, never disappear, although they fluctuate much in size with their colloid content, vascularity, and degenerative changes.

The administration of iodine may prevent the formation of colloid goiter. That it may also be almost equally efficacious in the prevention of adenomatous goiter in adolescence seems probable. In fact, if the theme here presented is correct, to control adolescent goiter means to control adenomatous goiter also.

Two theories have prevailed with regard to hyperfunctioning adenomatous goiter: first, that the adenomatous tissue elaborates and delivers an excess of thyroxine, and second, that the adenoma in some way stimulates the surrounding thyroid tissue to hyperfunction. Though the question must still be considered open, the evidence correlates best with the theory that the adenomatous tissue hyperfunctions. Irrespective of the question of which type of tissue furnishes the excess of thyroxine, there is no doubt that the adenomatous tissue actually elaborates thyroxine and stores colloid and iodine. In the following discussion of adenomatous goiter, the facts may be coordinated with either theory; however, I have assumed that the adenoma hyperfunctions.

The majority of adenomatous goiters have their inception in colloid goiter. The embryonal cells seem to be stimulated through the same mechanism that forces the postnatally developed gland to maintain a normal level of thyroxine in the tissues. Possibly we should look on adenomatous tissue as a compensatory attempt. Such a theory does not eliminate the possibility that the formation of the new tissue may in some instances be excited by local irritants. Early in its life history, new adenomatous tissue can not function. A number of observations suggest that it can elaborate and store colloid long before it can elaborate and store thyroxine. It seems more prone, as does the prenatally developed thyroid tissues, to store colloid if it is unable to elaborate thyroxine or the rate of stimulation of the thyroid is above the average normal. Only rarely are the factors such that the adenomatous tissue will function, at least to the point of causing hyperthyroidism, before the latter half of the third decade although, as a rule, it is palpable in the second decade of life. The average interval between the time the adenomatous goiter is first noticed and the onset of hyperthyroidism, including only those that hyperfunction before coming under observation, is seventeen and one-half years. While the normal

stimulating mechanism is a factor in the inception of the adenomatous goiter, once this tissue has started to function, it does so erratically and without relation to the needs of the individual. This observation is borne out by the fact that the basal metabolism drops to normal, but not below, within eighteen days after the resection of the adenomatous tissue, and there is no tendency to a recurrence of the hyperthyroidism.

Six patients have come under my observation who, following very extensive resection of the thyroid for combined adenomatous and colloid goiter, have a basal metabolism from 12 to 17 per cent. below normal and a recurrence of multiple adenomas. These adenomas react to thyroxin as does colloid goiter. One of the patients has been under almost constant observation for two years. When the basal metabolism is brought to normal, the adenomas 5 cm. in diameter almost disappear. She can estimate her basal metabolism within 5 per cent., if it is not elevated above normal, from the size of the adenomatous nodules.

While the hyperthyroidism may come on suddenly and its course may be marked by waves of high intensity, it is characteristic of the disease to come on insidiously and for a long period, not infrequently for years, to run a course of low intensity, and to be brought to attention by the phenomena attributable to fatigue and by resulting degenerative changes, rather than by changes indicating a hyperthyroid state. Some patients may be hyperthyroid for many months either from hyperfunctioning adenomatous goiters or from the administration of thyroxin, and wholly unconscious of any departure from the normal status. Those of a nervous temperament, particularly the type prone to develop cardiac neuroses, are more apt to be disturbed. The development of diffuse colloid goiter in man, other factors remaining constant, is determined by an equation taking into consideration the iodine available to the thyroid and the rate of exhaustion of thyroxin in the tissues. Infection of the organism, at least when attended with fever, probably increases the rate of exhaustion of thyroxin in the tissues. That infection of the thyroid can stimulate the gland to hyperfunction is indicated by a moderate degree of hyperthyroidism early in the history of patients having diffuse thyroiditis ultimately resulting in myxedema. That introduction of bacteria into the digestive tract is an important factor, if not the primary cause of endemic goiter, is fairly well established. As to how the organisms act in the host, there is no definite evidence. That the bacterial flora of the digestive tract may sufficiently interfere with the absorption of the small amount of iodine in the available diet is a possibility, particularly in areas in which this element is relatively small. The relation of the bacterial flora to the available iodine would well explain the geographic distribution of endemic goiter.

Potency of Antimeningococcic and Antipneumococcic Serums.—Since December, 1917, all lots of serum intended for use against meningococcus infection or pneumococcus infection (Type I), and subject to control by the Treasury Department, have been tested for potency at the hygienic laboratory. Tests for potency are made at the manufacturing establishments, but before being released for interstate sale, each lot must pass the official test at the hygienic laboratory. Under these provisions, 461 lots of antimeningococcic serum and 781 lots of antipneumococcic serum have been tested. Numerous tests have also been made on serums from other sources.—*Pub. Health Rep.*, Nov. 21, 1919.

THE MEASUREMENT AND STANDARDS OF BASAL METABOLISM*

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That a strenuously active man, engaged in severe muscular work, gives off heat is not surprising to any one, but it is seldom fully realized that, even with a man in complete muscular repose, such as a bedridden patient, the end-result of all the internal glandular and muscular activities incidental to the maintenance of life is *heat*. So truly is the heat output determined by the intensity of vital processes that, conversely, it may be stated that the level of vital activity may be inferred from the amount of heat produced. This caloric index of metabolic intensity is of such a transient and fugitive nature that unusually complicated technic is required for its determination, and this fact has retarded not only its use but, more especially, an appreciation of the significance of its relationship to physiologic and pathologic research. Since heat is the end-product of all vital transformations, the latter could, theoretically at least, best be measured by some method of determining directly the heat given off from the body. Such a method calls for an extremely elaborate and costly apparatus, a calorimeter, which, to be of sufficient size for measuring directly the heat production of the human body, assumes an appearance so formidable as to unnerve completely the best of hospital technicians. Fortunately, other, indirect methods for estimating heat production are available. While heat is the end-result of glandular and muscular activity, oxidative processes are essential factors in these transformations. Thus, the intake of oxygen is essential to combustion, while the production of carbon dioxide makes up a very large part of the total oxidative activities of the body. Therefore, if one can measure accurately the carbon dioxide production or, still better, the oxygen consumption, a very close estimate of the total heat production, and consequently, of the end-result of the glandular and muscular activity may be secured.

COMPLICATED TECHNIQUES

The techniques available for these measurements of the respiratory products have for many years been very complicated, involving in their most elaborate form a respiration chamber with its numerous appurtenances. In a somewhat less elaborate form, a mouth-piece or mask, together with valves and some appliance for measuring the total expired air, such as either a gas meter, a rubber bag or, more commonly, a spirometer, is necessary. But in addition to either of these forms of apparatus there is required that *rara avis*, a skilled gas analyst, on whom rests the determination of the changes in the composition of outdoor air, as it leaves the lungs. All of these methods have been in the special respiration laboratories, but have been introduced into hospitals in general to only a very small extent. Hence, clinical studies of gaseous metabolism have been made only by the relatively few workers in special laboratories, who have in but few instances been simultaneously clinicians.

* From the Nutrition Laboratory of the Carnegie Institution of Washington, Boston.

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

A SIMPLE TECHNIC

The Nutrition Laboratory has for many years been involved in a study to simplify the costly experimental technic for the measurement of gaseous metabolism. The final outcome of this study has been the development of a portable respiration apparatus that measures with extreme accuracy and great rapidity the oxygen consumption of human beings. Based on the important observation that when a human subject breathes pure oxygen the amount of oxygen taken up by the blood is the same as when ordinary air is inspired, a relatively simple technic for the measurement of the oxygen consumption of man, involving neither respiration chamber, valves, weighings nor gas analyst, has been evolved. Of the two respiratory gases, oxygen and carbon dioxide, this apparatus measures the oxygen consumption alone. But since it is the common experience of all clinics that, in those experiments in which where, by the older methods, both carbon dioxide and oxygen are determined, the oxygen consumption alone is of prime significance in the vast majority of pathologic cases, it can be seen that a method restricted to oxygen determinations will supply the needs for a large series of pathologic problems.

Normal control experiments, which are a necessary feature preliminary to all studies in disease, may, with the wide distribution of the portable respiration apparatus, be of great service to physiology and, ultimately, to pathology, provided such tests are intelligently planned and skilfully carried out. Indeed, the optimist can properly take the ground that whatever faults may arise in studying pathologic cases, whatever misinterpretations of data may be made, the development and wide distribution of the respiration apparatus can be fully justified by the contributions that each user of the apparatus can rightly be expected to make to our knowledge of normal metabolism.

REQUISITE CONDITIONS

In basal metabolism measurements, the requirements are that the subject should be, first of all, in the post-absorptive condition, that is, at least twelve hours after the last meal, and secondly, that he should be in complete muscular repose, preferably lying quietly without conversation or any psychic excitement for a half hour before the test begins. The room temperature should be not far from 20 C., and the subject should be sufficiently clothed or covered with bedding, to be perfectly comfortable. It is our custom in the Nutrition Laboratory, in order to rule out the possibility of a slightly febrile condition, to note the buccal temperature during the period of preliminary repose. Every effort should be made to secure a series of pulse rate records. This measurement may be taken at the wrist during the actual experiment itself and during the preliminary period, but is better taken by means of ear pieces attached to a Bowles stethoscope resting over the apex beat of the heart.

To be fully comparable with previous work, all normal experiments must be so conducted as to recognize certain fundamental points. Not infrequently the value of earlier work is greatly vitiated by the absence of certain fundamental physiologic measurements. For instance, a record of the sex, age, nude weight, and the height without shoes, must be considered as an essential part of the report. In addition, since it should be the aim of modern experimenters to

secure better data, it is not unreasonable to ask that two new measurements, of value in determining the nutritional state of a subject, be supplied. One of these is the sitting height, the importance of which has recently been emphasized so strongly by Dreyer¹ of Oxford and by von Pirquet's² use of it in the nutritional tragedy in Vienna. Furthermore, it is believed by Dr. C. B. Davenport that the investigator, at the moment of obtaining the sitting height, should also measure the sitting height to the suprasternal notch, i. e., eliminating the length of neck and head, as this additional evidence will prove of even greater value in later years. Finally, as a part of the records of all those having a portable respiration apparatus at hand, with its carefully calibrated spirometer, there may reasonably be expected a measure of the vital capacity, which has also been emphasized by Dreyer³ and by Peabody.⁴

ACCURATE MEASUREMENTS

Moreover, operators should be careful to record the degree of drowsiness of the subject. When the mouthpiece is used, unless the jaw is very much relaxed and opened, accurate oxygen measurements can readily be made with the portable respiration apparatus, and thus the question of sleepiness will not affect the technic. Parenthetically, I should like to add that a new procedure has recently been tested out in the Nutrition Laboratory, which serves admirably as a proof of absence of leak in these mouthpiece tests. Ordinarily the readings on the millimeter scale connected with the spirometer bell are taken only at the beginning and the end of a ten-minute period. In addition to these regular readings, as mentioned in various articles describing our technic,⁵ it is now our custom to take a reading at about the middle of the period, say after four or five minutes, and immediately thereafter we place on top of the spirometer bell a weight, of usually not far from 35 to 40 gm. This weight remains on the bell until just before the final readings. Obviously, if there is a leak around the mouthpiece or any part of the apparatus, the weight on the spirometer bell will result in the expulsion of air from the apparatus into the room, thus indicating a larger oxygen consumption. Consequently, by computing the oxygen consumption during the first five minutes and comparing it with that during the last five minutes, one can invariably detect the presence of a leak.

Still better, if one attaches a small writing point to the counterpoise weight of the spirometer bell and allows this to write over the surface of a smoked paper kymograph drum, a remarkably satisfactory picture of the entire respiratory process can be obtained from the beginning to the end of a test. The straight line curve, touching the points representing the end of each expiration, shows a general upward tendency as oxygen is consumed, and the bell descends, and forms an angle with the base-line of the kymograph paper, varying by only two factors, first, the rate of speed

1. Dreyer, Georges, and Hanson, G. F.: *The Assessment of Physical Fitness*, London, Cassell & Co., 1920.

2. Von Pirquet: *System der Ernährung*, Berlin, 1917, 1: 48, ff.

3. Dreyer, Georges: *Lancet* 1: 365 (March 10) 1917.

4. Peabody, F. W., and Wentworth, J. A.: *Clinical Studies of the Respiration*, IV, *The Vital Capacity of the Lungs and Its Relation to Dyspnea*, *Arch. Int. Med.* 20: 443 (Sept.) 1917.

5. Benedict, F. G.: *Boston M. & S. J.* 178: 667, 1913. Hendry, M. F.; Carpenter, T. M., and Emmes, L. E.: *Ibid.* 181: 285, 334, 363 (Sept. 4) 1919. Benedict, F. G.: *Ibid.* 182: 243 (March 4) 1920. Benedict, F. G., and Collins, W. E.: *Ibid.* 183: 449 (Oct. 14) 1920.

of the kymograph and, second, the rate of absorption of the oxygen. Assuming that these two factors remain essentially constant throughout a ten-minute period, we can see that if there is a leak when the weight is on the spirometer bell, the last half of the curve will have a decidedly different angle. Thus it is possible by either of two methods to detect absolutely the presence of a leak, particularly in experiments during sleep. When the subject is awake, our own experience has been that it is very difficult to secure a leak around the mouthpiece. For all of our research work the graphic method is invariably employed.

If these precautions are observed, records of basal metabolism are readily made, and the difficulty then shifts from the experimental technic to the scientific interpretation of the results.

INTERPRETATION OF RESULTS

The simplification of the technic for determining the respiratory metabolism is justifiable on the grounds that such technic in the hands of well-trained men will enable a much larger and more accurate accumulation of scientific data. The simplification of such technic is, on the other hand, dangerous, when it makes it possible for the tyro to secure measurements, which frequently neither he nor any of his associates are in a position to interpret intelligently and from which it is possible for him to draw deductions that are not only erroneous but, since they, not infrequently, may influence for or against operative procedure, may actually be of serious harm. This rapid and accurate method makes general use of gaseous metabolism measurements justifiable, therefore, only with the proviso that the operators have, first, acquired carefully and intelligently a relatively simple technic, and secondly, that in attempting to analyze or utilize results, they have previously made an intense study of the significance of respiratory metabolism. Unfortunately, the intellectual training of the operator has by no means progressed so rapidly as has the simplification of technic; and today we face a situation in which manufacturers are ready to supply almost unlimited numbers of simplified respiration apparatus, which are in a too great number of instances secured and put to use by operators wholly lacking in this fundamental and important education.

Even the most skilled and most experienced clinicians make at times sorry exhibits of their use of apparatus of this type. The apparatus is simple to use. We believe that an intelligent high-school girl can, after a few days of training, secure most satisfactory measurements of the oxygen consumption. No effort of the Nutrition Laboratory can, however, make up for the deficiency of theoretical consideration of the significance of basal metabolism measurements on the part of the user of these readily acquired metabolism measurements.

STANDARDS OF ANALYSIS

At the very start the results obtained in suspected cases must be scanned with an idea as to their normality or their relationships to normal results, and immediately great diversity of opinion arises as to what is normal. It must be realized that thus far the total number of published results for normal individuals, measured by perfectly comparable technics, is only in the hundreds. From these data, a large

proportion of which has been accumulated in the Nutrition Laboratory, at least three sets of standards have been proposed: (1) the earliest, by Aub and Du Bois;⁶ (2) the more complete biometric analysis by Harris and Benedict;⁷ (3) and more recently a subsequent analysis by Dreyer⁸ of Oxford. While in general these standards agree very well among one another, as is to be supposed, since they are all drawn from practically the same material, at times marked discrepancies are noted.

Muscular activity, digestion, psychic excitement, and sleep profoundly affect the metabolism, but the modern definition of basal metabolism presupposes measurements during complete muscular repose and with the subject in the postabsorptive condition. Yet, even under these conditions, as the careful biometric analysis of the Nutrition Laboratory material shows,⁷ basal metabolism is affected independently by weight, height, age and sex. The prediction of the most probable basal metabolism of any given individual can, therefore, according to Harris and Benedict, be made by the use of the two following planar equations:

For men $h = + 66.4730 + 13.7516w + 5.0033s - 6.7550a$
For women $h = + 655.0955 + 9.5634w + 1.8496s - 4.6756a$

where h = total heat-production per twenty-four hours, w = weight in kilograms, s = stature in centimeters, and a = age in years. To simplify the use of these equations, tables have been prepared, from which two sets of values can be drawn, added together, and the predicted metabolism obtained. These tables, as well as all of the standards previously mentioned, and other tables of data, together with illustrative computations, have recently been published by Dr. Thorne M. Carpenter of the Nutrition Laboratory.⁹

VARIATIONS FROM THE STANDARD

Between the ages of 20 and 40 years, within which age range most of the experimental data analyzed by Harris and Benedict were obtained, the error of prediction of the basal metabolism is the smallest. Outside of this range, however, predictions can be made only with great care. Finally, special attention should be called to the fact that the prediction of the basal metabolism of women cannot be made with anything like the accuracy obtainable with man, and that even among so-called "normal" individuals, the measured basal metabolism frequently varies greatly from the standards. For the present, persons who are "presumably in good health" are taken as "normal" individuals.

There are a great many people who are fat, who have no demonstrable pathologic lesion. There are seemingly a large number of individuals who are thin, who come under the same head. These are classified as people "presumably in good health." Much more data on normals are imperatively needed.

UNDERNUTRITION

To the factors known to influence basal metabolism, already mentioned, should be added the very important one of undernutrition. By this is meant not simply starvation, but prolonged, persistent undernutrition, which results in perhaps even greater disturbances to

6. Aub, J. C., and Du Bois, E. F.: *Metabolism of Old Men*, Arch. Int. Med. **19**: 831 (May) 1917.
7. Harris and Benedict: Pub. 279, Carnegie Inst., Washington, 1919.
8. Dreyer, Georges: *Lancet* **2**: 290 (Aug. 7) 1920.
9. Carpenter, T. M.: Pub. 303, Carnegie Inst., Washington, 1921.

metabolism than does a relatively short, complete withdrawal of food. Since it is recognized that in many pathologic cases undernutrition is an ever present factor, it is readily seen how complicated the interpretation of metabolism data may become. For example, are we to consider as normal or not the thin, emaciated, 16-year old girl who has a metabolism per square meter of body surface as high as that called for by the standard of Aub and Du Bois? The very fact that there is emaciation and undernutrition would speak for a low metabolism. On the other hand, if the metabolism is found to be normal by this standard, should not one suspect the presence of some superimposed factor which more than offsets the depressing influence of the undernutrition?

CONCLUSIONS

Keeping these several factors in mind, we can see, therefore, that the use of a so-called "standard" or "normal" metabolism is fraught with considerable danger and that the interpretation of metabolism results is not a simple rule-of-thumb procedure. In fact, the interpretation of results now far exceeds in complexity the actual laboratory technic. The technical stumbling blocks to the advancement of metabolism studies in clinical medicine have, we believe, been overcome. The great intellectual stumbling block, namely, lack of education with regard to the significance of metabolism measurements, cannot be overcome by the efforts of any one laboratory, one school, or one teacher. Before using gaseous metabolism measurements, it behooves every physician to familiarize himself thoroughly with the fundamentals of gaseous metabolism and its significance. May we not hope that medical schools in general will give this fact recognition and provide for it in their curriculums, thus furthering the admirable work instituted by Dr. Eugene F. Du Bois at the Cornell University Medical College.

FUNDAMENTAL IDEAS REGARDING BASAL METABOLISM *

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As early as 1839, Sarrus and Rameaux¹ stated that, since the loss of heat in animals must be proportional to their surface area, therefore the heat production must be proportional to the same unit.

Regnault and Reiset,² ten years later, wrote:

The consumption of oxygen absorbed varies greatly in different animals per unit of body weight. It is ten times greater in sparrows than in chickens. Since the different species have the same body temperature, and the smaller animals present a relatively larger area to the environmental air, they experience a substantial cooling effect, and it becomes necessary that the sources of heat production operate more energetically and that respiration increase.

Only three years after this, Bidder and Schmidt³ made the following thoroughly modern statement:

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Sarrus and Rameaux: *Bull. Acad. roy. de méd., Paris* 3: 1094, 1839.

2. Regnault and Reiset: *Annales de chimie et de physique, Series 3* 26: 299, 1849.

3. Bidder and Schmidt: *Die Verdauungssäfte und der Stoffwechsel*, Mitau and Leipzig, 1852, p. 348.

The extent of the respiration, like every other component of the metabolism process, is to be regarded as a function of one variable, the food taken, and one constant, a distinctly typical metabolism (*Respirationsgrösse*) which varies with the age and sex of the individual. This factor characterizes every animal of a given race, size, age and sex. It is just as constant and characteristic as the anatomic structure and the corresponding mechanical arrangements of the body. It is in the main determined by the heat consumption in the organism; that is to say, the replacement quota for heat lost to the body through radiation and conduction to the environment in a given unit of time. It may therefore be used to determine this, or in case the factor of heat loss is known, one can deduce the extent of the metabolism.

This typical metabolism . . . is that of the fasting animal. It must be nearly the same in animals having the same body volume, surface and temperature; the larger the body surface, the body volume and temperature remaining constant, or the higher the body temperature with surface and volume constant, the higher will be the metabolism as determined by the laws of static heat.

Of course a sharp mathematical treatment of this phenomenon can be thought of only after very numerous and exact experimental determinations on animals of most varied form, size and temperature.

Rubner⁴ first applied exact calculations to this problem, and he announced that dogs varying from 3 to 30 kg. in weight produced the same number of calories per square meter of body surface, though per kilogram of body substance the heat production was 88 calories per kilogram in the smallest dog and only 36 calories per kilogram in the largest one. He remarks:

Large and small dogs do not metabolize different quantities of food because their cells are differently organized, but because cooling influences on the skin excite the cells to activity.

Shortly after Rubner's publication, Richet, in 1885, showed that a cat, a rabbit and a goose, all of similar weights, produced approximately the same amounts of heat. He stated that in future one should express all calorimetric observations in terms of surface area and not in weight, a principle now very largely followed in the United States.

Rubner later came to a better understanding regarding the cause of the Law of Surface Area. He found that two guinea-pigs of different sizes had the same heat production per square meter of surface, even though they lived surrounded by air at a temperature of 30, thus excluding all thermal influences. He realized from this that the level of the basal metabolism could not be caused by the influence of cooling on the body, and no one has since thought so. Rubner,⁵ however, stated that he believed that the phenomenon observed was the result of accommodation to the action of cold to which animals in former ages had been exposed.

My own work has shown that a cold sugar solution, introduced into the stomach of a dog, can induce an extra production of heat extending over several hours. The body can therefore still respond to a withdrawal of heat by a compensatory production of it.

Rubner calculated the surface area of animals by the formula of Meeh,⁶ published in 1879. This formula assumed that the surface was a function of the $\frac{2}{3}$ power of the volume. Since animals contain the same materials, weight may be substituted for volume. The

4. Rubner, M.: *Ztschr. f. Biol.* 19: 549, 1883.

5. Rubner: *Die Gesetze des Energieverbrauchs bei der Ernährung*, Leipzig and Vienna, 1902, p. 174.

6. Meeh: *Ztschr. f. Biol.* 15: 425, 1879.

result thus obtained was multiplied by a constant k which expressed the relationship of weight in kilograms to surface in square meters for a given species. For man, the formula of Meeh was $12.3\sqrt[3]{(\text{body weight})}$.² It may be noted here that Dreyer, Ray and Walker⁷ found that the surface area, blood volume and cross sections of the aorta and of the trachea are all proportional to the $\frac{2}{3}$ power of the weight. Dreyer later concluded that the vital capacity was a simple function of the body surface. Moulton⁸ found that the surface area was a two third power function of the total body nitrogen of beef cattle and, therefore, of the protoplasmic mass. This confirms the conclusion of Carl Voit that the mass of the cells and their power to oxidize materials determines the height of the metabolism. One should remember, however, in this relation the fact that in very corpulent people the heat production appears proportional to the surface area and not to the mass of protoplasm.

Using Meeh's formula, McCrudden and I,⁹ in 1912, found that the basal metabolism of a dwarf was 775 calories per square meter of surface, and of two dogs 759 and 784 calories, respectively, results which agree within 3 per cent. Comparing these with results obtained by Benedict on four men, it was found that they produced an average of 789 calories per square meter of surface. It was also pointed out that an infant 5 months old, investigated by Howland, produced 1,100 calories per square meter of surface in twenty-four hours. This accords with former observations made in 1899 by Magnus-Levy and Falk.¹⁰

As early as 1895, Sonden and Tigerstedt¹¹ pointed out that the heat production of children during the period of adolescence was relatively higher per square meter of surface than in the adult. This long-neglected scientific information was confirmed by the contributions of Murlin and of Du Bois, as well as by the extensive and valuable studies of Benedict and Talbot. About this time it was found that the food prescribed by the commonly accepted dietary standards was insufficient for the nourishment of children in the regions of occupied Belgium and blockaded Germany.

With the establishment of the calorimeter of the Russell Sage Institute of Pathology in Bellevue Hospital during the winter of 1912-1913, under the active control of Du Bois, it became absolutely necessary to seek for accurate standards with which to compare the heat production in hyperthyroidism, for example, with the heat which the patient would presumably have produced had he been perfectly well. As there was a lack of accurate data, Gephart and Du Bois¹² investigated the heat production of several normal controls, and in their preliminary work established the value of 34.7 calories per square meter of body surface per hour as representing the basal metabolism of individuals of usual shape when the surface area was calculated by the Meeh formula. Although criticism has been made that protoplasmic mass is the sole criterion of the intensity of metabolism, it appeared beyond the bounds of possibility to determine the protoplasmic mass in hyperthyroidism, whereas the Meeh formula furnished

the most ready means then at hand of estimating the surface area. Du Bois at that time came to the conclusion that, although Meeh's formula might not accurately measure the surface area, at least the heat production was proportional to Meeh's formula.

Finally, E. F. Du Bois actually measured the surface area of several individuals, and with his cousin, Delafield Du Bois,¹³ worked out a formula from the measurements obtained. He was thus able to calculate the true surface area within an average error of ± 1.5 per cent. and a maximal variation of ± 5 per cent. Meeh's formula proved to have an average inaccuracy of 16 per cent. and a maximal variation of 36 per cent., the latter being found in the obese.

The now generally used Du Bois height-weight formula for determining the surface area indicated that the measure of the basal metabolism was 40 calories per square meter per hour in men, and 7 per cent. less than this in women. Du Bois claimed an accuracy of within ± 10 per cent., but of late others have ascribed even a greater degree of accuracy to his method. His body surface formula shows that very obese women, like the one described by Means as being a "veritable pork barrel," conform to Rubner's law that the heat production of the basal metabolism is proportional to the surface area.

Following Du Bois, Benedict and Harris published a book entitled "Biometric Study of the Basal Metabolism in Man," and gave various tables for the computation of the basal metabolism. Using these tables for people of early adult life, the calculations by both methods yield essentially the same results. The average basal metabolism of three old men, as determined by Benedict, was much lower than that found in six old men by Aub and Du Bois,¹⁴ and this tends to throw doubt upon the calculations of the true basal metabolism of old men. It may, however, be added that the basal metabolism of Zuntz remained at a constant level from the age of 41 to the age of 63.

Dreyer¹⁵ has objected to the introduction of the standing height as a factor in the calculation of the surface area on the ground that it is not a physiologic measurement, and he regards the sitting height as a more normal expression. He has evolved a formula which is based on age and weight alone. He states that this formula indicates that basal metabolism is not a simple function of body surface.

However, Dreyer calculates that the deviation between observation and calculation for Benedict's own series is, in the case of males, 5.27 per cent. by his own formula, 5.33 per cent. by Benedict's method, and 5.65 per cent. by Du Bois' method of calculation. These differences, which amount to only 0.38 per cent. at most, do not appear to be so considerable as to manifest, for one formula over the others, a readily distinguishable refinement of procedure.

Applying Dreyer's formula to the predictable metabolism of the six old men investigated by Du Bois and Aub, the average deviation from the metabolism actually measured amounts to $+2.2$ per cent., whereas Benedict's formula shows a discrepancy of $+19.7$ per cent. This, however, is a detail. The main facts are established. The controversy is concerning interpretations and theories.

13. Du Bois, Delafield, and Du Bois, E. F.: The Measurement of the Surface Area of Man, *Arch. Int. Med.* **15**: 868 (May) 1915.

14. Aub, J. C., and Du Bois, E. F.: The Basal Metabolism of Old Men, *Arch. Int. Med.* **19**: 823 (May) 1917.

15. Dreyer, G.: *Lancet* **2**: 289 (Aug. 7) 1920.

7. Dreyer, Ray and Walker: *Proc. Roy. Soc. Series B* **86**: 39, 56, 1912-1913.

8. Moulton, C. R.: *J. Biol. Chem.* **24**: 299 (March) 1916.

9. McCrudden and Lusk: *J. Biol. Chem.* **13**: 450, 1913.

10. Magnus-Levy: *Arch. f. Physiol., Supplement*, 1899, p. 388.

11. Sonden, K., and Tigerstedt, R.: *Skand. Arch. f. Physiol.* **6**: 1, 1895.

12. Gephart, F. C., and Du Bois, E. F.: The Determination of the Basal Metabolism of Normal Men and the Effect of Food, *Arch. Int. Med.* **15**: 835 (May) 1915.

In a recent publication Benedict ¹⁶ pens the following statement:

As a result of the critique of the body surface law presented by Harris and Benedict, we believe that the accurate measurements of body surface made possible by Du Bois may legitimately be used in a manner heretofore never practicable in metabolism experiments, provided that they are considered as physical measurements and with no erroneous conceptions as to the existence of a causal relationship between surface area and heat elimination.

I believe this statement to be somewhat exaggerated. I believe that the Du Bois standards for basal metabolism can be relied on, and I also believe that, though one may doubt the causal relationship between surface area and heat elimination, such doubt will not invalidate the arithmetic employed in the calculation. In making this statement I recall the words of Carl Voit, uttered regarding another matter:

I maintain this as an incontestable fact. It is of itself so important that I question whether it is desirable to add a word of explanation. The results of a properly conducted and properly appreciated experiment can never be annulled, whereas a theory can change with the progress of science.

The establishment of a predictable basal metabolism enabled those working with the Russell Sage calorimeter to interpret the variations from the normal in many diseased conditions and has offered a method now widely accepted throughout the world for a closer clinical diagnosis of several pathologic conditions.

THE BASAL METABOLIC RATE IN
HYPERTHYROIDISM *

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By the term hyperthyroidism is meant the clinical syndrome resulting from the presence in the body of an excess of thyroxin, which Kendall ¹ has identified as the active principle of the thyroid gland, and which, according to Plummer, ² "is a catalyst that accelerates the rate of formation of a quantum of potential energy in the cells of the organism." This syndrome is characterized by an increased basal metabolic rate, and by intoxication clinically evidenced by nervousness, tremor, tachycardia, loss in strength and weight, and in the later stages, myocardial disintegration.

FACTORS INFLUENCING BASAL METABOLIC RATE

Plummer ² has proved the calorogenetic action ³ of thyroxin by extensive basal metabolic rate studies, following its intravenous injection in myxedematous and normal persons, and also by partial removal of the thyroid gland from patients with hyperthyroidism.

16. Benedict and Talbot: Metabolism and Growth from Birth to Puberty, Pub. 302, Carnegie Institution of Washington, 1921, p. 159.

*Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Kendall, E. C.: Isolation of the Iodine Compound Which Occurs in the Thyroid, J. Biol. Chem. 39: 125-146 (Aug.) 1919.

2. Plummer, H. S., and Boothby, W. M.: Specific Dynamic Action of Thyroxin, Am. J. Physiol. 55: 295-296, 1921.

3. Dr. Graham Lusk has requested that the term "specific dynamic action," previously used by Plummer and Boothby to indicate the caloric or heat producing power of thyroxin and epinephrin, be reserved to express the increase in heat production following the ingestion of a food-stuff, maintaining the sense of the term as originated by Rubner. The term "calorogenetic action" has been suggested by Dr. Lusk, after consultation with Dr. Francis G. Benedict, to signify the specific stimulus to metabolism given by such substances as thyroxin and epinephrin.

From the basal metabolic rate curves thus obtained it can be calculated that from 12 to 14 mg. of active thyroxin must be present in the body to maintain the basal metabolic rate at the normal level, and that the rate of loss or destruction of the thyroxin is probably not far from 0.5 mg., daily. The average calorogenetic action resulting from the intravenous injection of

TABLE 1.—INCREASE IN BASAL METABOLIC RATE FROM
INTRAVENOUS INJECTION OF THYROXIN

Increase per mg.	2.8	Increase per mg. per sq.m. 4.7
Average variation.....	0.7 = 25%	Average variation..... 1.1 = 23%
Largest + variation...	2.8 = 100%	Largest + variation... 2.9 = 60%
Largest - variation...	1.8 = 64%	Largest - variation... 2.9 = 60%

Variation in Calorogenetic Action Depending on the Original Level of the B. M. R.				Variation in Calorogenetic Action Depending on Size of Dose			
Average B. M. R.	Average Dose	Increase per Milligram	Average Dose per Sq. M.	Increase per Milligram per Sq. M.	Average Dose	Increase per Milligram	Average Dose per Sq. M.
Above to -14	8.7	3.3	5.7	5.0	4.8	3.5	3.6
-15 to -19	9.1	2.3	5.1	3.9	6.9	2.8	5.2
-20 to -24	7.3	2.9	4.6	4.6	8.8	2.9	7.0
-25 to -29	10.9	2.8	6.2	5.0	11.2	3.3	9.3
-30 to -34	14.8	2.9	9.2	4.9	16.0	2.6	11.5
-35 and below	15.5	3.0	8.6	5.1	24.0	1.6	13.2

different amounts of thyroxin in sixty-nine cases of myxedema or hypothyroidism of varying degrees of intensity is summarized in Table 1, and a characteristic curve is given in Chart 1, together with a curve illustrating the return to normal in the basal metabolic rate, following the removal of an adenoma from a patient having adenoma with hyperthyroidism. Therefore, pathologic variations in the basal metabolic rate are due, at least in disorders of the thyroid gland, either to an increase or to a decrease in the normal

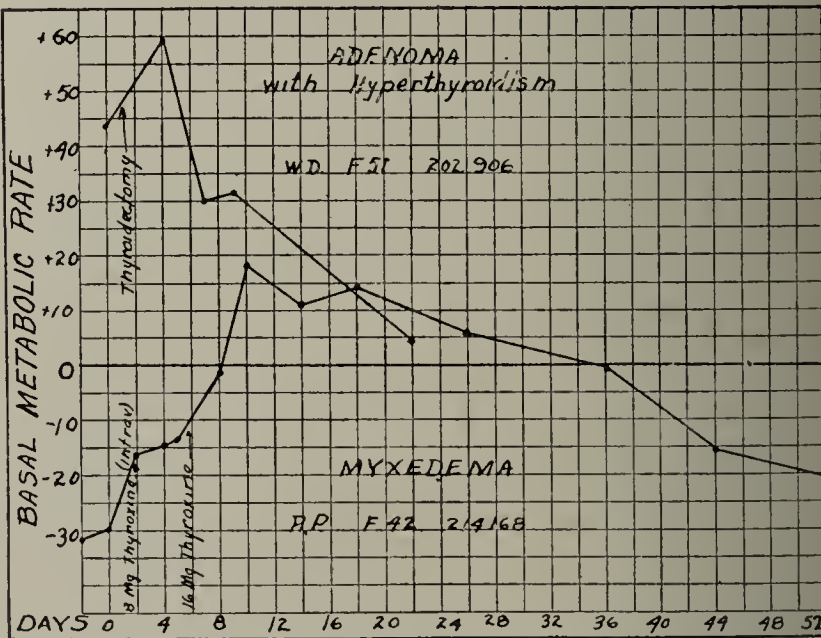


Chart 1.—On the upper curve the basal metabolic rates of a patient having adenoma with hyperthyroidism are plotted showing the original preoperative rate and the immediate postoperative rise in the metabolic rate, followed by the drop to normal after partial thyroidectomy. The lower curve illustrates the effect on the metabolic rate of a myxedematous patient of two intravenous injections of 8 and 16 mg. of thyroxin, from which can be calculated the amount of thyroxin needed to bring such a patient to a normal metabolic rate; and therefore the presumable amount of thyroxin in the body, and also the rate at which the thyroxin is destroyed or eliminated.

quantity of thyroxin in the body, thus explaining the characteristic and fundamental alterations in the basal metabolic rate found in hyperthyroidism and in hypothyroidism.

However, other factors than the quantity of thyroxin in the tissues may exist which play a part in the maintenance of the normal basal metabolic rate and influence its abnormal fluctuations, especially of a temporary nature. Removal of the suprarenals has been shown by Aub⁴ to cause a decrease in the basal metabolic rate, which may be brought back to normal by the slow intravenous injection of suprarenal extract, at the rate stated by Stewart and Rogoff to be the normal output in the body. Conversely, Boothby and Sandiford⁵ have shown that epinephrin possesses a calorogenetic action in man when injected subcutaneously (0.5 c.c. of 1:1,000). However, the evidence is not yet conclusive that the suprarenal glands are concerned with the normal rate of resting cellular com-

bustion in the sense that it acts as a calorogenetic agent. There are certain other diseases in which very occasionally an increased basal metabolic rate has been found; the cause of the increased heat production in these instances is not known.

TABLE 3.—DURATION OF GOITER IN ADENOMA WITH AND WITHOUT HYPERTHYROIDISM AND IN EXOPHTHALMIC GOITER (1,656 CASES)

Duration, Years	Exophthalmic Goiter, per Cent.	Adenoma	
		With Hyperthyroidism, per Cent.	Without Hyperthyroidism, per Cent.
From 0 to 0.9.....	42		
From 1 to 1.9.....	15		
From 2 to 2.9.....	9.75	17	10
From 3 to 3.9.....	6		
From 4 to 4.9.....	3		
From 5 to 9.9.....	11	14	18
From 10 to 14.9.....	4	13	17
From 15 to 19.9.....	4	13	18
From 20+.....	5	43	37
Average duration, years	4.2	18	15.7

TABLE 2.—STATISTICAL STUDY OF 1,656 CASES OF GOITER*

	Adenoma		Exophthalmic Goiter		
	Non-Toxic	Toxic	Two Ligations, Rest and Thyroid-ectomy	One Ligation, Thyroid-ectomy	Thyroid-ectomy
Number of cases studied....	254	366	341	275	420
Age.....	44	48	37	38	36
Duration goiter, years.....	15.7	18.0	3.4	3.9	5.0
Age at onset of goiter.....	28	30	34	34	31
Duration symptoms, years..	...	1.8†	1.6	1.5	1.3
Age at onset of symptoms..	...	46	35	37	35
Cardiac decompensation:					
Positive.....	7.3%	46%	54%	48%	24%
Probable.....	10%	10%	9%	5%	7%
Exophthalmos.....	2%‡	3%‡	67%	65%	51%
Thrills.....	4%	5%	63%	58%	39%
Fruit.....	12%	12%	87%	86%	67%
Weight, pathologic specimen, gm.....	187	152	59	55	51
Glycosuria.....	1%	2%	1.4%	1%	1%
Blood pressure:					
Systolic (floor)§.....	141	158	150	146	141
Diastolic (floor).....	85	86	75	74	77
Pulse pressure (floor)....	56	72	75	72	64
Pulse rate (floor).....	91	107	125	121	113
Basal metabolic rate.....	+2%	+30%	+65%	+53%	+33%
Clinical diagnosis correct**..	98%	88%	99%	98%	97%

* Differential diagnosis of adenoma without hyperthyroidism (nontoxic adenoma), adenoma with hyperthyroidism (toxic adenoma), and exophthalmic goiter. The cases of exophthalmic goiter are divided into three groups depending on the surgical treatment: (1) two ligations, two to three months' rest at home and thyroidectomy, (2) one superior pole ligation followed by thyroidectomy and (3) primary thyroidectomy.

† 1.8 represents the average duration since the onset of definite symptoms; however, it is possible to elicit a history of possible duration of 3.2 years, and in this respect differs from exophthalmic goiter which has a much clearer cut onset.

‡ The exophthalmos was only slight in these cases; never more than degree 1 on a scale of 4 and corresponds to that so frequently seen in certain types of nephritis.

§ The blood pressures and pulse rate were those obtained at the time of the clinical examination with the patient sitting.

** Accepting the report of the Section on Surgical Pathology made by fresh frozen section examination at the time of operation as correct, the previous clinical diagnosis was found to correspond as indicated. The close agreement between the pathologist's diagnosis of adenoma on the one hand and diffuse parenchymatous hypertrophy (exophthalmic goiter) on the other hand and the respective clinical diagnoses is very striking; the pathologist, however, cannot distinguish adenomas that produce hyperthyroidism from those that do not.

bustion, or that they are the primary cause of abnormal rates of any definite clinical syndrome, notwithstanding the fact that decreased rates have been reported in Addison's disease and following experimental suprarenalectomy.

The possible increased basal metabolic rate in active acromegaly, and the decreased rate in the syndrome known as hypopituitarism, suggest that alterations in the activity of the pituitary gland may change the metabolic level. There is, however, as yet little evidence that the secretion of any part of the pituitary gland is concerned with the normal rate of cellular com-

At this meeting Du Bois has shown that the increase in the basal metabolic rate accompanying febrile diseases follows Van't Hoff's law of the velocity of chemical reactions with temperature changes; it is about doubled for an increase of 10 degrees C.

A decrease in the basal metabolic rate is characteristic of myxedema and is due to the inability of the thyroid gland to supply a sufficient amount of thyroxin. A lowered basal metabolic rate has been consistently found in experiments in prolonged fasting, and in clinical conditions of inanition in which the food supply is decreased over a long period (stricture of the esophagus, cardiospasm, anorexia nervosa, etc.); the mechanism producing this decreased rate is not known, yet it seems quite probable that it may be a compensatory slowing down of the life processes in an endeavor on the part of the organism to prolong life on a minimum utilization of its stored food, and that

TABLE 4.—AGE AND OCCURRENCE OF ADENOMA WITH AND WITHOUT HYPERTHYROIDISM AND EXOPHTHALMIC GOITER

Age	Percentage of Patients by Decades Having Hyperthyroidism Caused by (1) Adenoma or (2) Exophthalmic Goiter			Percentage of Cases in Each Decade of (1) Adenoma Without Hyperthyroidism, (2) Adenoma With Hyperthyroidism, (3) Exophthalmic Goiter		
	Number of Cases	Adenoma Toxic	Exophthalmic Goiter	Adenoma Nontoxic	Adenoma Toxic	Exophthalmic Goiter
From 0 to 9	1	0%	100%	0%	0%	1%
From 10 to 19	59	8%	92%	1.5%	1%	5%
From 20 to 29	280	10%	90%	8%	8%	24%
From 30 to 39	374	13%	87%	24%	13%	31%
Below 40.....	714	....	....	33%	22%	61%
From 40 to 49	358	30%	70%	33%	29%	24%
From 50 to 59	253	46%	54%	27%	32%	13%
From 60 to 69	75	77%	23%	6%	16%	2%
From 70 to 79	2	100%	0%	0.5%	1%	0%
Above 40.....	688	....	....	67%	78%	39%
No. cases.....	1,402	366	1,036	254	366	1,036
Aver. age.....	.....	48	37	44	48	37

the thyroid gland itself takes part in this decreased compensatory process, with a consequent reduction in the amount of thyroxin acting as a catalyst.

UNSTABLE FOUNDATION OF ENDOCRINOLOGY

While we recognize that there is a biologic interdependence not only of every organ but of every cell in

4. Aub, J. C.; Forman, J., and Bright, E. M.: The Effect of Adrenalectomy Upon the Total Metabolism of the Cat, *Am. J. Physiol.* 55: 293, 1921.

5. Boothby, W. M., and Sandiford, Irene: The Relationship of the Increase in Blood Sugar Concentration to the Specific Dynamic Action of Glucose and to the Specific Dynamic Action of Adrenaline, *Am. J. Physiol.* 55: 293-294, 1921.

the body, nevertheless we are able to measure quantitatively only the calorogenetic power of the active principle of the thyroid gland; consequently we deprecate the tendency so much in evidence in current literature to parcel out to each ductless gland a certain definite yet entirely hypothetic power, and to build on such an unstable foundation the mammoth superstructure expressed in the term endocrinology.

ADENOMA WITH HYPERTHYROIDISM

Plummer² has shown that pure hyperthyroidism can be produced in a person by the administration of an excess of thyroxin, and that the syndrome thus produced cannot be distinguished from that caused by an overactive adenoma of the thyroid gland. In each case, either the discontinuance of the thyroxin or the operative removal of the adenoma ends the syndrome, and the patient rapidly returns to a normal condition, with a normal basal metabolic rate (Table 5). The characteristic symptoms of adenoma with hyperthyroidism are those that can be predicted from a knowledge of physiologic effects produced by a prolonged increase in the rate of cellular combustion; consequently, for many years Plummer⁶ has spoken of the overfunctioning adenoma of the thyroid as "adenoma

in exophthalmic goiter and in adenoma with hyperthyroidism has been proved beyond reasonable doubt by Plummer,⁷ by the difference in the mode of onset of the two diseases, the clinical course and duration of the symptoms, the physical findings, and, finally, the difference in the pathology of the thyroid gland. The differential points in the two diseases are strikingly shown in Tables 2, 3 and 4. To account for these differences, the most probable hypothesis is that in exophthalmic goiter, not only are the thyroid cells producing an excess of thyroid hormone, but also the secretion so formed has some abnormal and peculiar chemical properties that produce the symptoms that differentiate it from pure hyperthyroidism. Kendall¹ has suggested that probably there is, in exophthalmic goiter, a slight alteration in the structure of the thyroxin molecule.

The delay in the recognition of adenoma with hyperthyroidism as a disease distinct from exophthalmic goiter has been due in part to the fact that it was not at first recognized that small isolated areas of hypertrophic cells, such as may be found in some adenomatous thyroids, do not produce the clinical syndrome of exophthalmic goiter and, conversely, that diffuse parenchymatous hypertrophy may develop in a gland in which adenomatous tumors are incidentally present.

TABLE 5.—EFFECT OF OPERATIVE TREATMENT ON 284 CASES OF EXOPHTHALMIC GOITER AND ADENOMA

	Exophthalmic Goiter						Adenoma					
	Two Ligations, at Home and Thyroidectomy				One Ligation and Thyroidectomy		Primary Thyroidectomy		With Hyperthyroidism		Without Hyperthyroidism	
	Before Treatment	Ten Days After Ligation	After Second Months' Rest	After Thyroidectomy	Before Treatment	Ten Days After First Ligation	Before Treatment	After Thyroidectomy	Before Treatment	After Thyroidectomy	Before Treatment	After Thyroidectomy
	+68%	+51%	+43%	+20%	+60%	+39%	+36%	+8%	+35%	+6%	-3%	-9%
B. M. R.	139	132	131	125	137	126	133	122	145	133	115	115
Systolic blood pressure...	75	72	72	75	71	66	73	73	81	78	74	70
Diastolic blood pressure...	64	60	59	50	66	60	60	49	64	55	41	45
Pulse pressure.....	122	114	108	93	116	106	107	86	102	79	74	73
Pulse rate.....	52.3	48.0	56.6	56.3	52.8	49.7	53.3	52.9				
Weight.....												
No. cases in each group....	55				42		72		92		23	

with hyperthyroidism," and has recognized the disease as a clinical entity with a characteristic course and symptoms. In this condition, the thyroid gland presents, on pathologic examination, discrete, single or multiple nodular adenomatous tumors in various stages of degeneration, surrounded by a definite capsule.

EXOPHTHALMIC GOITER

Until recently, adenoma with hyperthyroidism has been confused with exophthalmic goiter, which is another pathologic condition of the thyroid gland, consisting of diffuse parenchymatous hypertrophy, symmetrically involving the entire gland. Clinically, exophthalmic goiter, like adenoma with hyperthyroidism, is characterized by an increased basal metabolic rate and, therefore, both diseases have in common the symptoms due to the increased rate. However, exophthalmic goiter has a different clinical course from adenoma with hyperthyroidism, and, in addition, certain peculiar and characteristic symptoms, one or more of which are present in varying degrees, such as exophthalmos, thrills and bruit, tendency to gastrointestinal crises, and a peculiar type of nervousness. That we are dealing with two entirely distinct diseases

OPERATIVE PROCEDURE IN THE TWO DISEASES

Aside from the academic interest in differentiating adenoma with hyperthyroidism and exophthalmic goiter, the correct diagnosis is of great clinical importance because the times of onset, duration, course and outcome are different; furthermore, the operative program is not the same in these two diseases. In adenoma with hyperthyroidism, the operation is directed to the removal of the tumor, while in exophthalmic goiter the surgical procedures are planned to reduce, in the severer cases, the overactivity of the diffuse parenchymatous hypertrophied thyroid by successive steps: first, hot water injection, second, one or more ligations, and, finally, one or more partial thyroidectomies. In adenoma with hyperthyroidism, preliminary ligation of the blood vessels is seldom of benefit even in the severe cases, while in exophthalmic goiter the benefit from ligation is usually quite marked. Simple enucleation of the adenoma is almost invariably sufficient to cure the patient suffering from adenoma with hyperthyroidism; on the other hand, extensive resection of the greater part of both lobes and the isthmus is necessary to reduce the activity of the hypertrophic parenchymatous thyroid of exophthalmic goiter within normal limits, and not infrequently a second and

6. Plummer, H. S.: The Clinical and Pathologic Relationship of Hyperplastic and Nonhyperplastic Goiter, J. A. M. A. **61**: 650-651 (Aug. 30) 1913.

7. Plummer, H. S.: The Clinical and Pathologic Relationship of Simple and Exophthalmic Goiter, Am. J. M. Sc. **146**: 790-796, 1913.

occasionally a third resection are necessary before the intensity of the intoxication is brought within the bounds of safety. The effect of operative treatment is illustrated in Table 5.

It is well known that the course of exophthalmic goiter proceeds in cycles of intensity with intervening periods of partial and occasionally total remission. Experience has shown that the dangers of any operative interference during the rising curve of intensity and at the peak, especially if associated with gastrointestinal crises and loss of weight, are greater than during the stage of improvement. The curve of the basal metabolic rate in conjunction with the loss or gain in body weight of the patient are valuable mathematical expressions of the intensity and phase of the intoxication cycle. We have been unable to prove that the roentgen ray definitely influences the natural course of exophthalmic goiter.

DIAGNOSTIC VALUE OF BASAL METABOLIC RATE

Accepting the definition of hyperthyroidism as a clinical syndrome resulting from the presence in the body of an excess of thyroxin which increases the rate of heat formation, and the conception that the basal metabolic rate serves as a fundamental classification of disease,⁸ it is obvious that a very sharp distinction can be drawn between mild cases of exophthalmic goiter, and those conditions known as "effort syndrome," "disordered action of the heart," "cardiac neurosis," "nervous instability," "neurocirculatory asthenia" or "neurasthenia," which on superficial examination present some of the signs and symptoms of mild exophthalmic goiter, but in which the basal metabolic rate is normal, and which on close analysis can be shown not to be dependent on an excess in the body of the thyroid hormone. The basal metabolic rate is of particular diagnostic value in these cases when they are accompanied, apparently without causal relationship, by a colloid enlargement of the thyroid gland, as so often occurs in the regions of the endemic goiter.

VALUE OF VARIOUS TESTS

Confusion in the differential diagnosis of functional neurasthenia from mild exophthalmic goiter and adenoma with hyperthyroidism has been increased during the last few years by the revival of the epinephrin hypersensitive test in a new guise by Goetsch.⁹ A series of studies by Peabody¹⁰ and his associates, and similar studies from our laboratory,¹¹ have shown that there is no correlation between the intensity of the epinephrin reaction and the degree of hyperthyroidism as controlled by simultaneous studies of the basal metabolic rate; also, that the so called "positive"

epinephrin reaction is present in a large percentage of cases that are not hyperthyroid, and even occasionally in patients with myxedema. Studies on the action of epinephrin by Boothby and Sandiford¹² show that there is not sufficient physiologic basis for the assumption that the reaction to the subcutaneous injection of an active principle of the suprarenal gland is indicative in clinical medicine of activity of the thyroid gland. The blood sugar curves as shown in Chart 2, following the ingestion of 100 gm. of glucose, have not been sufficiently consistent in the different types of cases studied by us to be of diagnostic value, in spite of the fact that high and prolonged curves were more frequently found in patients with hyperthyroidism than in those with hypothyroidism.

CONCLUSIONS

The basal metabolic rate, which is a determination of the heat production in a person under standard conditions, serves as a measurement of the most fundamental process of life itself. Variations of the heat production, and alterations in the body temperature are

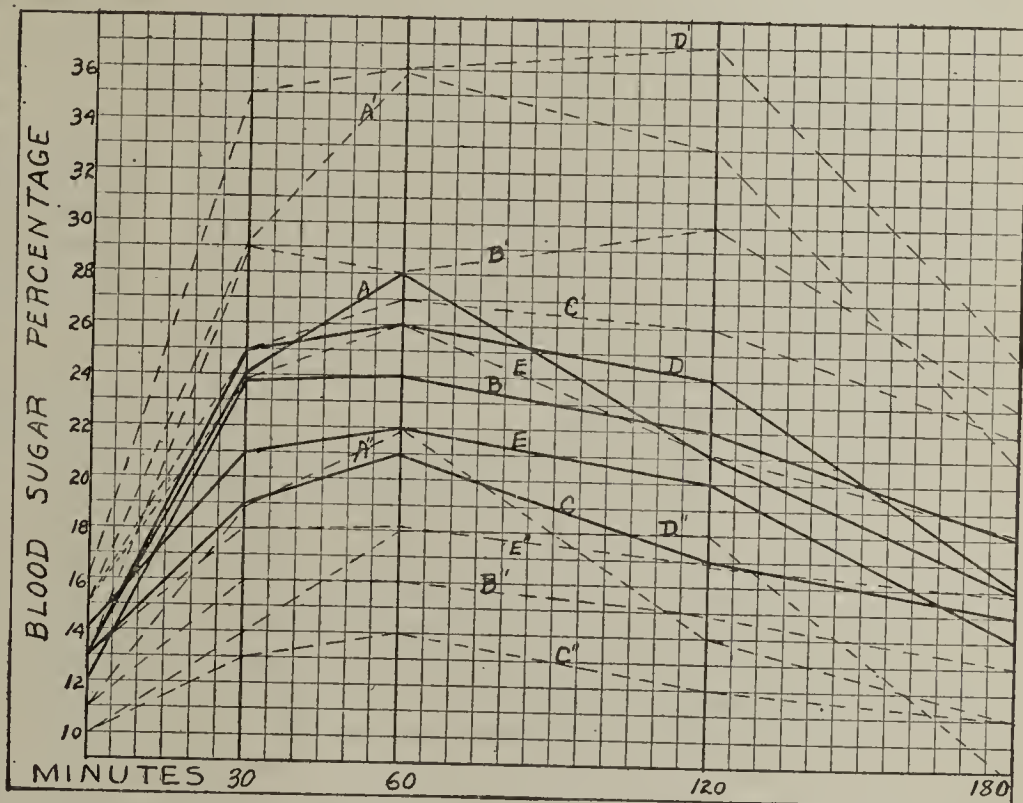


Chart 2.—The heavy black lines represent the average blood sugar curves following the ingestion of 100 gm. of glucose in patients having various basal metabolic rates; the dotted lines represent the upper and lower limits of each group. A, A' and A'', average upper and lower limits for seven cases with basal metabolic rates between +4 and +59 per cent.; B, B' and B'', six cases between +11 and +39 per cent.; C, C' and C'', ten cases between -40 and -11 per cent.; D, D' and D'', sixteen cases above +60 per cent.; E, E' and E'', four cases between -10 and +10 per cent.

to be considered rightly a means of fundamental disease classification, and the basal metabolic rate serves as an accurate diagnostic aid in the recognition of the presence or absence of hyperthyroidism.

12. Boothby, W. M., and Sandiford, Irene: The Effect of the Subcutaneous Injection of Adrenalin Chlorid on the Heat Production, Blood Pressure and Pulse Rate in Man, *Am. J. Physiol.* 51: 200-201, 1920.

Success in Health Work.—The master key to the door of success in the public health business is *work*. The health officer who consistently works hard will often succeed in much higher degree than the health officer of greater attainments who does not work so hard. Do not be discouraged if your efforts do not result in the establishment of perfect conditions. Get the best results you can and strive for more and better. Be practical; use common sense.—L. L. Lumsden, "Rural Hygiene," *Public Health Rep.*, Nov. 7, 1919.

8. Boothby, W. M.: The Fundamental Classification of Disease by the Basal Metabolic Rate, *J. A. M. A.* 76: 84 (Jan. 8) 1921.

9. Goetsch, E.: Studies on Disorders of the Thyroid Gland: Hyper-sensitiveness Test with Especial Reference to "Diffuse Adenomatosis" of the Thyroid Gland, *Endocrinology* 4: 389-402 (July-Sept.) 1920.

10. Peabody, F. W.; Sturgis, C. C.; Tompkins, E. H., and Wearn, J. T.: Epinephrin Hypersensitiveness and Its Relation to Hyperthyroidism, *Am. J. M. Sc.* 161: 508-517, 1921.

11. Boothby, W. M.: Adenoma of the Thyroid with Hyperthyroidism (Thyrototoxic Adenoma), History of the Recognition of This Disease as a Clinical Entity: A Study of the Symptomatology with Basal Metabolic Rates, *Endocrinology* 5: 1-20 (Jan.) 1921.

THE OMISSION OF DRAINAGE FOLLOWING CHOLECYSTECTOMY*

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In proposing, as a routine procedure, the omission of peritoneal drainage following uncomplicated cholecystectomy, a deviation from the standardized technic that the majority of surgeons are as yet unprepared to accept as safe, I wish to make no pretense at the introduction of a new or original idea. Rather is the chief purpose of this paper to point out that the peritoneal toilet commonly used at the conclusion of the operation is not altogether abreast that used elsewhere in the abdomen.

In reviewing the literature, one is impressed by the fact that fifteen or twenty years ago there were numerous contributions by well known men advocating the procedure. Witzel,¹ in 1905, reported a series of 500 cases, in which he closed the peritoneum, with one death, the cause of which was not given. Witzel, unlike many of the men in the earlier days of gallbladder surgery, who made a tight closure, was fully cognizant of the dangers, the chief of which he considered post-operative biliary leakage. To prevent this accident, by means of "the finest Lembert suture," the stump of the cystic duct was whipped over and over, pulling the stump in toward the common duct. The raw surface of the liver and the stump were then peritonealized. "As in ovariectomy, then in appendectomy, and then in cholecystectomy, the technic of the care of the stump is so developed that its burial beneath a smooth peritoneal surface can be followed."

In 1904, Mayo Robson,² in his monograph "Diseases of the Gallbladder and Ducts," remarked: "Unless there be oozing, or unless the wound has been infected by pus or gallbladder secretion, drainage may perhaps be thought unnecessary." Robson was unwilling unreservedly to recommend the method. Similarly Moynihan,³ in his work "Gallstones and Their Treatment," published in 1905, states, "If inflammatory changes are limited to the gallbladder, drainage need not be provided, the whole abdominal wall being soundly closed." In one of his later works,⁴ however, while expressing the same opinion concerning drainage, or rather its omission, he describes his routine practice of placing a rubber tube in contact with the stump of the cystic duct.

Goldmann,⁵ in 1912, in an article based on the work of Rotter's clinic, not only unreservedly advocated closure in the "simple cases," but denounced the indiscriminate use of peritoneal drainage when it did more harm than good. Goldmann reported ninety-five cholecystectomies closed without peritoneal drainage, with one death. The cause of this death was wound erysipelas; necropsy eliminated the possibility of abdominal accident. In this series were three acute cases in each of which there was a gangrenous patch on the free bor-

der of the gallbladder; in two cases, there was perforation of the free surface. He recommended closure in empyema and called attention to the inefficacy of drainage in a diffuse spreading reaction. In one of the earlier cases, there occurred an abscess due, as he states, to the fact that he "had not learned his indications." Like Witzel, Rotter considered a special technic in handling the stump of the cystic duct necessary to avoid its reopening. This consisted of two ligatures, one just above the common duct, and one at the point of severance of the gallbladder. The doubly ligated duct was then kinked on itself, the distal ligature being used to maintain the kinked position by tying the end of the duct to its base. The stump was then buried retroperitoneally. When such peritonealization was not possible, drainage was considered necessary. "The rapid convalescence was a joy to watch."

Rotter,⁶ defending his position against the adverse criticism of Kehr, drew the analogy of the inverted stump of the appendix, and quoted the experiences of Riedel, Witzel, Hoffmeister and others. Riedel considered "tamponade" not only useless, but harmful.

This unreserved stand in favor of the omission of drainage has not had so prominent a place in our own literature until quite recently, and then by only two men, Richter and Willis. While there seems to be a growing tendency in this direction, the rubber tube or cigaret drain, placed in close proximity to the stump of the cystic duct, still finds the greatest favor, the assumption being that although the need for drainage is infrequent, either of these two drains serves to prevent accidental leakage of bile into the peritoneum.

In 1917, Willis⁷ reported thirty-eight cases in which he closed the peritoneum. Willis began omitting drainage because of the infrequency with which postoperative biliary leakage occurred when drains were inserted, and so he came to the conclusion that cases that were benefited by drainage were extremely rare. "A shortened and more comfortable convalescence, and a larger proportion of patients obtaining more permanent relief" were his observations on his cases. In some subsequent experimental work, Willis⁸ called attention to the extensive crippling adhesions produced by bile in the peritoneum, and suggested that in the doubtful cases cholecystectomy without preliminary exploration of the gallbladder be performed, avoiding both the biliary soiling and the necessity for drainage. When he has spilled bile, he merely flushes the peritoneum with salt solution and then aspirates the fluid with an electric aspirator.

Bottomley,⁹ in a recent communication, called attention to the desirability of dispensing with drainage in a large number of cholecystectomies, and of providing others with drainage for a shorter time, from twenty-four to thirty-six hours. Oozing and contamination of the field with the contents of an infected gallbladder are taken as indications for drainage for a short time.

C. H. Mayo¹⁰ recently stated, "More and more I am closing the abdomen without drainage, in only a few instances satisfying my old inclination to drain by leaving the double strand of catgut attached to the liver

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

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3. Moynihan, Berkeley: Gallstones and Their Surgical Treatment, Ed. 2, Philadelphia, W. B. Saunders Company, 1905.

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5. Goldmann, A.: Ueber den Verschluss der Bauchhöhle nach der einfachen Cholecystectomie, Berl. klin. Wchnschr. **49**: 1649, 1912.

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8. Willis, A. M.: The Advantage of Cholecystectomy in the Avoidance of Adhesions in Gallbladder Surgery, Ann. Surg. **66**: 411 (Oct.) 1917.

9. Bottomley, J. T.: The Question of Drainage in Cholecystectomy, Boston M. & S. J. **183**: 232 (Aug. 19) 1920.

10. Mayo, C. H.: Cholecystectomy with Modified Drainage, Minnesota Med. **4**: 1 (Jan.) 1921.

where the fundus was separated from it and continued in a suture down to the cystic duct. This catgut is brought out of the abdomen, but the abdomen (peritoneum, muscle, fascia, skin) is closed tightly around it." In this connection, a modified type of drainage suggested by Doyen¹¹ is interesting. Doyen suggested that the peritoneal sheath of the gallbladder be sutured to the abdominal wall, a marsupialization, thus making the entire operative field extraperitoneal. A glass tube is left in the abdominal wall down to the sheath.

My own experience with the method dates back to the technic H. M. Richter instituted in his clinic in Wesley Memorial Hospital in 1916. In his clinic during the last seven or eight years, he (Richter) has laid special emphasis on the harm done by unnecessary drainage of the peritoneum, particularly in perforated duodenal ulcer¹² and following cholecystectomy.¹³

In 1916, following the removal of a gallbladder for stones, Richter phenolized the cystic duct stump, much in the fashion that we formerly treated the stump of the appendix. This patient and the patients in several subsequent cases so treated made uneventful recoveries. Then believing that the phenol was unnecessary, we iodized the stump in a few cases only later to abandon the use of any antiseptic on the stump as needless.

NECESSITY FOR PRECAUTION

It is recognized, however, that certain dangers other than operative accidents complicate the operation of cholecystectomy. Therefore, in proposing a method, the very application of which may, on theoretical grounds, appear to court the gravest of these dangers, the surgeon must proceed along fundamentally well grounded lines.

First, it may be said that the peritoneum may be exposed to the possibility of infection from the stump of the cystic duct, or occasionally from the gallbladder, in which a preliminary exploratory incision has been made. Second, there may be postoperative biliary leakage from the stump of the cystic duct. Third, there may be a dangerous amount of bleeding from the raw surface of the liver. Fourth, there may be biliary leakage from the gallbladder bed. In view of these possibilities, therefore, most men institute peritoneal drainage as a routine procedure, the type and amount of drainage varying with the individual operator, some using a gauze tampon, others using a small rubber tube or cigaret drain. It is a common practice to secure the drain in such a way as to hold it in close contact with the stump of the cystic duct.

In the usual cholecystectomy in which the gallbladder is unopened, peritoneal soiling is certainly very slight, and I believe that the majority of surgeons would be more inclined to remove a doubtful organ than make an exploratory incision as a preliminary to removal. But even in such an event, the peritoneum can adequately be protected by packs. The infection of the usual chronically infected gallbladder in which cholecystectomy is indicated is of a low grade. Diffuse peritonitis from such a source need not be feared. We do not regard the spilling of bile during the course of the operation as an indication to drain. Furthermore, Richter has, on several occasions, spilled bile and pus, and then tightly closed the peritoneum without untoward results, feeling that it is the continuous reinfec-

tion rather than a single soiling that is dangerous. The mucous membrane of the duct in the chronic cases is likewise benign from a bacteriologic standpoint. Bacteriologic smears made from the stump of the cystic duct show an average of an occasional organism or two per field. The actual amount of the mucous membrane that is exposed is very small, and surely much less than that of a ligated appendiceal stump which we know may be left uninvaginated in the peritoneal cavity with impunity.

The postoperative escape of a quantity of infected bile within the peritoneum might easily result fatally. It occasionally happens, following gallbladder removal when drainage has been used, that there is a variable amount of biliary leakage along the drain, and it has frequently been pointed out that such leakage may first make its appearance several days after operation. The fact that such leakage may only occasionally occur has been used as an argument against the routine omission of drainage, even in the simple cases, a most valid argument if the same tendency to leakage is present when the drain is omitted.

It seems most probable, too, that postoperative biliary leakage in these cases must be due to the contact between the drain and the stump of the cystic duct. It is a common practice to use the ligature with which the duct has been ligated, as a means of holding the end of the drain in close contact with the stump of the duct. The infection introduced by the drain is most likely responsible for the failure of the cut surface to heal. The analogy may be found in a suture line in the bowel which may be endangered by the close contact of the drain. I have called attention to the fact that numerous men have suggested various types of special attention to the stump of the duct to prevent its reopening, such as double ligating, or double ligating and angulating the duct sharply on itself and also burial of the stump behind the peritoneum.

TECHNIC

In the technic suggested by Richter, a very fine catgut is used, a No. 1, or, if the No. 0 has sufficient strength to prevent its breaking, we prefer that. The pressure in the common duct amounts to from 200 to 500 mm. of water, very much less than the blood pressure of the average individual. There is no need, therefore, in order to insure permanent closure of the duct, to use a ligature heavier than that which would be more than ample for the carotid or the femoral artery. Extra heavy catgut, kangaroo tendon, or heavy nonabsorbable material, such as braided silk or linen, carries with it the objections that characterize the use of foreign material in an infected field. We use a single ligature, which, tied with sufficient force to obliterate the lumen, probably does not function more than a few hours. As yet we have not had to reopen an abdomen for an accumulation of bile. The peritoneal coat is then enabled to seal the duct.

We do not "peritonealize," a phrase of technic given a prominent place in the literature of the subject. This peritonealization consists essentially in suturing the serous flaps over the gallbladder bed and in placing the stump of the cystic duct behind the peritoneum. In a recent contribution, Richter,¹⁴ reviewing the work of Willis, referred to this peritonealization recommended by Willis as constituting a "peculiar basic error." Basing his practice on the well known capacity of the

11. Doyen, E. L.: *Surgical Therapeutics and Operative Technique*, New York, William Wood & Co., 1918.

12. Richter, H. M.: *Perforated and Duodenal Ulcers*, Surg., Gynec. & Obst., **28**: 399 (April) 1919.

13. Richter, H. M.: *Surg., Gynec. & Obst.* **29**: 455 (Nov.) 1919.

14. Richter, H. M.: *Surgery of the Gall Tracts Without External Drainage*, Illinois M. J. **39**: 256 (May) 1921.

peritoneum for limiting the spread of infection, he (Richter) has felt that the stump can, with far greater safety, be trusted to the peritoneum than to the retroperitoneal tissues where infection usually tends to spread to the proportions of a cellulitis. That the stump can with impunity be so treated, only the more surely proves how nearly free from organisms the mucosa must be, and how little must be the tendency to reopen. It seems to me that nothing more clearly emphasizes this point than the fact that the greatest factor of success in intestinal surgery is the peritoneum.

Persistent bleeding from the gallbladder bed is of rare occurrence except in jaundiced patients. In the removal of the gallbladder, we begin at the fundus, incising the peritoneal reflection and freeing the gallbladder from the liver by gentle blunt dissection with the finger. A pack is held by an assistant against the raw surface as the gallbladder is stripped away, and usually by the time the artery and duct have been ligated and cut, the oozing has stopped. I believe that spending an extra few minutes for the purpose of so controlling hemorrhage is time well spent if it will avoid the necessity of leaving a pack in the peritoneum. When, however, such bleeding is excessive, or when it fails to subside within a reasonable length of time, it demands the factor of safety offered by a gauze pack.

Leakage of bile from the raw surface of the liver is not common. It has not been necessary in our experience to drain because of such occurrence. Following the method of hemostasis suggested, the raw surface is absolutely dry. We do not attempt to do anything with the raw surface of the liver.

EXPERIMENTAL STUDIES

With the purpose of studying the effect of drainage in experimental animals, during the last few months, I have performed forty cholecystectomies on dogs, in each case removing a normal gallbladder. In the first twenty-five dogs, following the typical operation, the stump of the cystic duct was ligated with a No. 1 catgut. The ligature, left sufficiently long, in each case was used to keep the drain in contact with the stump of the cystic duct by means of a suture. In the first eight, cigaret drains were used; in twelve, rubber tubing having an outside diameter of one-fourth inch or a little more, was used. In five, a strip of dry gauze was inserted with the tube down to the stump of the duct. In the series, one dog died immediately after operation; a second died of peritonitis, and a third tore open his wound and had to be killed. There were several other wound infections.

The animals were carefully watched for a week or more for evidence of postoperative biliary leakage. To supplement inspection, the drains were removed after four to six days and tested chemically for bile. None was found.

In a second series, ten dogs were drained with rubber tubing after the duct had been ligated with heavy linen or silk. My purpose here was to determine whether nonabsorbable material would be more frequently followed by leakage than catgut. In five animals, a tight closure was made. In none of the second series was there leakage.

A characteristic feature at necropsy was the extensive adhesions in the upper abdomen, in spite of the fact that a relatively small incision was made and the minimum of peritoneal trauma was inflicted. This,

of course, our clinical experience with secondary operations on the gall tracts verifies. The five controlled animals showed adhesions also, but they were fewer in number and not so heavy.

It may be argued here that the analogy with the human in whom cholecystitis is present is not exact, because of the absence of infection, but observation of the drain tract after removal of the drain makes me believe that the conditions about the stump of the duct are essentially the same. Positive deductions cannot, of course, be made from such a small series of experiments, yet, I believe that a ligated cystic duct within the peritoneum is almost absolutely safe. I had expected to produce occasional leakage, at least, in this work. Failing to do so, I am led to the conclusion that even under such unfavorable conditions as those introduced by the drain, namely, large foreign body and infection, the duct normally tends to heal.

It is necessary, of course, to remark that indications and contraindications for omitting peritoneal drainage must ever be present in the mind of the operator. When a cholecystectomy is complicated by other operative work on the gall tracts, for jaundice or cholangitis, conditions for omitting drainage would not be considered favorable, although we know that the drain functions but little, as far as the peritoneum is concerned. The necessity for biliary drainage carries with it the necessity for peritoneal drainage. Recently, Richter¹⁵ drew attention to the possibility of a safe closure of the common duct following choledochotomy, eliminating the need for both biliary and peritoneal drainage.

HARM FROM UNNECESSARY DRAINAGE

A discussion of this subject would not be complete without recounting the harm done by the unnecessary drainage in these simple cases. First of all, the postoperative convalescence of cases in which the abdomen has been closed is much easier, and more rapid. Postoperative pain, nausea, and other evidence of peritoneal reaction are reduced. There is no question but that the drain is responsible for most of this, and we are all familiar with the relief that comes with the removal of the drain. It occasionally happens that while the peritoneum may be closed, complete closure of the abdominal wall is not advisable because of the likelihood of an infected wound. In these cases, drainage of subcutaneous fat or fascia causes less discomfort than peritoneal drainage.

The incidence of postoperative hernia is, of course, reduced to a minimum by tight closure of the peritoneum, and hernia is by no means infrequent following drainage for operations on the gall tracts. The omission of drainage is by no means an absolute method of avoiding accidental wound infection, but such wound infection is no more frequent than in any other clean abdominal wound.

Lastly, a word about peritoneal adhesions. The futility of corrective operative procedures aimed at the removal of adhesions is a matter of common knowledge. That dense and crippling adhesions out of all proportion to the original disturbance occur is also quite generally admitted. I believe it not unlikely, that as we continue in an increasing number of cases to avoid peritoneal drainage, the number of cases presenting recurring or continued distress will diminish.

104 South Michigan Avenue.

15. Richter, H. M., and Buchbinder, J. R.: The Omission of Drainage in Common Duct Surgery, *J. A. M. A.* 73:1750 (Dec. 6) 1919.

ABSTRACT OF DISCUSSION

DR. JOHN L. YATES, Milwaukee: A satisfactory solution of the question of drainage after cholecystectomy can be found in a consideration of the postoperative intraperitoneal reactions. Removal of a gallbladder by the usual technic leaves a portion of the liver surface denuded of its capsule. This denuded area will secrete bile until it is covered with an impermeable layer of fibrin. Fibrin is deposited more rapidly in the presence of a foreign body, like a drain, than otherwise. Careful observation of the discharge in drained patients shows that bile is present for a day, often for two days. Bile is an irritant to the peritoneum and causes a profuse serous exudate and much more diffusion if undrained than if drained. No such thing as complete surgical asepsis is possible, and, moreover, innocent-looking gallbladders and ducts can contain virulent streptococci. The proposition is perfectly definite. Bile is going to be excreted into the peritoneal cavity from any denuded surface of the liver and produce a regional peritoneal irritation for a day or more. Bacteria, occasionally virulent bacteria, are found to be present within the zone of reaction. If a soft cigaret drain is placed so as to extend from the stump of the cystic duct up along the denuded liver and brought out through a lateral stab wound, much has been accomplished for the patient and little done that is disadvantageous. Most of the bile will be delivered outside the abdomen, the area of irritation will be restricted, and the total amount of peritoneal reaction will be reduced. If the drain is surrounded with omentum and removed early, the adhesions are not dense, are in effect parietal in location, and transient. Healing of the surgical incision is not affected so that the total disability, distress and danger are reduced by drainage used. No need to argue that the majority of people recover from cholecystectomy without drainage. The ninety-ninth and one hundredth patient are the ones to try to protect.

DR. JOHN T. BOTTOMLEY, Boston: We are not yet warranted in going on record as saying that all cases of even simple cholecystectomy may be closed without drainage, though I am sure a large proportion of them may be so closed. There is an unavoidable mortality with cholecystectomy, either with or without drainage. In the development and evolution of surgery of the abdomen the tendency has been away from drainage and toward nondrainage. Even in perforated duodenal and gastric ulcers, when the case reaches the surgeon early, there is no particular reason for drainage; yet not all such cases may be closed without drainage. Similarly, not all cases of simple cholecystectomy may be closed without drainage. There is no question that, when drainage is unnecessary or unindicated, it is harmful. I believe that much will be granted. When drainage is instituted in the gallbladder region, it certainly promotes the formation of adhesions and it increases the liability to postoperative hernia in a place where postoperative hernia is difficult to cure. The postoperative course in cases in which drainage has been omitted is far more comfortable than in the drained cases. Again, when you use a drain, there is always the chance of infection from without inward. On the other hand, Willis has proved by experiment that in cholecystectomies without drainage the formation of adhesions is almost negligible; we know that in the absence of drainage there is very little danger of postoperative hernia and no danger of infection from without. Forrest Martin took cultures from the cut end of the cystic duct before he cauterized it, and he frequently found colon bacilli and even streptococci; yet he did not hesitate to close the abdomen in such cases, and convalescence was uneventful. A few cases should be drained. I close without drainage from 60 to 65 per cent. of simple cholecystectomies, when the common duct is unobstructed; but in the remaining 35 or 40 per cent. I put in a drain for from twenty-four to thirty-six hours. In doubtful cases I still drain. A drain can be put in through a stab wound, can be started early and be taken out entirely in from twenty-four to forty-eight hours. I have yet to see any drainage of bile in the drained cases. The gist of the matter is that nondrainage of simple cholecystectomies can be car-

ried out in a very large proportion of cases, but it must be applied with common sense and judgment in the choice of cases.

DR. EDWIN BEER, New York: My inclination is to agree with Dr. Yates. Very few cases ending fatally are put on record. Fifteen years ago one of my assistants witnessed operations of this type in the clinic of one of the master surgeons of Berlin. The next day he saw three patients in the necrosy room with the abdomen full of bile. Nobody ever hears of the bad results, and no doubt bad results do happen from leakage in some cases which do not appear in the records. There is no doubt that you can tie off the cystic duct in simple cases without extensive leakage, but who can tell when leakage will occur? What is a properly performed cholecystectomy? It is removal of the gallbladder and exploration of the common duct. Everybody who palpates the common duct runs the risk of getting a swelling and increased tension in the biliary system which may cause leakage at the tied off biliary duct. The fundamental physiologic problems are altogether different.

DR. JOSEPH C. BLOODGOOD, Baltimore: It has been my rule not to drain after the removal of the gallbladder unless the common duct is opened. Then I have drained the common duct. Recently I have adopted Halsted's suggestion—close the opening in the common duct and drain with a small tube in the cystic duct. I have found drainage unnecessary after the removal of the gallbladder, except in a few cases, because I do not remove the gallbladder until I have demonstrated that the cystic duct can easily be exposed. In removing the gallbladder I divide its peritoneal coat some distance from the liver, separate the gallbladder subperitoneally until it is attached only by the cystic duct and artery. The artery is ligated separately with silk, the cystic duct with silk and chromic catgut. These ligatures do not include the peritoneal cuff which is stripped back. The cystic duct is divided with the cautery, and the peritoneal cuff is allowed to fall over the ligature, but is not sutured. These undrained cases have all done well. In a few cases drainage has been introduced, because in stripping the gallbladder from the liver oozing surfaces were unavoidably made. As a rule, I have drained with one piece of rubber dam, brought out of the outer lower angle of the wound when made through a lateral incision, or through a stab wound in the side, when the incision has been through the right rectus. In a few cases I have also used a piece of iodoform gauze because the wound of the liver exhibited a great deal of oozing. In my own cases I have never observed leakage of bile, nor postoperative hernia. In following up these cases, there is apparently no difference in the results between the drained and the undrained cases. I have no evidence that proper drainage adds to the risk of the operation, or to the occurrence of postoperative adhesions or of hernia. I am inclined to the opinion that when the operator is in doubt, drainage should be instituted. From a study of the literature and from personal communication I am inclined to the opinion that the danger of the removal of the gallbladder is not due to drainage, but to injury of the common duct, or removing the gallbladder when it is impossible, or difficult to ligate the cystic duct properly. If I should remove a gallbladder and feel that the cystic duct could not safely be occluded by ligature, I would follow Halsted's suggestion and introduce and suture a small tube into the cystic duct. This would prevent leakage of bile until the wound had healed. Leakage of bile due to the faulty ligature of the cystic duct is associated with more local peritonitis and, therefore, more postoperative adhesions and leads to the breaking down of the abdominal wound and postoperative hernia.

DR. JACOB R. BUCHBINDER, Chicago: It is, of course, impossible to complete the arguments pro and con. One must select one's cases. We cannot indiscriminately close the abdomen after every cholecystectomy, but, following the usual chronically infected gallbladder, when cholecystectomy has been done, we may close without drainage where infectivity is of low grade, and by closing without drainage we lessen the likelihood of biliary leakage. After a gauze pack has been held against the liver for twenty or thirty minutes, the liver surface is dry, although it is quite conceivable that a small

amount of postoperative biliary leakage from the liver may occur. We have surmised on the second or third day where a little postoperative rise in temperature had occurred that there had been some such leakage, but the amount of such leakage never struck us as being an item of danger. Concerning postoperative leakage from the duct: diffuse peritoneal infection from bile would be a serious complication, but this leakage of bile is certainly much more likely to occur if there is a foreign body near or in the vicinity of the cystic duct than if the peritoneum is left clean. In regard to suture and size of drain: There is no foreign body, no matter how bland or smooth, that can be put into the peritoneal cavity without exciting adhesions. Since the foreign body is apt to excite biliary leakage, drainage with a foreign body is bad. However, to drain is a source of discomfort, not a source of danger, but it helps to make a smooth postoperative course.

PARALYSIS IN CHILDREN DUE TO THE BITE OF WOOD-TICKS*

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Paralysis in children following the bite of wood-ticks, while not unknown to the medical profession, has not been sufficiently described in the medical literature accessible to American readers. As a result, most physicians are ignorant of the occurrence of this condition and, consequently, fail to consider this origin of paralysis when making their differential diagnoses.

HISTORY

In 1903, while I was making an examination of a woman, aged 22, suffering from an almost complete motor paralysis of the extremities; a large wood-tick was found in the skin at the tip of the spine. Immediately following its removal, improvement in the patient's condition began, continuing to complete recovery. At that time search of the available literature disclosed no reference to similar cases. In the last eleven years, ten cases of paralysis in children due to tick bites have come to my attention. A recent search of the literature regarding this disease has been productive of considerable information.

Borthwick,¹ in 1905, reported paralysis in sheep occurring over a large area of Cape Colony, which the sheep farmers had long recognized and attributed to the bite of a wood-tick. Temple,² in 1912, reported from eastern Oregon four cases of his own, and nine of other physicians, of acute ascending paralysis in children, from the same cause. Both of these are reported in condensed form by Nuttall.³ In 1912, Todd⁴ sent letters to physicians in British Columbia asking them if they had met with cases of illness which had been ascribed to tick bites. The object of his request was to ascertain if Rocky Mountain spotted fever, which was prevalent in Montana, and attributed to wood-ticks of a type found also in British Columbia, existed in western Canada. In the replies, nine cases of tick bites in children, followed by paresis, paralysis, and, in some cases, by death, were reported. In later articles, Todd⁵

reported two additional cases of this illness in children. He requested ticks from active cases for examination, and gave a review of the literature. Bishopp and King,⁶ in 1913, reported cases occurring in Montana, and at the same time Hadwen⁷ visited British Columbia to investigate the occurrence of paralysis in sheep in that district. During his visit, he found no paralyzed sheep but did find a large tick embedded in the back of one. This finding, together with his recollection of published cases of curious paralysis in children where ticks were found attached to the back, gave him the idea that the condition might be caused by tick bites. With ticks collected in this locality, he was able to produce the disease experimentally in sheep.⁸ Later a case of paralysis in a child was described by Strickland in Australia.⁹

ETIOLOGY

Adults are rarely affected, practically all cases reported being in children. Adults undoubtedly find the ticks easily and brush them off, which probably explains the lower adult morbidity. Many mothers in our vicinity who take their children to the lakes for the summer frequently examine the bodies of their children for ticks, and often their search is rewarded by finding them, usually in the scalp. The tick season may begin as early as February, and may last until August.

Southern British Columbia, eastern Washington and Oregon, Idaho and Montana are the usual localities. Cases are also reported from Cape Colony and Australia.

Among sheep it has been noted that it is the yearlings alone that become ill, older sheep having acquired an immunity. No record of second attacks in either man or animal has ever been found.

EXCITING ETIOLOGY

The wood-tick most commonly found is *Dermacentor venustus*, which is also responsible for the transmission of Rocky Mountain spotted fever. In sheep the ticks are usually located along the spine, but in man symptoms result from ticks embedded in the axilla, ear, temporal region and the occiput. In animals, ticks are found on the healthy as well as on the affected, and the number of ticks on a subject does not seem to influence the severity of the paralysis, one tick producing the same effect as many. A few cases in man are reported in which multiple ticks were removed. The male ticks attach and detach themselves easily and frequently, and it is not known whether male ticks can produce paralysis in the absence of the female. Experimentally, paralysis has always been produced through the agency of tick bites, but it has been impossible to transmit the disease by inoculations; no parasite has been found, and bouillon cultures from diseased animals have remained sterile. This is well illustrated by the following experiments of Hadwen⁷ and Hadwen and Nuttall:⁸

1. Tick transmission: Total paralysis occurred in a lamb on the eighth day after attachment of the tick.

2. Attempt to transmit from lamb to lamb by inoculation: Inoculations of material from brain, spinal cord and cere-

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

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2. Temple, I. V.: Acute Ascending Paralysis, or Tick Paralysis, M. Sentinel, 9: 507, 1912.

3. Nuttall, G. H. F.: "Tick Paralysis" in Man and Animals, Parasitology 7: 95, 1914.

4. Todd, J. L.: Canad. M. A. J. 2: 686, 1912; 2: 1118, 1912.

5. Todd, J. L.: Canad. M. A. J. 4: 825, 1914; 9: 994, 1919.

6. Bishopp, F. C., and King, W. V.: Additional Note on the Biology of the Rocky Mountain Spotted Fever Tick, Ecen. Entomol. 6: 200, 1913.

7. Hadwen, Seymour: On "Tick Paralysis" in Sheep and Man Following Bites of *Dermacentor Venustus*, Parasitology 6: 283, 1913.

8. Hadwen, Seymour, and Nuttall, G. H. F.: Experimental "Tick Paralysis" in the Dog, Parasitology 6: 298, 1913.

9. Strickland, C.: Note on a Case of "Tick Paralysis" in Australia, Parasitology 7: 379, 1914.

bellum of the affected lamb produced no paralysis in the second lamb. Repetitions of these inoculations were uniformly without result.

3. Tick transmission: Paralysis occurred in a lamb on the eighth day after attachment of the tick. Improvement began on the ninth day, and recovery was complete on the twelfth day, without removal of the tick. Necropsy findings after killing the sheep were negative.

4. Experimental inoculation with mashed ticks: Susceptible animals were inoculated by both engorged and unengorged ticks without results.

5. Experiments with guinea-pigs with the following negative results: (a) Inoculated along the back with a few drops of fluid from mashed ticks; (b) Intraperitoneal injection of 2 c.c. of defibrinated blood from a lamb experimentally paralyzed; (c) Inoculated subcutaneously with brain emulsion.

6. Death observed in guinea-pigs on the fifth to seventh day following the application of *Dermacentor venustus* larvae and nymphs (young ticks).

7. Paralysis observed in a dog nine days after attachment of a single *Dermacentor venustus*. Complete recovery occurred on the sixteenth day, though the tick was not removed until the eighteenth day.

PATHOGENESIS

The exact nature of the disease has not been determined. In favor of the infectious theory is the incubation period of from six to eight days, which has been determined in the animal experimental work. Opposed to this explanation is the usual absence of fever and the negative results of inoculation. On the hypothesis that the disease is infective, Hadwen and Nuttall state that the negative results which follow the experimental use of the prematurely removed ticks may be explained on the ground that the hypothetic infecting parasite undergoes development in the tick while the latter is attached to the host, and that the pathogenic parasite only enters the vertebrate host after the tick has remained attached for some days. The paralysis may, on the other hand, be explained as resulting from toxins absorbed from the ticks and elaborated, especially at the time when engorgement is complete. To strengthen the toxic-absorption theory, the period of incubation might be explained on the assumption that it is only when the tick begins to engorge or feed rapidly, some days after it has become attached, that it gives off sufficient hypothetic toxin in its saliva to produce pathogenic effect.⁸ No doubt both man and animals affected have been exposed to previous tick bites without symptoms, but an anaphylactic origin seems to be disproved since one attack seems to confer a lasting immunity; if the origin were anaphylactic, there would be multiple attacks after sensitization had occurred.

PATHOLOGY

At the point of attachment of the ticks, subcutaneous hemorrhages are found and the blood seems to have partly lost its power of coagulation. The hemorrhages have some resemblance to those seen in hemophilia. About the tick is deposited a dark reddish patch of excrement. At necropsy, in animals dying from this paralysis, slight congestion of the brain and cord has been found by some observers.

SYMPTOMS

The symptoms are usually characterized by the sudden onset, in a previously healthy child, of weakness in the muscles of the extremities, staggering, difficulty in standing, and disinclination to active play, rapidly followed, in a few hours, by more or less complete

motor paralysis. The child is often unable to stand, hold the head erect, or feed himself, although consciousness is not impaired. The onset may be accompanied with convulsions. The incubation period in children is doubtful, but, by experiments in animals, it is found to be from six to seven days after the ticks are attached. Rapid pulse and a slight rise of temperature have been noted. A large engorged wood-tick is found somewhere on the body, most often in the scalp, occasionally in the external ear, the axilla and other protected areas.

REPORT OF CASES

The following case histories of patients whom I have seen, together with short reports of cases given by physicians in this locality, are illustrative. My cases are given herewith:

CASE 1.—Miss H., aged 22, of Hillyard, Wash., seen in 1903, gave a negative family and personal history. This robust young woman had been unable to walk or stand for a period of three weeks. She could not feed herself, and held up her head with great difficulty. During the routine of a complete physical examination, a large wood-tick was found embedded in the skin over the coccyx. The tick was removed, but no prognosis was given. In a few days she was entirely well.

CASE 2.—Baby B., aged 2 years, of Mullan, Ida., seen in June, 1909, gave a history of sudden inability and unwillingness to use the lower limbs. On questioning as to wood-tick bites, the mother stated that she had removed a large tick from the scalp just before coming to the office. Examination disclosed nothing but an apparent complete paralysis of the legs. The child was well the following day.

CASE 3.—C. S., a boy, aged 1 year and 10 months, seen in July, 1917, was referred by Dr. Barnhardt of Spokane, Wash. Family history and all personal history was irrelevant. The child was brought with a complaint of sudden great difficulty in walking. He had spent several days at a nearby mountain lake. The first morning at home, he refused to walk, revealed a peculiar activity of his hands, was awkward and could scarcely handle his toys. The boy was well nourished; the feet were slightly swollen from sunburn; the heart, lungs and urine were negative. He was normal except for an inability to walk, and the fact that he would not pick up objects from the floor. Mentally, he seemed very inactive. Heat and cold sensations were normal. A large wood-tick was discovered attached to the scalp in the right temporal region. Inside of twelve hours after removal of the tick, the boy was able to walk about the room. The next day he had completely recovered.

CASE 4.—K. L. D., aged 4 years, seen in August, 1917, was referred by Dr. H. P. Marshall, Spokane, Wash. Nothing in her previous history bearing on the case presented itself except the fact that she had always been very active and extremely nervous. She lived in a small "jack" pine grove. Four days before onset, the child had loss of appetite, with some abdominal pain and great restlessness. She had been given very drastic treatment for suspected worms. Dr. Marshall was called because of severe pains in the knees and an absolute inability to stand. The child appeared very well nourished. She had pain in the legs and refused to try to stand. The hands and arms were normal. A large wood-tick was found in the scalp above the left ear. On the sixth day after removal of the tick, the pains in the legs and the inability to stand had disappeared and the child was normal, except for the appearance of an enlargement of the glands of the neck.

CASE 5.—E. L., a boy, aged 3 years and 6 months, of Cocolalla, Ida., seen in August, 1918, gave a negative family and previous personal history. Seven days before, he had retired in good health, but next morning could not walk. Generalized weakness of the muscles increased in severity to the time of examination. He was unable to hold his head erect and had great difficulty in feeding himself. An unsuccessful search for a wood-tick was made; the head was then shaved and

well cleaned, and a small wound, similar to that in other wood-tick cases, was found and cauterized. Cathartics, baths and other methods of elimination were used. The mother reported that she had found several wood-ticks on this child during the spring, but that he had had no symptoms at that time. The spinal fluid was negative. The next day the mother reported that the child was walking much better. His further improvement was very slow and he did not begin to walk well for five weeks and was very weak for some time. In June, 1920, the mother reported the child as well, except for a slight difficulty in the use of his left hand. From the history, the course of the case, and the finding of a wound in the scalp, it was assumed that a wood-tick had caused the symptoms, and after engorgement had loosened its hold and had fallen off. I recognize the possibility that this may have been a case of atypical infantile paralysis.

CASE 6.—Q. R., a girl, aged 5 years, of Spirit Lake, Ida., seen in May, 1919, whose family history was negative, after an 8 mile walk in the woods, had complained of being very tired, and had cried with an ache in the legs during the night. The next morning she could not get out of bed and, even with assistance, could not stand; but she seemed well when in bed, sang, played, and ate heartily. She could not put her feet to the floor because of pain, and could not stand; the head dropped forward or backward; she could not speak plainly, and had some difficulty in swallowing. The picture was the most pathetic of all I had seen. A large wood-tick was found over the occiput. The child gradually improved after the tick was removed, and was entirely well in about one week.

CASE 7.—M. B., a girl, aged 8 years, of Vera, Wash., seen in May, 1920, was referred by Dr. Barnhardt of Spokane, Wash. The family history was negative. Four days previously, the parents noticed that the child was unusually nervous, but as she was just recovering from measles, little anxiety was aroused. Later she was dizzy, staggered around her room, and dressed herself with difficulty. Speech was disturbed, and she seemed irrational at times. The left eyelid was swollen and inflamed. She had a staggering gait with weakness of the lower extremities. A tick was found in the right axilla. It was detached by the use of chloroform, and immediate improvement began. About the attachment of the tick there was an ecchymotic spot about one-half inch long and one-quarter inch wide. The skin and subcutis were necrotic to a depth of about one-quarter inch. This area was curetted and cauterized. The highest elevation of temperature noted was 99.4. The blood was normal except that there was a leukocytosis of 13,400, of which 11 per cent. were eosinophilic cells. The tick was sent alive to Dr. H. Gideon Wells of the University of Chicago, who found it to be an impregnated female resembling *Dermacentor venustus*. The tick attached itself to a guinea-pig, and on the sixth day moderate fever and decreased capacity to use the hind legs were observed. Necropsy revealed nothing to explain this condition. Inoculations from the first pig were unsuccessful in a second lot of pigs. These findings confirm those of Hadwen.

CASE 8.—N. G., a girl, aged 5 years, of Libby, Mont., in May, 1921, was referred by Dr. Stenberg of Spokane, Wash. The family history was negative. May 25, 1921, the child complained of being sick, and could not stand. May 26, the paralytic condition continued the same, with the addition of great difficulty in breathing. May 27, she was sent to Spokane, a diagnosis of infantile paralysis having been made. The child was paralyzed in both arms and both legs, and the reflexes were absent. She could not talk or swallow, and was in a semistupor. An engorged wood-tick was immediately found and removed from the scalp. The breathing became more shallow, the pulse very irregular and at times absent. The child died of bulbar paralysis fourteen hours after the removal of the tick. Necropsy was not permitted.

The following cases were reported to me by physicians in this vicinity.

Dr. W. C. Lindsay, Kellog, Ida.: In July, 1917, a previously healthy boy, aged 7 years, was unable to get out of bed or to stand. He was prostrated, the temperature was subnormal,

the legs were cold, the pulse was fast and thready, and he vomited. The lower limbs were flaccid, and sensation was normal. He was treated as a case of gastro-intestinal intoxication, but became rapidly worse. Accidentally, a tick was found in the occipital region in the center of an inflamed area, 2 inches in circumference. The tick was removed, and the area aseptically treated. Next day the boy was well. The incubation period in this case was apparently three days, estimating from a single exposure in the woods.

In April, 1920, a girl, aged 9 years, was recovering from tonsillitis. On arising one morning she was unable to stand, was dizzy, and vomited. Throughout the scalp and on her pillow were found small dark particles like fine coal dust, which probably consisted of coagulated blood and tick excrement. A large wood-tick was found in the scalp. The recovery was quite slow in this case, possibly because the incubation period had been unusually long, nine days' duration being reasonably certain.

Dr. C. E. Worthington, Coeur d'Alene, Ida.: A girl, aged 4 years, died two hours before the physician reached her home. She had been drowsy after the noon meal, and could not join the other children in their play during the afternoon. She had had no appetite for dinner. In brushing her hair a large wood-tick had been discovered and incompletely removed, the mother allowing its head to remain in situ. During the night she was found dyspneic, and soon died.

A girl, aged 6 years, refused her breakfast. She seemed dazed and could not walk steadily. She was pale, and the pupils were dilated. A tick was found embedded in the scalp. Recovery was complete seventy-two hours after the removal of the tick. In neither of these cases could an incubation period be determined.

Dr. L. J. Stauffer, Rose Lake, Ida., reported a case from Kalispell, Mont., in which a large wood-tick was found, during burial preparations, in the scalp of a little girl who had died from an obscure paralytic disease.

Dr. C. J. Kinsolving, of St. Maries, Ida., which is situated in a tick-infested valley in the mountains along the St. Joe River, reports a large number of tick bites with symptoms, but has never seen paralysis resulting. His patients have shown vomiting, fever, prostration, loss of appetite and other general symptoms of an intoxication.

I am of the opinion that if a thorough survey were made among the physicians of Idaho, Montana, eastern Washington and Oregon, and British Columbia, an enormous number of these cases could be collected.

PROGNOSIS

Recovery is usually complete and rapid following the early removal of the entire tick, most of the children being normal within forty-eight hours. Occasionally where the tick is not removed entirely or is removed after an extensive paralysis has occurred, death may follow from respiratory failure. I know of cases in which children with paralysis of obscure etiology have died, and in the preparation of the body for burial, wood-ticks were found in the scalp.

It is not positively known, in cases of tick paralysis in man, whether recovery can take place without removal of the tick. In sheep, however, the disease may be of long duration, and recovery is not absolutely dependent on the removal of the tick. A case is reported by Hadwen⁷ of a shepherd carrying a paralyzed lamb all summer from camp to camp, with total recovery finally occurring, no tick having been removed.

DIAGNOSIS

The physician usually realizes that he is dealing with an acute progressive extensive motor paralysis, which from its course, presents a picture of extremely unfavorable prognosis. He attributes the paralysis, with little confidence in his diagnosis, to poliomyelitis.

litis, meningitis, or to an acute intestinal intoxication, without manifest evidences of an enteritis.

The direct diagnosis depends on the finding of an engorged wood-tick on an individual suffering with sudden paresis or paralysis of the muscles of the extremities, followed by rapid improvement in all symptoms after the removal of the tick unless respiratory paralysis has developed.

The only case in my series in which a complete blood examination was made showed an eosinophilia. This is possibly of great diagnostic importance, being indicative of animal parasitic infection.

TREATMENT

The treatment consists in the removal of the wood-tick. It must be searched for carefully, and is usually to be found buried in the hairy scalp or other protected places. Great care must be exercised to remove the head of the tick, otherwise improvement in the symptoms may not occur. Many ways have been suggested to secure the tick. Gentle traction may be used; the tick may be covered with grease and, when forced to move to breathe, is easily removed; a lighted match may be held beneath the tick until it is too hot for it to remain attached to the skin; or the skin to which the tick is attached may be excised; kerosene and chloroform can also be used to force the tick to loosen its hold.

CONCLUSIONS

1. Bites of wood-ticks, usually *Dermacentor venustus*, can cause a motor paralysis of the flaccid type.
2. The paralysis is acute, extensive, progressive and usually ascending in its progress.
3. In man, children are most commonly affected.
4. Death may occur, usually by respiratory paralysis.
5. Recovery is rapid and complete, following the complete removal of the tick before respiratory paralysis has occurred.
6. Experimentally, tick bites have produced this type of paralysis.¹⁰

Paulsen Building.

ABSTRACT OF DISCUSSION

DR. E. J. HUENEKENS, Minneapolis: Two thoughts present themselves—first, the similarity to postdiphtheritic paralysis, which would show that there may be an exotoxin, and the rapid recovery after removal of the tick, would also show that this is due to an exotoxin. However, without necropsy findings, we can only speculate. Second, some of these cases may be happening in other parts of this country and not be recognized. In Minnesota there is a tick-infested district.

DR. FRANKLIN P. GENGENBACH, Denver: We have quite a number of cases of wood-tick bites and cases of Rocky Mountain fever in Colorado, and although I have seen children upset by bites of the ticks, I have never had a case of paralysis. However, last fall I received a letter from a woman in Wyoming who reported the death of her 14 months old baby from the bite of a wood-tick. She said that the condition had not been recognized.

DR. JOSEPH BRENNEMANN, Chicago: I wonder how frequent wood-ticks and wood-tick bites are. Does everybody expect to get bitten where they are common? In what proportion of cases do alarming symptoms occur?

DR. PETER D. MCCORNACK, Spokane, Wash.: While visiting in Iowa just before this meeting, I mentioned this subject,

10. It is requested that live ticks found on paralyzed patients be sent or further study to Dr. H. Gideon Wells, University of Chicago, with description of the symptoms and such other data as may be of interest to him.

and was told of a case of removal of an enormous wood-tick from the scalp of a child. There was no associated paralysis. To further illustrate the widespread distribution of ticks in this country is the history obtained from a woman of a tick removed from her back when she resided in Boston. This spring I requested four girls who were going for a two-day trip in the woods of eastern Washington to collect the ticks which they found on their clothes and bodies. Sixteen ticks were obtained. In our section, most people, while in the woods, examine their bodies for ticks each night before going to bed. Little is known in regard to the paralysis. We do not know exactly what causes the paralysis and why not all tick bites in children are followed by paralysis. Perhaps it is the impregnated female tick alone that is responsible. In the cases in which the tick has been classified, it has been the female.

NEEDED MEASURES FOR THE PREVENTION OF DEAFNESS DURING EARLY LIFE *

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Too much attention has been paid to the acute otologic conditions of childhood; too little attention has been paid to the chronic otologic conditions or, at least, to the causative factors which bring about deafness in later life. The cure of an acute suppuration of the ear may mean the saving of a life; but is that of any more importance than eliminating factors which, if left uncared for, will mean the leading of a life of misery? The individual who is kept from the intellectual contact with his fellow men considers himself beyond all others. I have been led to think more of this subject, during the last few years, because of the number of patients I have seen who were suffering from a hopeless progressive deafness which, no doubt, could have been prevented if they had been properly taken care of in early childhood, when some intercurrent infection or one of the exanthematous diseases started the trouble.

The problem of the prevention of deafness in early childhood is both medical and educational. Each of these aspects is of importance to the otologist, who frequently has to advise as to the proper schooling of children and also as to whether a deaf person should marry or not. He should find himself in a position to answer all questions; for on his opinion rests the future happiness and welfare of the individual and his direct descendants.

Deaf children divide themselves into three classes: those who are hereditarily deaf, those who are congenitally deaf and those who have an acquired deafness. The so-called deaf mutes belong to the first two classes and need our attention mainly from the educational point of view. The third class needs our attention both from the educational and from the medical side. Now what is the difference between hereditary and congenital deafness? How many otologists attempt to differentiate between the two? Very few, I am sure; and yet this differentiation is a most important one. Hereditary deafness can be claimed only in those cases in which there is deafness among ancestors in the direct line. One or two generations may have been skipped, but if one makes use of genealogical tables, such as occur in the writings of Love,

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Bell and Fay, he will find many cases of hereditary deafness which are directly traceable. Congenital deafness is a deafness which takes place before the child is born, and may be due to a true congenital defect because of an abnormal development, or to syphilis in one or both of the parents. Acquired deafness, on the other hand, comes on after birth, within the first few months or later on in childhood, during the first five years, the result of some febrile disturbances, one of the exanthems or because of certain localized conditions which interfere with the delicate mechanism of the middle ear. Most writers who have studied the subject carefully assert that the majority of cases are the result of neglect of the ears after measles, scarlet fever and meningitis, which may be either of the epidemic type or one of the low grade meningitides so often caused by syphilis. It is a sad commentary on our knowledge of the subject that over 30 per cent.¹ of the inmates of our institutions for the deaf are children who have an acquired deafness which might have been prevented if taken in time.

However, as our problem is a preventive one, our most important task is the prevention of deafness in acquired cases. We may thus divide our subject: (1) prophylaxis of the nose and throat; (2) the removal of tonsils and adenoids; (3) the care of acute non-suppurative and suppurative conditions of the ears; (4) the care of the ears during and after the acute exanthematous diseases, and (5) the more careful treatment and testing of children's ears.

PROPHYLAXIS OF NOSE AND THROAT

An unclean condition of the nose and throat of a child, by which I mean the accumulation of mucus and mucopus, will tend to an engorgement of the eustachian tubes which is likely to result in impaired hearing. One must remember that the acuity of hearing of a child depends on the normal balance in the middle ear which can be maintained only if the tubal muscles are at a proper tension so that the drum and ossicles are automatically massaged with each act of swallowing. It is a simple matter to keep the nose and throat clean, particularly if the child's health is up to par; but one must remember that if the vitality of the child is lowered in any manner whatsoever, be it from some generalized disease or from malnutrition, the problem cannot be handled by the otologist alone. Children with rickets, marasmus or some other devitalizing disease are more prone to troubles in the upper air passages, and such diseases must receive proper treatment before local treatment is attempted. Very often there is no evidence of impaired hearing at this early date, which makes it more necessary for one to be on the lookout for trouble. It is because of the history of these devitalizing diseases that one notes that the majority of cases of acquired deafness are among the poorer classes who have not had the opportunity for proper housing or medical care. The prophylaxis of this class of cases is exceedingly simple. The child's general health must first be brought up to par. The local treatment consists in keeping the nose and throat clean, by the use of instillations of mild alkaline solutions by means of a medicine dropper, followed by

drops of some soothing oil, like liquid petrolatum. The alkaline solution should be used until the nasopharynx is thoroughly clean, and then the oil is used as a coating on the exposed mucous surfaces. Such cleansing will ward off many an inflammatory condition and may be the means of avoiding a deafness later on in life.

REMOVAL OF TONSILS AND ADENOIDS

The removal of tonsils and adenoids is a question of vital importance, particularly in relation to the subject with which we are dealing. Although there may be controversies galore as to whether tonsils and adenoids should be removed or when they should be removed for the purpose of revitalizing the general health of the child, there should be no question about their removal when any sign of ear trouble occurs. There are many men who believe that, in the course of time, cases of progressive deafness will seldom be seen because of the wholesale removal of tonsils and adenoids. I cannot accept this optimistic view: for although I do believe that they are the cause of many of the ear troubles in early childhood which give rise to deafness in later life, I have seen too many children with ear troubles after tonsils and adenoids are removed to feel that they are always the primary consideration. In fact, sometimes after their removal, the eustachian tubes are so wide open that, unless the child is told how to blow his nose properly, he is only too liable to bring about a condition within the ear which is beyond repair.

Realizing the important part that adenoids play, be they small or large, in interfering with the normal action of the tubal muscle, I feel that they should always be removed if the child has shown any tendency toward ear trouble. The large adenoid, in infants, which is of sufficient size to interfere with breathing or feeding, gives enough evidence of trouble to warrant its removal. But it is the small adenoid, often not pendulous from the vault of the pharynx but springing from the region of the eustachian tube or the fossa of Rosenmüller, which is open to question in the minds of those who have not seen the aftermath, in the form of progressive deafness. No matter how small the adenoid is, no matter at what age it is first noted, be it in the first months of life or during the second or third year, it should be removed as soon as there is any evidence that it is causing trouble, particularly with the ears. Some of these masses may be so small and friable that they can be broken down with the finger without anesthesia, while others will need a more severe operation with the curet under ether narcosis.

As a general rule, the majority opinion is in favor of leaving the tonsils in situ until the second year of the child's life, unless they are found to be directly responsible for systemic disease or have been the seat of repeated local infections. However, one must not lose sight of the fact that the tonsils may cause impairment of hearing because of their close proximity to the eustachian tubes. The elimination of irritants from these tonsils, aside from their direct pressure on the tubes, may cause ear trouble which will be apparent if a suppuration or an inflammatory reaction occurs, but will often not show itself until there is some manifestation of impaired hearing later on. If the tonsils are left in until that time, their removal may or may not cause an arrest of the progress of the condition. In the ordinary case, I think it advis-

1. A test of the hearing of 342 children made at the Institution for the Improved Instruction of Deaf Mutes, New York City showed that 129, or 37.73 per cent., could distinguish words spoken in a loud voice with mouth to the ear; forty-one, or 11.99 per cent., could hear vowels under the same conditions; fifty-three, or 15.49 per cent., were doubtful, and 119, or 34.79 per cent., had no hearing.

able not to remove the tonsils before the end of the second year of the child's life; but if I have any evidence of impaired hearing before that time, I believe that I am erring on the side of safety by removing these tonsils as quickly as possible. Infants who are suffering repeatedly from earaches and who, on inspection of the drum, show evidence of acute inflammatory conditions, children who suffer from prolonged suppuration from the ears at an early age, who have tonsils of large or moderate size, are much better off when the tonsils are removed. Emerson is of the opinion that later on in life the tonsils are responsible for the continuation of an ear trouble, because of the toxic absorption which takes place through the system by the elimination of the products of the bacteria contained therein and because of the chronic localized pharyngitis which arises. If this is so in adults, why is it not equally true in infants when the general resistance is far lower?

ACUTE CONDITION OF THE EARS

Attention to the repeated earaches in children is not as close as it should be. The child is ordinarily seen first by the general practitioner or the children's specialist who, if he is especially acute, is able to determine the amount of local inflammatory reaction. However, he is most often content if the pain, the rise of temperature and the local inflammation subside. How often does he attempt to find out whether the hearing is impaired? I admit that this is a difficult procedure, but it can be done and it should be done. If an otologist is taking care of the case, he is often equally at fault; but in the majority of cases, the otologist is called into consultation once or twice and is never advised of the case after that. No child who has had more than one attack of earache should be allowed to go without a hearing test and, if the hearing is found to be impaired, remedial measures should be started at once. The drums may need but a slight massage, or it may be necessary to do a careful politzerization. Or some causative factor will have to be sought and eliminated.

What has just been said about nonsuppurative inflammatory conditions is even of more importance in those cases in which there has been suppuration. It has been our custom too often, in the past, to be content to clear up the discharging ear. But our duty is but half done. The discharging ear has been an infected ear. Certain deposits have taken place in the tympanic cavity, such as the deposit of fibrin and perhaps inspissated pus which may make an alteration in the hearing mechanism which may be permanent. The eustachian tube may still be inflamed so that no air reaches the middle ear, or else a small perforation, dry and crusted over, may remain unnoticed. These are conditions which can be easily remedied at the time but which are sure to leave their mark, later on, if neglected. Unfortunately, again, the family physician or the pediatrician is satisfied when the suppuration has stopped because it is seldom apparent to him that the child's hearing is sufficiently impaired to need attention at that time. All children's ears should be tested after any suppurative condition, and one should not be satisfied until the hearing has been brought back to as nearly normal as possible. I have had sufficient evidence, in a number of cases, to warrant my feeling that impairment of hearing is frequently present after a suppuration has ceased, and that the hearing

can be brought back to normal if proper care is taken. First one must see that the eustachian tube is open. Secondly, he must see, by vibratory massage, that the drum is moving properly. Thirdly, he must be sure that the perforation in the ear drum is properly closed. And fourthly, and of as great importance, he must eliminate all causative factors that will tend toward a recurrence of the condition, such as the removal of tonsils and adenoids, the clearing up of nasal sinus disease, so ably brought to our minds by Dean, and the building up of the general constitutional condition.

One cannot close the question of the acute suppurations of the ears in children without dwelling for a moment on what may be called the conservative mastoid operation. Phillips and others have pointed out that, regardless of the acute symptoms present which would determine us as to the advisability of operating on the mastoid, for the purpose of conserving the hearing, the suppuration must not be allowed to exist for too long a time. Some of these children are allowed to continue with a suppuration for from four weeks to two months; and as long as there are no acute symptoms, such as a rise in temperature, and as long as the child feels perfectly well, nothing is done for ears but periodic douching. If the discharge is mucoid rather than purulent, the tonsils and adenoids are removed, if this has not been done before. In an infant, no signs of deafness will be noticeable. In an older child, the parents or the physician may notice that the child is inattentive. As long as the suppuration continues with pulsation of the drum, there is always the possibility that some part of the mastoid is involved; and just so long is there a possibility that a permanent impairment of hearing will result unless something of a radical nature is done. I have frequently spoken of this in previous papers, and wish to emphasize it again. I consider that any suppuration extending for any length of time, which has been associated with an acute inflammatory process, should be eliminated even if it means the opening up and cleaning out of the mastoid cells. I have yet to operate in the first case of this kind without finding sufficient evidence in the mastoid cavities to warrant my doing so. Once in a while a case like this will clear up of itself; but, invariably, that case will eventuate in progressive deafness. I am at present watching an unruly child who was allowed to continue with a discharge for over two months. The circumstances were such that I could not operate. I am sure that after puberty, the boy will be consulting some one because of his diminution in hearing.

CARE OF EARS DURING AND AFTER EXANTHEMATOUS DISEASES

The vast amount of harm that is done to ears during the exanthematous diseases, particularly measles and scarlet fever and meningitis, has seemed to be fully recognized. The ears of the children are well taken care of during the acute stages of the disease, and remedial measures are at once used. But what happens after the acute condition subsides? How many of these cases are properly followed up after the patient leaves the hospital? Yet if one glances over his histories of progressive deafness later on in life, he finds that frequently there is a history of the trouble having arisen during or after one of these three diseases. Meningitis with deafness often means that the nerve has become affected or that there has been some intracranial affec-

tion, and the condition frequently manifests itself at the time of the disease and so is given hopeless attention. But in scarlet fever and in measles, there is either a residual process left or there is a continuation of the catarrhal process which forms part of the disease. The acute inflammation has subsided or the suppuration has ceased and, at the time, the impairment of hearing is so slight that it passes unnoticed. But certain adhesive processes are left which mean permanent impairment of hearing—processes which, I believe, could often be remedied, if taken in time. There are some who feel that the hearing defect is caused by toxic processes during the disease; but there are others of us who are convinced that the deafness is due to neglect of the local trouble after the child leaves the hospital. Every parent who takes from the hospital a child who has suffered from one of these contagious diseases, should be advised to consult an ear specialist at once and, if there is the slightest impairment of hearing, every care should be taken to bring it to normal as soon as possible. I have sufficient data on hand to know what can be done in this way, and all of us have sufficient data in our histories of progressively deafened patients to realize that something more should be done for these cases than is done at present.

MORE CAREFUL TREATMENT AND TESTING OF CHILDREN'S EARS

I have indicated the kind of treatment that may be employed to prevent deafness. I have not taken into account the child who has been found to be suffering from slight impairment of hearing by either the teacher, the parent or himself. A child of school age is usually a sensible child whose hearing can be properly tested and whose ears can be properly treated. There are two factors which are of a great deal of importance in such a case. Invariably such a child has some form of nasopharyngeal obstruction which should be corrected, or else he has been blowing his nose improperly. In former papers I have spoken of pocket handkerchief deafness. This results in a relaxed ear drum which is an exceedingly difficult condition to treat. Children should be taught to blow their noses properly and not to use them like trumpets. Only one nostril at a time should be held and, if air is felt to force itself into the ear then, the nostrils should not be held at all.

Naturally, in preventive treatment, one must eliminate all causative factors either in the nose, throat or ear or in the general system. Next of importance is the proper massage of the drums at regular intervals. The eustachian tubes of children are far more widely open than they are in adults, and proper politzerization is a simple procedure when one has once gained the confidence of the child. It is amazing to see the vast, immediate improvement in the hearing of these children after careful politzerization. A medicated vapor should be used in the Politzer bag or the connection between it and the nasal attachment. I have frequently seen hearing, which was zero to the watch before treatment, return to normal after the treatment and remain so for a considerable length of time. The treatment will have to be frequently repeated, particularly after the child has had a severe cold. However, a word of warning should be given here. Too strenuous treatment of children's ears will result in more harm than good. Careful judgment must be exercised in every case. I hesitate to say that I have seen the hearing made worse by overtreatment, but such is the fact. Catheterization

is a very difficult and often dangerous procedure in children, and it is wise to feel that a tube which cannot be dilated by inflation through the Politzer bag is a tube which is suffering from a pathologic obstruction which needs more attention than inflation. Aside from the above mentioned procedure, one may make use of a mild massage of the drum by means of a Siegel otoscope or an electric otoscope attached to an electric massage apparatus. The massage should never be given with sufficient severity to cause any engorgement of the drum.

EDUCATIONAL PROBLEM

The educational problem of the prevention of deafness has not been considered with sufficient seriousness by the otologist. It has been left in the hands of educators who have been more interested in the congenitally deaf child. But medical men are realizing more and more that they must acquaint themselves with the various factors which lead to deafness in childhood, and with those factors which arise in childhood and bring about deafness later on in life. The problem divides itself into three parts: (1) education of parents, teachers and physicians to those factors which give rise to deafness; (2) the proper interpretation of causative factors in early childhood which can be corrected at that time, and (3) preventive measures which will arise during the routine examination of children's ears.

1. *Education of Parents, Teachers and Physicians as to the Factors Which Give Rise to Deafness.*—Certain cases of deafness are due to transmission of weaknesses from the parents, and may be considered congenital. Too much stress cannot be laid on the obtaining of the history of deafness and the possibility of the weakness of the ear mechanism being transmitted. Such cases are not essentially ones of hereditary deafness, and a great deal can be done to prevent the deafness occurring in the child, if proper care is given to the nose, throat and ears during the early years. When there is a history of deafness in the family, the parents should be carefully advised that any children, the result of their marriage, must receive more careful attention than children who spring from parents or forebears who have never had any trouble of that kind. The duty of disseminating this knowledge rests with the parents, the teachers and the physicians, particularly the latter, who are brought into more intimate contact with the family. The question of whether the educators should go so far as to advise deafened people not to marry is another matter and cannot be taken up in detail here. Deaf adults will marry, sometimes intermarry, regardless of any advice that is given them. But the problem becomes a more serious one if there is a history of syphilis in both father and mother or in either one of them. One has only to consult well worked out genealogical tables to appreciate this fact. Of course, neither parent may be aware that he or she has syphilis and, therefore, when deafness becomes evident in the child, a blood test should be made on the parents and the child. It may be possible, if the disease is discovered in time (but this problematical), that the diseased condition may be partially or completely overcome. It would be more than worth while to have a census of the deaf taken in each decade to be handed over to such an organization as the Volta Bureau, which could then be in a position to distribute the propaganda so necessary to instruct parents in the proper care of their deaf children.

2. *Proper Interpretation of Causative Factors in Early Childhood Which Can Be Corrected at That Time.*—This problem has been taken up in detail in the preceding paragraphs. The laity is sufficiently educated at present to understand medical problems explained to them in a simple way. People have come to appreciate the importance of the acute ear diseases and mastoiditis, and insist that a discharging ear receive proper treatment. But what they do not understand is that the ear which has stopped discharging, and which is still lacking in hearing acuity, is a great menace to the growing child and may mean untold unhappiness later on in life. Some of these problems can be dealt with very simply in childhood, but, if neglected, become one of our hardest problems after the child has got beyond the age of puberty. If we glance over the causative factors of deafness in adult life, we find that invariably there is a causative factor in childhood which perhaps was not apparent to the individual until it was brought to his attention at this late date. In our various leagues for the hard of hearing, throughout the country, we are trying to work out this problem now, and the possibilities for the prevention of deafness, from the knowledge thus gained, will be very great. In fact, our knowledge has increased so greatly during the last ten years that all of us feel that the next ten years will allow us to bring it more accurately before the public.

3. *Preventive Measures Which Will Arise During the Routine Examination of Children's Ears.*—Our greatest problem is the routine examination of children's ears. Parents are careful about the looks of the outside, but are very careless of the workings of the inside, of their children's ears. During early child life, a child's hearing should be variously tested, by any means at hand, particularly if he has had any acute condition of the nose and throat or of the ear itself. As soon as any trouble is discovered, the advice of a competent specialist should be sought. But parents will always be careless in this regard, and so the measuring of hearing acuity will rest on those who are educating the children. Routine examination of children's ears in school must, in time, become as important as the examination of their eyesight and teeth. We must not rest until it has become so. Nurses can be instructed to make the simpler examinations, and those children who need more detailed study can be separated from the rest and turned over to competent specialists. Dr. Josephine Baker of New York states that over 4,000 children who have defects in hearing are attending the public schools, and that little is being done for them at the present time. School clinics have to be established and the cases studied in such a way that the children are properly seated, according to the amount of hearing defect they have, or else are sent to schools for the deaf. One important problem arises here. Most of these children need medical treatment of one kind or another. It is unwise to send them to clinics which are far away from the school and to which they cannot come regularly. Clinics must be established in the schools themselves so that, under competent aurists, the treatment can be expedited. Little time will then be lost, and the problem can be more readily studied from the educational and medical standpoint.

CONCLUSION

Let me emphasize these points: There are more deaf adults in the United States than there should be; there are more deaf adults, because the moderate defect in

hearing in childhood was not properly taken care of; and the problem of the prevention of deafness can be handled intelligently only by a precise cooperation between the parent, the educator and the physician.

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SOCIAL ALLEVIATIONS OF ADVENTITIOUS DEAFNESS *

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NEW YORK

Deafness, no matter if the world finds it a petty affair, a joke or an annoyance, is truly a grief to him who has it. As in the case of any other physical handicap, deafened people must adjust themselves to deafness, and this reconstructive work must be comprehensive if the man or woman is to hold a place among independent citizens. Every person who acquires deafness in adolescent or adult life needs some degree of reconstruction. Many must either change their occupation¹ or become charges on their friends or their community; all must readjust their views of life and make the effort, no matter how difficult it may be, to keep mentally and spiritually normal.

The deafened themselves differ from other handicapped people in that they have organized and developed their own reconstructive work for their own kind, preaching the gospel of reconstruction, as it were, by example.² Public indifference and ignorance have been hard to change. In Newark, N. J., where a flourishing group exists, an article on the work of this organization was published by a local newspaper. Another column carried comment to this effect "Everything is organized nowadays. We note that hard of hearing people have a league of their own; we may expect to hear of a League of Persons with Boils on Their Necks."

Ignorance and indifference, however, are being overcome rather more rapidly than one might reasonably expect, and but one formidable enemy of this movement remains. Strange to say, this is an enemy in the very household of the deafened; it is the deafened wealthy man or woman whose sensitiveness takes the form of refusing to help lest his own handicap become known. There are very many of these. They fill great places in government, finance, industry, the professions, literature, society; yet, like all unreconstructed deafened people, they fear that the world will know of their deafness, even though it is minimized for them by their wealth and position. One of these is a man who is widely known as a soldier, novelist and playwright. He made a modest contribution to a deafened organization, and insisted that it be anonymous, although he has ably and generously assisted other philanthropies by writing and speaking in their behalf. His deafness is so pronounced that it cannot be hidden. Such people are the greatest problem we deafened have; it is inconceivable that they should not be willing to help their own. The friend who will show

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1. Thirty-seven per cent. change their occupations.

2. The first deafened man to organize other deafened persons was Edward B. Nitchie, founder in 1910 of the New York League for the Hard of Hearing.

us how to open this particular oyster will deserve the canonization of our grateful hearts. Perhaps you who approach them so closely can tell us the way.

However, in spite of indifference, ignorance and sensitiveness, the deafened have attained the dignity of no less than sixteen organizations, which are doing various forms of social work in New York, San Francisco, Chicago, Jersey City, Newark, N. J., Toledo, Ohio, Pittsburgh, Los Angeles, Cleveland, Boston, Philadelphia, St. Louis, Washington, Dayton, Ohio, Toronto and Kansas City, Mo. They have organized, in cooperation with some of our leading otologists, the American Association for the Hard of Hearing to work in the national and international fields. This is at present holding its second annual meeting in Boston, and it has already nine constituent bodies (the Leagues for the Hard of Hearing in New York, San Francisco, Chicago, Jersey City, Newark, Toledo, Pittsburgh and Los Angeles, and the Lip-Readers' Club of Cleveland) besides a considerable number of individual members. It is about to change its name to one which shall better describe it—the American Federation of Organizations for the Hard of Hearing.

These sixteen organizations represent hundreds of rebuilt lives—deafened people who have overcome their handicap and are working for the good of other deafened people. They represent literally thousands of deafened people whose lives have been at least touched and ameliorated, who will never be quite as lonely, despairing or demoralized as if this movement had never started. In each locality they make their mark; they win the respect of all social welfare organizations; they educate employers of labor to the possibilities of the deafened worker; they show school boards that free instruction on lip-reading is the right of every deafened adult for economic reasons as well as humanitarian; they work for the discovery and treatment of partial deafness in schoolchildren and for special instruction in lip-reading for such children in their schools without segregating them with the deaf. As a typical case, let me cite the story of a boy of fourteen whose parents, on the advice of an organization, have placed him in a private school of lip-reading for the summer. He will enter high school next fall, taking a cooperative industrial course. His mother told the social worker that she had consulted a number of otologists, who all agreed that her son's deafness was incurable, but did not tell her what could be done to lessen the handicap. At last she went to an otologist who is deeply interested in this organization's work and is constantly in touch with its workers. He told her that her son must study lip-reading without any delay, and that his vocation must be carefully selected. Her gratitude overflowed her vocabulary; her problem was solved at last: "That—that—is a Hero-Man!" was her cry.

All these things may be called the outside work of the sixteen organizations; their inside work is naturally more concentrated. It is the complete rebuilding of lives. Their members study and practice the art of lip-reading; they procure employment; they learn how to make good use of hearing devices; they attack the non-social tendencies of the deafened toward isolation and ultimate demoralization by conducting every possible sort of activity which can restore a normal mental and spiritual attitude. These activities include parties of every description, cards, games, dances, outings; educative groups to supply in a special way

what the deafened cannot get in a general way; among the latter are lectures, Bible classes, crafts, instruction, story telling, classes in social dancing, gymnastics and folk dancing, and dramatics; one organization has a small but earnest brass band. Nearly all have their own headquarters, a room, a suite or an entire floor in an office building; four maintain their own club houses; one operates a successful tea shop, and one conducts an up-to-date vocational bureau and is otherwise so comprehensive that it truthfully calls itself a community center for the deafened.

It should be pointed out that there is no intention in all this to make life easy for the hard of hearing by segregating them from an unsympathetic outer world. On the contrary, the object is to develop alertness, independence and initiative, so that the reconstructed individual goes back into the one great world of work and play and commands its respect. And not only does he develop alertness, independence and initiative, but through good comradeship a spiritual healing takes place and the impulse to serve is born in him. He goes forth, therefore, ready and able to perform the full duties of a citizen—to pay his way, to keep fit and happy, and to help others. Many letters attest the truth and the force of this, for the people are so happy in their changed lives that they must not only say so, but offer service, and what is more, they pledge themselves to share the support of the organization which has helped them by making monthly or annual payments which are nothing short of remarkable, considering their means.

It may be asked what types are served by these organizations. Every type of human being plus the tragedy of acquired deafness. In every case there is the color of tragedy; it may be a tint; it may be deeply dyed. Many lives are saddened, as in the case of a prosperous business man who found in his local organization just the happiness he needed, and even the hearing device that remade the world for him; many lives are thwarted, but some are definitely warped by deafness. What relation, for example, does acquired deafness bear to crime? Let us consider two stories from the records of one of the larger organizations.

A was the 18 year old son of foreign born parents who did not recognize his deafness. Misunderstood and ridiculed, he ran away from school to New York. He was picked up in questionable surroundings by the police and brought to organization headquarters by a probation officer. Work was found for him and he was encouraged to study lip-reading.

B is an east side Italian committed to prison on conviction of assault. His case has been investigated and it is clear that he was an innocent victim for no other reason, apparently, except that he was a foreigner and deafened. He urged the necessity of getting him a job at once, saying that the police were watching him and that as he had been in prison even temporary unemployment was a peril. As this happened during the present industrial crisis, it was serious; but, fortunately, employment was found for him. He had been known to this organization before his conviction as a respectable working man supporting a paralyzed mother, but since his imprisonment he has shown signs of a growing mental depravity and it is now doubtful whether much can be done for him.

From these instances, it is plain that the deafened boy or man does not always get fair treatment in the

courts because it is often assumed that deafness is feigned. Organizations, when more widely known, will be able to forestall these injustices as well as to alleviate their after-effects and also the effects of punishment that has been well deserved.³

While it is true that the deafened are organized and are doing great works for one another, and in a larger sense, for the public good, they have one class of friends who work faithfully side by side with them; these friends advise them and they also share in government, financial sacrifice and all other responsibility. These friends are the great-hearted, progressive otologists of America. Without them, one might almost say, social work for the deafened would be impossible. It certainly could not hold its present high standard. Otologists have founded more than one organization; they are leading more than one as presidents; they are now organizing the deafened of several cities; they serve on many consulting boards; and an otologist, Dr. Wendell C. Phillips of New York, founded our American Association for the Hard of Hearing and is now its president. Among the most active may be named Dr. Harold Hays, for the last seven years president of the New York League for the Hard of Hearing; Dr. T. R. Chambers, organizer and president of the Jersey City League, and Dr. M. A. Goldstein, founder of the Saint Louis League; Dr. Shambaugh of Chicago, Dr. Thomas Hubbard of Toledo, Dr. Richardson of Washington and Dr. MacCuen Smith of Philadelphia work with the organizations in their respective cities; Dr. T. H. Halstead of Syracuse, N. Y., has established a lip-reading clinic; while the interest of the late Dr. Clarence Blake in the Speech-Reader's Guild of Boston, and the present cooperation of Dr. D. H. Walker with the Guild are well known.

In towns where these organization for the deafened exist, the otologists welcome them because they can send them their patients for lip-reading, advice as to hearing devices, employment, and for what they believe is of prime importance, recreation and companionship. The chief object of our American Association is to encourage the formation of new organizations. This need not be difficult. If the otologist will invite a group of deafened people to meet social workers, people of means, and the local teacher of lip-reading, where one is resident, a beginning is easily made. If there is no resident teacher of the adult hard of hearing, such a group can procure one, either through influencing the local school board or by applying to one of the schools giving normal training. Schools of lip-reading, such as the Nitchie School in New York, the Bruhn School in Boston and the Kinzie School in Philadelphia, are constantly sending out their normal graduates to establish new schools. These teachers are glad to settle where such inducements as the cooperation of otologists and a nucleus of pupils are held out to them. The association stands ready to help each new organization with information, advice and printed matter, and it can arrange to send speakers to address organization meetings.

We invite this section to make full and constant use of us; we invite its members to visit our exhibit at the home of the Speech-Reader's Guild; and we ask

nothing better, as reconstructed deafened people, than to work shoulder to shoulder with the otologists for the social betterment of all who are adventitiously deafened toward the goal set before us by James Kerr Love of Glasgow: the prevention of deafness.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. HAYS AND MISS PECK

DR. WENDELL C. PHILLIPS, New York: The Association of the Hard of Hearing is one of the finest organizations in this country. A series of panels is to be sent around the country for missionary work in the building up of organizations of this kind. I cannot tell you what a relief it has been to me to have at my hand a social center to which I can send my deaf patients, where they will be cared for and encouraged—rehabilitated, faith-restored, and self-directed. Experience with it has made me a missionary to the cause of having the work extended to all parts of the country. It is a sad travesty to be compelled to say to a patient, "Your hearing is gone and nothing can be done," when you know that a new life may be opened up for these people. I am in sympathy with every word Dr. Hays said. We ought to go into the public schools in all our cities and begin there the work for the prevention of deafness. Much can be done and little is being done in any of the schools. I hope you will think seriously of this, because we owe this duty to the deaf children and to the community. If you will write to the headquarters of the national organization we will send you literature to show how the work is accomplished. Then you can start a campaign of this kind in your own city in order to carry to the afflicted ones there this gospel of hope for the deaf.

DR. FRANCIS P. EMERSON, Boston: It is in the recent cases that our success lies almost wholly. In chronic cases we all have had difficulties. It is in the handling of these cases that I differ with Dr. Hays as to what takes place. In chronic cases I believe two processes are going on: First, the gross tissue changes with diminished tone perception which takes place with the onset of the deafness and which goes on throughout the course of the disease. If you analyze several hundred hearing tests you will find that they all conform to about the same formula. There is diminished tone perception for the whispered voice and raising of the lower limits in the recent cases. In those cases in which a pocket tube is used, as the tube opens, tone perception of the low limits becomes normal; but if that case is going on to complete deafness, tone perception of the upper limits, which is roughly indicated in its lower part by the whispered voice, continues to be lost. My final judgment is that it is the loss of this tone perception which is important, because until the patient becomes very deaf, the low limits are not again raised. Just before the low limits are raised, you may get evidence that there is some involvement of the cochlear nerve. This is indicated by tone gaps and by diminished perception for the 2,048 C⁴ fork more often than for any other. This finding was confirmed by Dr. Dean in the use of his audiometer. With the raising of the limits and lowering of bone conduction we all recognize that there is nerve involvement; but by the time you can recognize nerve involvement by a metallic instrument, the process has gone on indefinitely. The second point on which I differ with the essayist is that I think the origin of this trouble is in a chronic focus with acute exacerbations and not in a reinfection. Taking a careful history of these patients, you find that the process which has started and is going on throughout life is manifested in other ways whereby you can account for general systemic conditions besides loss of tone perception.

DR. CULLEN F. WELTY, San Francisco: About fifteen years ago I dwelt especially on the indications for acute mastoid operation, saying at that time that if we allowed a case of acute suppuration to go along for more than a certain period, the hearing was more than likely to be impaired. Following mastoid operation in these acute cases, two thirds of the patients are improved in hearing. Why allow them to go

3. One children's court in Philadelphia has an attending otologist who says that, of the children brought in for delinquency, perhaps 10 per cent. are not delinquent, but hard of hearing.

along and have further impairment of hearing? Another thing for us to determine is when to operate for adenoids and diseased tonsils. I say, at the first onset of any trouble. Do not wait for a second or third attack. In regard to otosclerosis, we cannot do anything for it; we do not know much about it; we know that it is hereditary. One of the foremost otologists of the world says that these people should not marry, that that is the only way to prevent the condition. At the Otological Congress at Budapest twelve years ago I maintained that in case a woman who is impaired in her hearing should become pregnant, she should have a therapeutic abortion. In regard to lip reading, I am associated with one of these organizations in San Francisco, and I can only subscribe to what Miss Peck has said regarding the wonderful field this work has opened up for persons who are really deaf or who have had their hearing destroyed entirely.

DR. T. R. CHAMBERS, Jersey City, N. J.: If Dr. Pyncheon of Chicago were alive, he would recommend something which Dr. Hays in his paper failed to mention, and that is to teach people how to clean the little baby's nose. In the case of children up to 3 years of age who are brought for examination and treatment, you may have all the laboratory appliances you want, but rich and poor alike will neglect your treatment. My treatment is based on ideas obtained from Dr. Pyncheon long before he died, and that is to tell the mother to place some warm boric acid solution in a large basin; and then put the baby's head down in the water. The baby cries; lift it up, head down, and the baby will clean its nose better than you can do it with any appliance. That has been my treatment for a long time and it has been successful. Elaborate treatments fail because they are neglected. Dr. Phillips brought this subject to my attention a year ago and placed me on a committee of the Hard of Hearing Association in New York. I was indifferent at first, but since becoming active in this work, I have been instrumental in getting up a fine organization in Jersey City. Many times I have been discouraged and about ready to give up, but persons coming one after another, exemplifying what we are doing in the reconstruction of these afflicted ones, inspire the hope that similar agencies may be instituted wherever there are deaf people.

DR. D. J. McDONALD, New York: Thirteen years ago I came before the society in regard to constructive work from the economic position of the deaf. It required six years' work to bring about in New York City the foundation of a school for the deaf through the help of Dr. William H. Maxwell. We must have cooperation within our own ranks. I am now in a movement to raise \$150,000 in New York City to enable these people to help themselves. If this committee could have subcommittees in every city, we should be able to do effective work by distributing propaganda in the halls of Congress, in the various legislatures and in the different communities. So far we have been partly successful in New York, but, as Dr. Chambers says, it is hard to get the layman interested. However, any man who goes to the school on Twenty-Third Street and sees the work that is being done by Dr. G. B. McAuliffe and others will be glad to go to his legislators in an endeavor to have money appropriated for this work. When we consider that in the general educational system of the United States not 0.5 per cent. is given toward the education of the deaf, there is no reason why we should not get together here and have a committee appointed that will help these people to help themselves. Dr. George B. McAuliffe was appointed by the board of education to find out about the tone gaps, etc., referred to by Dr. Emerson. The teachers there could be very much improved, but this association, of which Dr. Phillips is the head in New York City, is on the right road to secure proper teachers. We hope that eventually we shall have three or four hundred men and women in this country who will be trying to help Miss Peck to carry on this most important work.

DR. HAROLD HAYS, New York: The majority of hard of hearing persons can be helped, either by prevention, by school work, or by medical attention, but they cannot be helped by local treatment at all. They must be treated systemically.

SOME PERSONAL EXPERIENCES WITH CASES OF MYASTHENIA GRAVIS*

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Although myasthenia gravis is designated either as a disease of the muscles or belonging to the endocrinopathies as a thymic disorder, yet its clinical position and nosology are very uncertain. On the one hand, particularly in the mild cases, the fatigue symptoms show a strong analogy to psychoneurotic fatigue, with the exception that in myasthenia gravis the fatigue is improved by rest and, on the other hand, more recent investigations seem to point that it may be an endocrine disorder or disturbance in the vegetative nervous system. Symptoms of myasthenia gravis are occasionally encountered in hyperthyroidism or exophthalmic goiter, and these symptoms have been known to improve after thyroidectomy or antithyroid therapy.

The disease is rather rare, although personal observations have shown that there may be mild forms of the disorder which are frequently confused with the psychoneuroses, particularly if fatigue be a prominent symptom. In 1878, Erb separated the disease from the progressive bulbar palsies of organic nature, and later Oppenheim,¹ in 1887, definitely described the disorder under the term of myasthenic paralysis or bulbar paralysis without anatomic findings. In 1891, Jolly first called attention to the characteristic electrical reactions occurring in the muscles, the so-called myasthenic reaction, although, as will be shown later, these electrical reactions are open to certain modifications and to new interpretations.

From the standpoint of medical history, although Oppenheim seems to have overlooked the fact in his monograph, it is interesting to note that a clear description of the disease was given by the English physician Thomas Willis,² in 1685, under the title of "Palsey." The rapid muscular fatigue and the bulbar disturbances of speech were described by Willis in a vivid and picturesque manner.

It is my purpose in this contribution to give some personal experiences with myasthenia gravis. It seems that it would be more valuable, instead of relating the medical histories in detail or in summary, to give a condensation of personal impressions, a sort of a clinical Galton photograph.

I have been particularly fortunate in having been able to observe and study eighteen cases of the disorder. Out of the eighteen cases ten were male and eight female. The age of onset among the male cases varied from 15 years, the youngest, to 62 years, the oldest, seven of these cases showing the first symptoms before the age of 35. Among the female cases the ages varied from 16 to 49 years, practically the same as for the male cases with the exception of one case in which the first symptom manifested itself at the age of 62. This corresponds fairly closely with Oppenheim's observation that, "as a rule, young persons are affected, but there are exceptions."

The racial predilection is interesting. Ten of the cases were Russian-Jewish, four Irish-American, two

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Oppenheim, H.: *Die Myasthenische Paralyse*, 1901.

2. Willis, Thomas: *The London Practise of Physick*, 1685, pp. 431-432.

American, and one each in Dutch and Italian subjects. Why over 50 per cent. of the cases should have occurred in individuals of Russian Jewish origin it is impossible to state, until more is known of the exact etiology of the disease.

SYMPTOMS

The mode of onset, or rather the first symptoms of the disease were variable and may be thus summarized:

Severe general fatigue and thickness of speech, difficulty in chewing food and swallowing (bulbar symptoms), five cases.

Severe general fatigue with cardiac symptoms (central arrhythmia and extrasystoles), one case.

Pure bulbar symptoms (difficulty in swallowing and chewing food, thickness of speech) without general fatigue, two cases.

Fatigue and diplopia, two cases.

Diplopia, ptosis, thickness of speech, difficulty in swallowing, three cases.

Excessive fatigue and drowsiness, one case.

Localized fatigue in the legs, two cases.

Severe general fatigue, one case.

Diplopia, one case.

Double ptosis, one case.

Because of these variable symptoms, the patients had first consulted specialists in their respective fields, for the eye symptoms, the ophthalmologist; for the bulbar symptoms, the laryngologist; for the localized weakness in the legs, the surgeon; and it was only after further observation that the real nature of the disorder became clear.

An analysis of this material revealed certain features of interest. The general fatigue was usually rapid in its onset and improved by rest, thus distinguishing it from the false fatigue of the psychoneuroses, such as occurs in hysteria and the anxiety neuroses. In myasthenia gravis the fatigue becomes rapidly worse after exertion, particularly in localized muscle groups, such as in swallowing or in speech, whereas in the psychoneuroses, the fatigue is of an emotional nature and bears little or no relation to muscular exertion. The pupillary reflexes and the knee jerks were normal in all cases. In some instances the knee jerk became greatly diminished or actually disappeared after repeated tapping with the percussion hammer, but the reflex was rapidly restored after a few minutes' rest, thus corresponding to the rapid exhaustion and subsequent rapid restoration of muscular contractability on faradic stimulation. In a few cases also, an exhaustion of the pupillary reflexes could be demonstrated on frequent illumination of the retina.

Hyperthyroidism was not noticed in any of the pure cases of myasthenia gravis, although its possibility was taken into consideration, particularly because of the theory advanced by Chvostek that hyperfunction of the thyroid gland may produce the disorder. Muscular weakness and myasthenic symptoms are facts of common clinical experience in hyperthyroidism and exophthalmic goiter, the symptoms disappearing after thyroidectomy or after the administration of a thyroid antitoxin.

In none of these cases could any disturbances of the sensation be demonstrated, although Buzzard found sensory disturbances in his series of seven cases, in one of which there was a diminution of cutaneous sensibility of the root distribution type.

The onset in all cases was rather slow and occasionally without known cause. In some of the cases, however, it followed tonsillitis, influenza, severe gastro-

intestinal disturbances with diarrhea or an emotional shock. One case appeared after a lobar pneumonia, and one absolutely typical case followed shortly after a severe influenza. This patient died subsequently from respiratory paralysis. In this instance, whether the influenza was a direct cause or merely a precipitating factor in a myasthenia which was already latent, it is impossible to state. One patient had been an auctioneer for several years, and in this case the first symptom took the form of dysarthria, probably arising on the speech mechanism already fatigued through this strenuous occupation.

In those cases in which a Wassermann test was made, the reaction was always negative. No thymus enlargement could be demonstrated by the roentgen ray in any instance. In most cases the family history was negative, except an occasional tendency to tics or psychoneuroses. There were no mental symptoms in any of the patients except the usual reactive anxious depression. Two cases showed a doubtful Babinski reflex. In two cases also, hiccup was present for a time, a symptom which can be explained only on the basis of a myasthenic localization in the diaphragm.

As it is also the object of this contribution to direct attention to the milder and practically undescribed forms of the disorder, certain points of importance will be emphasized, since the fatigue symptoms alone bear a certain resemblance to the fatigue of the psychoneuroses. There are, however, several characteristics of the mild type which clearly differentiate the condition from the psychoneurotic exhaustion, particularly the developmental data of the clinical history, the nature of the fatigue itself and its relation to rest, and finally the electrical reactions. These mild types of the disease may be transitory or prolonged, but all the cases seem to progress to recovery and differ from the severer types in the absence of the characteristic facies, although slight ocular and bulbar symptoms may be in evidence after exertion.

The most prominent symptom of these mild types of myasthenia gravis is the phenomenon of exhaustion, both from the subjective standpoint and from the actual demonstration of abnormal fatigue through the electrical reactions and the reflexes. All the patients complained of a constant sense of severe fatigue, which became rapidly worse on exertion and rather slowly improved by rest, thus differentiating it from the emotional fatigue of hysteria or neurasthenia, which bears little or no relation to rest or exertion. Nor did the fatigue have the usual apprehensive anxiety of neurasthenic and hysterical states, but seemed to be actually localized in the muscles, particularly in the lower extremities. Experiments on the electrical reactions of the muscles of hysterics and neurasthenics complaining of severe fatigue showed a complete absence of the characteristic myasthenic reaction.

In the more severe cases, the bulbar symptoms of the difficulty in swallowing and the dysarthria after a few minutes' conversation also belongs to the same category of exhaustibility of the peripheral apparatus of speech and swallowing. In one case the drawling speech was the first symptom of the disorder, in another the rapid fatigue of the leg muscles in walking up stairs; in a third case, that of a barber, the initial fatigue was localized in the fingers resembling an occupational neurosis, causing him frequently to drop a razor or comb during the course of his work. In fact, it seems that strong myasthenic symptoms in the

so-called occupational neuroses may be the forerunners of a myasthenia gravis.

REACTIONS TO FARADISM AND GALVANISM

In all the cases, the typical myasthenic reaction to the faradic current was present, and the rapidity with which the complete exhaustion of the muscular contractions could be induced bore a direct relation to the subjective sense of fatigue. In other words, parallel with the improvement, the number of contractions of the faradic current or the length of time of application of a tetanizing current tended to diminish with improvement. It seems also that a tetanizing current produces a more rapid muscular exhaustion than the usual make-and-break test. The exhausted muscles rapidly recovered their irritability to faradism after a few minutes' rest. The fact also that the muscles showed a normal quick reaction to galvanism and without polar inversion, and that a muscle completely exhausted by faradism still reacted to the galvanic current of the same strength in milliamperes as before the faradic exhaustion, leads to the same interesting generalizations on the localization and theory of the disease. The characteristic reaction in myasthenia gravis is obtained by faradism, whereas in muscular atrophies produced by a lower motor neuron disease it is obtained by galvanism.

Even after the muscles have been completely exhausted by faradism, they still respond normally to galvanism, with a normal formula and quick, sharp contractions and always with the same amount of current as before the faradic exhaustion. No muscular atrophy or fibrillary twitchings could be demonstrated in any of the cases. Where bulbar symptoms were prominent or where a ptosis appeared, the facial group of muscles showed the best myasthenic reaction. If the fatigue was localized in the legs, the thigh muscles were selected for the test, whereas, if the fatigue is a general one without characteristic local symptoms, almost any group of muscles will show the typical myasthenic reaction.

As the case improves clinically, the number of contractions or the length of time necessary to produce muscular exhaustion by the faradic current gradually becomes less, until it finally disappears altogether. Some very interesting curves could be plotted in some of our cases showing the parallelism between clinical improvement and the diminution of myasthenic exhaustion of the electrical current.

The course of the disease is rather slow, the mild cases seeming actually to recover. It is an open question, however, whether a genuine recovery ever takes place in the severe cases. In one patient, there was a remission of over ten years, when the myasthenic symptoms reappeared without any apparently known cause.

TREATMENT

Although treatment as a rule is rather unsatisfactory, yet personal experience has shown that the best treatment of the disease is symptomatic and consists of absolute rest, both general rest for the general fatigue and localized rest for certain groups of muscles, for the more definite local symptoms. If bulbar symptoms appear, producing dysarthria, the patient is forbidden to talk for a certain length of time; if there is dysphagia, the deglutition reflexes must be given as much rest as possible. In the latter instances only fluid or semisolid food should be allowed, in order

to minimize the energy used up in chewing; and the swallowing muscles should be allowed an interval of from one to three minutes to elapse after each mouthful of food or swallowing of liquid. This plan is usually very satisfactory, as experiments on both voluntary contraction of the muscles and the reaction of the muscles to the faradic current demonstrate a rapid recovery from the myasthenic fatigue under these conditions. In fact, the data derived from the periodic examinations of the myasthenic reaction will often furnish valuable hints in the treatment and feeding of the patient.

Although recent investigations have tended to establish the fact that the disease may be of the nature of an endocrine disorder, yet it is doubtful whether ductless glandular extracts are of any value. As starchy foods are not well digested because of insufficient mastication and mixture with saliva, either the patient should be directed to keep food in his mouth as long as possible, or, what is better, one of the starch digesting ferments should be administered or mixed directly with the food. In all cases it is absolutely essential that the state of nutrition be carefully maintained.

The central nervous system in this disease shows no characteristic lesions and, basing our conclusions on the nature of the myasthenic electrical reactions, the disorder is probably some type of a toxic degenerative myositis. The characteristic electrical reaction of myasthenia gravis, either of the severe or of the milder types, is obtained by faradism and not by galvanism, whereas in the muscular atrophies following peripheral nerve degeneration or from lesions of the first motor neuron, the characteristic electrical change is obtained by galvanism. The myasthenic reaction strongly resembles the reaction obtained by both veratrin and protoveratrin, and the fatigue curve in myasthenia gravis is analogous to that of muscle preparations poisoned by these alkaloids.³ In some of our cases in which it was possible to carry out the test, it was found that after complete exhaustion by faradism the muscles still reacted to the galvanic current. This seemed to point to the localization of the exhaustion to the motor end-organs rather than to the muscle fibers themselves. In this disease also the creatinin excretion is less than normal, and this points to the fact that myasthenia gravis may be a disorder of deranged muscular metabolism. A marked increase of the calcium output is also found; and since calcium plays an important part in normal muscular action, the good results obtained by the calcium salts in some of the mild forms of this disease may thus be in part explained.

CONCLUSION

It seems extremely doubtful whether the disease is a pure neurosis, in spite of the negative anatomic findings in the central nervous system, although certain neurotic and emotional features can be distinguished in nearly all cases which are carefully observed. Future investigations of the disease must be directed along several lines, such as the vegetative nervous system, which probably regulates muscular metabolism, toxic causes, for the reason that many cases seem to follow infectious disorders, endocrine disturbances and, finally, an examination of the unconscious psychic states.

3. Walker, A. D.: *Brain*, 1900. Meyer and Gottlieb: *Pharmacology*, p. 426.

ABSTRACT OF DISCUSSION

DR. W. F. SCHALLER, San Francisco: Were blood pressure observations made in this group of cases? This might throw some light on suprarenal deficiency as a possible etiologic factor. I have a patient under observation at present in whom blood pressure readings were repeatedly made and found normal.

DR. WALTER TIMME, New York: I should like to substantiate the fact regarding the racial factor. I have seen only three cases of undoubted myasthenia gravis in the last two years, and the patients were Jews over the age of 45. Their metabolic rates were all minus, varying from 10 to 17. Blood sugar was low in all, the lowest being 60 mm. to 100 c.c. blood. The blood pressure varied, but there were no departures from the normal in two. In the third case the blood pressure was over 200 systolic. All showed typical myasthenic reactions. This test should be done very carefully, 150 interruptions a minute of the faradic current in order to exhaust the affected muscle within two minutes. In all three cases there was a focus of infection; in the first case, carious teeth; in the second, a secondary sinus infection; in the third we could not determine the source of infection for a long time until an acute mastoiditis developed six months afterward and operation revealed evidence of an old chronic mastoid infection which had never been diagnosed. After operation the blood pressure rapidly fell, until now the systolic pressure is from 130 to 140. The myasthenia remains; the infectious process in the mastoid is still present, though slight. In the case with carious teeth there was little improvement after the extraction of the teeth, but in the third, the patient made a remarkable recovery.

DR. G. H. HOXIE, Kansas City, Mo.: Were there evidences of leukemia? The literature contains cases under the diagnosis of leukemia which other writers have regarded as cases of myasthenia gravis.

DR. ISADOR H. CORIAT, Boston: The discussion has emphasized that we know nothing of the origin or nature of myasthenia gravis. It is true that some of my cases followed infection, but the more I study this curious disease, the less I feel I know about it.

JEJUNOSTOMY

A TREATMENT OF ACUTE ILEUS AND A PREVENTIVE OF POSTOPERATIVE ILEUS*

A. I. McKINNON, M.D.

LINCOLN, NEB.

The problem that confronts the surgeon in every case of obstruction of the bowels is emptying the intestinal canal. When free drainage is once established, the patient's urgent symptoms are relieved; and for the time being his case is changed from an almost hopeless surgical risk to a comparatively good one. The cause of the obstruction or the subsequent intoxication is not a matter of immediate concern. Emptying the intestinal canal for the present practically restores the patient to a normal condition. In short, drainage is the definite objective.

The advocacy of enterostomy for drainage is not new, being not infrequently employed following an operation for the relief of the obstruction. The surgeon opens the bowel not because he feels sure it will keep the patient alive, but from custom. He has no well-founded reason for the procedure. He has in mind no particular part of the bowel to open. He generally selects a point near the obstruction, where

the bowel is most distended, and hence most parietic. This explains the fact that so few enterostomies drain successfully. In addition, to still further decrease the chance for successful drainage, the operation is generally performed under ether narcosis. It is common knowledge that ether inhibits peristalsis.

Some years ago, I read an abstract from an article by some foreign author on gastrostomy in postoperative peritonitis with ileus. He reported a few cases with recoveries. I inferred that the gastrostomy was performed to drain the stomach as it was filled from the intestines and to eliminate the depressing defects of vomiting. Jan. 21, 1916, I saw a case of obstruction of the bowels of seventy-two hours' duration. I felt that an operation under a general anesthetic to relieve the obstruction and drain the intestine would be fatal. I, therefore, decided to perform a gastrostomy under local anesthesia as a temporary expedient, and if it were successful, a curative operation could be performed later. On opening the abdomen, I found neither stomach, transverse colon nor omentum visible or easily palpable, for the reason that these organs had been displaced upward by the extreme distention of the intestine. I was in a quandary. I decided that, inasmuch as I could not drain the stomach, I would drain the intestine near the stomach. I picked up a loop of the jejunum near its origin, put in a purse-string suture, punctured the intestine, introduced a small drainage tube, anchored the tube with a retaining suture, then another purse-string suture and dropped the intestine into the abdominal cavity.

The tube began to drain liquid intestinal contents and gas immediately. Large quantities poured out intermittently. The patient was soon able to take a deep breath, and after a few deep inspirations, expressed herself as feeling all right. In a few minutes, the clinical picture had changed as if by magic. Her convalescence was uninterrupted, the bowels moved naturally within thirty-six hours after the operation. The tube dropped out on the fifth day and there was absolutely no leakage afterward. The patient left the hospital on the seventh day. (The obstruction, evidently, was due to a volvulus.)

To the best of my knowledge, this is the first case on record in which a tube was introduced into the upper end of the jejunum to relieve obstruction of the bowels.

Shortly after this, I saw another case of acute obstruction of the bowels with extreme distention. I performed the same operation; that is, I put a tube into the jejunum under local anesthesia. The result was as dramatic as in the first case. After a few inspirations the patient remarked that she was feeling all right. She improved steadily and took nourishment freely; however, nothing passed through the rectum. After five or six days, she was again taken to the operating room and given a general anesthetic. The abdomen was opened and a Meckel's diverticulum was found with a fibrous band attached to the mesentery. Through this loop, several coils of the intestine had become incarcerated, causing complete obstruction. The diverticulum was removed, and the patient made a complete and prompt recovery. I have used this method of relieving intestinal obstruction in a large series of cases with marked success, and the mortality has been reduced almost to zero.

I have become firmly convinced that the poor results of the operation for ileus are due to the use of general

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anesthesia and faulty drainage. Undoubtedly, too much emphasis has been laid on the pathology of obstruction and not enough on the physiology of peristalsis and the mechanics of drainage.

From my experience and from clinical observation, it is my belief that the chief factors causing death in intestinal obstruction are of a mechanical nature and incident on the abdominal distention. This distention leads to a displacement of the abdominal viscera, crowding the diaphragm and subdiaphragmatic viscera virtually into the thorax, thus diminishing the capacity of the lungs to such an extent that asphyxiation ensues, with its accompanying symptoms of rapid shallow respiration, rapid pulse, leaky skin, cyanosis, etc.

A properly performed jejunostomy will drain the intestinal canal, reduce intra-abdominal tension, improve respiration—all this, with a surprising suddenness.

This dramatic change from a condition of imminent dissolution to one of comparative well-being in a few minutes would not occur if the symptoms were due to toxic absorption.

TECHNIC

The use of a local anesthetic is imperative for obvious reasons. (It does not inhibit peristalsis nor add to the patient's toxic condition.) A short incision is made through the upper left rectus muscle, beginning at the margin of the ribs. Next, the upper end of the jejunum is located. This is the vital, likewise the most difficult, part of the operation. The ungloved index finger is introduced and the bifurcation of the abdominal aorta is located. Normally, the jejunum is within an inch above it, to the left. It may be pushed up several inches. The right side is palpated for the root of the mesentery at the upper border, and by sweeping the finger from the aorta to the left, the beginning of the jejunum will be found. A pair of intestinal forceps is introduced and a loop of the bowel is delivered.

Next a purse-string suture is inserted, the bowel is opened, a drainage tube is inserted 2 or 3 inches, with the point away from the stomach. A retaining suture is put in and the purse-string suture is tied. Another purse-string suture is inserted three fourths of an inch from the tube, invaginated and tied, then the bowel is returned to the abdominal cavity. The bowel should not be sutured to the abdominal wall.

COMMENT

There are other conditions besides acute obstruction in which jejunostomy has proved to be a life-saving operation; for instance, in perforated ulcer of the stomach, in general, suppurative peritonitis, in perforations and resections of the bowel.

To a jejunostomy performed at the completion of the operation to forestall a possible ileus, I have given the name complemental jejunostomy.

It has been my observation in complemental jejunostomy that for the first twenty-four hours the drainage is slight, consisting of a few ounces of bile-stained mucus. After this period, drainage is profuse. When normal peristalsis is restored tube drainage ceases. One of the most striking results is the absence of postoperative pain and discomfort, as repeatedly expressed by patients who have formerly undergone abdominal operations. Invariably they will tell you that during their convalescence from former operations they suf-

fered from gas pains. The question has often been asked, Does leakage of the bowel follow the removal of the tube? The answer is, that there is a cone of intestine projecting into its lumen. When the tube drops out, this acts on the principle of a safety ink bottle, thus preventing drainage.

In acute obstruction of the bowel, a high jejunostomy will drain the intestine immediately and continuously, as long as peristalsis is active and reversed. The abdomen should be opened under local anesthesia. Even in cases that are seemingly hopeless, and in which drainage is not free after jejunostomy, I found that washing out the stomach and the introduction of coffee, whisky, etc., through the tube sometimes stimulates peristalsis, and drainage soon becomes profuse and continuous.

A jejunostomy performed following a serious abdominal operation (a complemental jejunostomy) practically does away with postoperative vomiting. It eliminates gas pains and it always prevents postoperative ileus. It is valuable in desperate cases.

ABSTRACT OF DISCUSSION

DR. ANGUS McLEAN, Detroit: I have had a good deal of experience with ileus. In many of these cases at the time of operation one is in doubt whether or not stasis will occur. When you are skeptical about that, inject a few ounces of castor oil into the intestine, use a hollow needle and put a purse-string suture around. I have had several cases of so-called postoperative ileus or obstruction coming on two or three days later. The condition is usually preceded by distention and vomiting. The stomach should be washed out early. If the patient does not respond, you must make an opening into the intestine. Under no consideration use a general anesthetic of any kind, not even nitrous oxid gas. You can do this very well under local anesthesia and sometimes you can do it without using an anesthetic of any kind. Simply open the abdomen by taking out a few stitches. You may go too high so that secretions leave too soon. It is hard to nourish these people by mouth if the opening is too high up. You can puncture a dilated portion in the vicinity of the wound that may not reach it, but that will empty out the portion; in three or four hours that upper portion will crowd down and you can do that again. I have seen as many as four openings, and eventually the contents of the upper canal come through and the patient will be relieved. I know of nothing in surgery so beneficial as puncture of the intestine at the proper place when there is distention and a postoperative ileus, an obstruction. This obstruction is due to twisting or paralysis. I have seen dozens of them, after puncture where in two or three days the canal is restored, the bowels will move and secretions will go in the correct channel. You have a distended loop; puncture; it collapses, and I have seen some of these fistulas heal themselves; nothing further is necessary to be done.

DR. ARTEMAS I. McKINNON, Lincoln, Neb.: The reason for emphasizing the necessity of a high opening in the jejunum is illustrated by the case of a young man taken sick at midnight following a hearty meal before going to bed. I saw him almost seventy-two hours after onset of the obstruction. His condition was bad. I did the usual operation under a local anesthetic and brought out a loop of bowel, which I took to be the upper end of the jejunum, put in a tube and dropped the intestine back into the abdomen. It drained only a few ounces. I decided that I had not drained the upper end. I introduced my finger, and on palpating between spine and kidney, I found the beginning of the jejunum, and delivered a loop and put in a tube. The drainage was profuse and continuous. In a short time he was able to take a deep breath, and after a few inspirations he felt all right. That case was very valuable. If I had stopped with my first puncture the chances are it would not have done him any good. I have not had any trouble with

leakage following the removal of the tube. Drainage lasts only as long as peristalsis is reversed; when normal peristalsis is established, there is practically no drainage through the tube. In complementary jejunostomy, for the first twenty-four hours, there is practically no drainage following an abdominal operation under ether. This explains in part why our operations for obstructions were not successful when we did them under a general anesthetic. During the second and third twenty-four hour periods, drainage is profuse; after this it is less; and with normal peristalsis there is practically no drainage through the tube.

WHOLE BLOOD TRANSFUSION AND CITRATED BLOOD TRANSFUSION

POSSIBLE DIFFERENTIATION OF CASES *

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The time has arrived, it seems to me, to compare the methods of blood transfusion of recent development, with a view to determining whether, as has so often happened in other fields of endeavor, the pendulum has not swung too far in favor of the latest discovery. The necessity for this comparison is, perhaps, not so apparent to those who are familiar with the transfusion of blood only by the citrate method, as it is to those of us who have seen the procedure develop from the terribly difficult direct artery-to-vein major operation affair through the various simpler, indirect methods of giving whole blood, until finally the noncoagulable blood came into vogue, nor are the former in position to make the comparison.

SIMPLICITY OF CITRATE TRANSFUSION

It should be well understood that whole blood transfusions were only discarded because of the tremendously simplified technic of the citrate transfusion. There was never the slightest criticism concerning the efficacy of whole blood. It answered every purpose and was most satisfactory, once it was transfused. The only trouble was transfusing it—and that was such a technically trying and elaborate affair that the transfusion field was limited to a comparatively small group of specially trained operators.

It was because of this difficulty that the citrate method, whereby blood could be rendered uncoagulable by the addition of comparatively small amounts of sodium citrate and in this state kept for hours and injected into patients at will, was received with acclaim throughout the medical world. Nor would I decry this acclaim. I, myself, long a devotee of the whole blood method, took part in the deserved enthusiasm that followed the Agote-Lewisohn discovery, for I had long before become convinced that if the procedure of transfusing blood was to become popular and be of general service some such method needed to be evolved. I promptly adopted it, in company with most all other students of this subject. I carried out quite a series of citrate transfusions and became so convinced of the efficacy and simplicity of the method, and the possibility of its wide usefulness that in June, 1917, I read a paper before this Association advocating its general adoption. During the war I watched with interest the generalized use of this method of blood transfusion,

being firmly convinced of the correctness of that attitude of the Army authorities whereby all other methods for the time being were excluded from use. Nor have I cause for changing fundamentally that early opinion. The greatest good for the greatest number will come from the use of sodium citrate transfusion; it is undoubtedly the method of election for most men and for most cases.

UNFORTUNATE SEQUELAE

But we must not be blind to the fact that the sodium citrate blood transfusion possesses certain obscure, but none the less inherent, features that are not only embarrassing to the physician but most uncomfortable and even dangerous to the patient. Apparently there are a certain few patients, a small proportion of the total perhaps, but none the less definitely a certain few, that should not be subjected to this form of transfusion; for in the light of our more mature experience it is utterly ridiculous to pretend any longer that the reactions that follow the giving of citrated blood are harmless and susceptible of being ignored. Chills and fever and profound shock have never helped any one, and to ignore the danger of these sequelae, merely to note their occurrence without vouchsafing a careful consideration of their eventualities, is little more than admitting a mind closed to certain embarrassing features connected with the procedure.

Still this is the attitude we have maintained, our enthusiasm for the method having rather obscured our better judgment. It is true that we did take notice of these sequelae from the start; but it was felt that increasing familiarity with the method would eliminate its evils. Alas, vain hopes! The dread reactions still persist and persist despite the most painstaking efforts to discover their cause or origin, despite the most careful mixing of citrate with blood, despite the most carefully planned and executed citrate transfusions carried out by men whose long experience with general blood transfusion would preclude the possibility of technical error. Some thought that if the sodium citrate were freshly made, there would be no reaction following the transfusion, but that turned out to be a false hope. The use of freshly distilled water in making up the citrate solution was then advocated as a preventive, but that failed to make any material difference. Then warming the blood was tried, together with a host of other minor measures, but so far as I am aware the difficulty has not been overcome.

Worst of all, we are not even in position to tell just when a reaction will occur and when one will not. I sometimes think that if it were possible to predict, to be able to say that in a given case the conditions are such that no reaction need be feared, our minds might be a great deal easier in the use of this method. We are not in this position and the chances are that we never will be, since we are more and more inclining to believe that the reaction is due solely to the action of the sodium citrate itself. The phenomenon of the occurrence of the reaction in one case and not in another, probably will be found to resolve itself into a question of drug toxicity, an idiosyncrasy such as is shown toward many other drugs.

I have tried the various preventive measures advocated without avail. Knowing that the citrate is eliminated through the kidneys, on several occasions I have tried allowing the citrated blood to pass into the viens of the recipient in the slowest possible manner, once consuming an hour for 500 c.c. of blood, hoping

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that elimination would occur during the course of the blood inflow. But my patients suffered the reaction just the same, so I gave that up.

More men are doing transfusions now than ever before, and since many of them have had little experience and consequently can boast of only a minimum of skill in the work, the percentage of reactions is actually increasing. At first, we were rather inclined to the belief that the phenomenon was harmless. It was unfortunate and distressing both to the patient and the doctor, but little attention was paid to it—it appeared to be but a passing phase. All patients seemed to recover from it and the reaction over, citrated blood seemed to possess the same beneficent action and power as whole blood. So we assuaged our doubts at first. Then there occurred a case that did not get over the reaction, and it was not so very long before a similar one transpired and since then there have been others. Yet until this moment no warning has been sounded, though the number of deaths has been considerable. Our apathetic attitude on this question of citrate transfusion reaction is not unlike our attitude toward the blood-matching tests in the early days of blood transfusion development. Then every one felt that it was nice to match up the blood of donors and recipients prior to transfusion, but by no means essential or necessary—merely a refinement, nothing more. I was in this delightful state of mind myself. I had done a number of transfusions, ten or fifteen, quite successfully and with excellent results and without a thought of matching bloods, when lo! tragedy ensued. I had a death and the most distressingly sad death. It is true that the case was an emergency, a grave one, and there would have been no time for tests even had I wished to make them. But I would not have had them made if there had been hours and days of time, for with my successes I was convinced that they were but a superfluous refinement! What a terrible awakening! The most frightful case of hemoglobinuria resulted, from incompatible bloods, of course, and, in spite of every effort to stave off the inevitable, the inevitable occurred!

Even so, the true significance of this disaster dawned on me slowly, and it was not until some time later that I became convinced of the absolute necessity for blood tests preliminary to all blood transfusions. Private investigation brought forth the confession on the part of others of accidents similar to mine—and for the same blind reason. Just how many deaths did occur before every one became convinced of the prime necessity of blood tests no one will ever know, but there must have been a number. That there were not a great, great many is due solely to the fact that blood transfusions were rather rare occurrences in those days, owing to the inherent difficulties in performing the then fashionable direct transfusion.

So I maintain that this reaction following the citrate transfusion, with its inherent danger and the failure of medical men to take cognizance of its importance, is analogous to the story of our erstwhile indifference to blood tests, and I am trying to sound a warning. Deaths following reactions from citrate transfusion cannot longer be considered as accidental and unrelated to the reaction, nor can they be regarded as due to blood incompatibilities when competent laboratory workers have ruled out this factor by tests, not only before transfusion, but by control tests afterward. Furthermore, it is unscientific and stubborn to take the stand

that reactions are merely troublesome, perfectly innocuous and therefore of no consequence. I have had two deaths from this method of transfusion, and I have personal knowledge of about four additional unreported deaths, not to mention numerous other miraculous escapes from death, and I feel quite sure that the experience of many others has been not unlike my own. Indeed, one encounters hints to this effect in various articles that occur in the literature.

Since it is impossible to say what the exact cause of the reaction is, and impossible to eliminate it as a factor in citrate transfusion, the next best safeguard is to attempt to differentiate those cases that can safely be trusted to withstand the citrate reaction, should one occur, from those which under no circumstances should be exposed to this risk. We know now that in from 20 to 40 per cent. of the citrate transfusions a reaction of varying intensity will occur, while in the ordinary whole blood transfusion reactions may be expected in hardly more than 5 per cent. of the cases. If, then, we can determine with some degree of certainty which are the cases that cannot stand transfusion by the citrate method, we will have made a step in advance.

TYPES OF CASE UNSUITED FOR CITRATED BLOOD

According to my experience, there are apparently two types of case which should not be given the citrated blood:

1. That in which there has been a hemorrhage of such intensity that the extreme limits of bleeding have been reached, and the patient is in such a state of shock that everything in the nature of additional shock must at all hazards be avoided.

2. Those states of anemia, either primary or secondary, in which the blood depletion has progressed to such limits that the patient is almost dead.

Not many months ago, early one morning, I was aroused from a deep sleep and asked if anything could be done to save a man who had been given 500 c.c. of citrated blood four hours previously, and who was apparently dying from the reaction that had occurred. The case was one of the most profound exsanguination from bleeding of a duodenal ulcer. The man was conscious at the time of transfusion, but in the most critical state imaginable. He had had a frightful chill following the giving of the blood in spite of the fact that most careful preliminary tests by competent special laboratory workers had been made. The temperature rose to 105 F., the pulse became imperceptible, and he died from shock. That is an example of the first type of case which I have cited as unfit for transfusion with citrated blood. Those who are familiar with extreme exsanguination, and the profound degree of relaxation of all bodily functions that accompanies it, which we call shock, will at once recognize the common sense in my statement that every means possible should be taken to avoid any additional shock. And since it is well known that whole blood gives rise to a reaction in but the smallest possible percentage of cases, it can readily be recognized that this is the method of selection in such instances.

Two striking cases almost parallel with each other brought me to the foregoing conviction, and these cases are illustrative of the second type of case in which citrated blood ought not be given. The first was an elderly woman who was having air-hunger, as a result of prolonged and exsanguinating bleeding from a

terine fibroid. We took time to make the usual tests and then, in my ignorance, I gave her a citrate transfusion. She had a profound chill and died three hours later. The second was a younger woman who was so weak from prolonged and exsanguinating uterine bleeding of unknown origin that she was unable to talk above a whisper. The first case was vivid in my memory, and by that time I had begun to formulate my ideas of differentiation—so, fearing disaster from a possible reaction, I gave that girl a whole blood transfusion. She had no reaction whatever, and immediately took on renewed life. Two days later, feeling that she could stand the shock of a reaction and wishing to test out my incipient theory, I gave her the same amount of blood by the citrate method. She had a reaction, a most violent one; but as I had surmised she was able to withstand it, and came through. Her recovery was slow at first, but uneventful.

In certain of the primary anemias, especially when the blood picture is profoundly low, it is best at least to begin with whole blood. Several years ago, I was asked to perform a transfusion on a woman suffering from pernicious anemia whose condition was extremely critical. I had given citrated blood to others suffering from the same disease, and equally ill and anemic, with fortunate results, so I gave this patient the same type of transfusion. But she died. She had a reaction, and not such a terrible one at that; but she was evidently on the border line and was simply pushed over. This is the case which first aroused my doubts as to the suitability of citrated blood for all types of patients. I looked up the records of my other cases and found, surprisingly enough, that those most profoundly ill had failed to have a reaction at the first transfusion, which probably explained the lack of fatalities in this group. I remember even thinking that perhaps those most depleted of blood might possibly be secure against the reaction. Such was my ignorance. But though this path rather impressed me, I still remained unconvinced, probably, I realize now, because I was unwilling to admit the possibility of a citrate reaction death. The other physicians in the case rather believed that the patient was dying anyhow, and past saving, thus bolstering up my unwillingness. Thus do we permit our conscience to be salved and our judgment warped! While I was in France, there occurred in Baltimore two deaths following citrate transfusions in circumstances almost exactly similar to those just mentioned. As a result two widely known and well recognized physicians had come to the conclusion, independently of each other, that citrate transfusions were dangerous and that if possible they would have no more of them performed on their patients! On my return, however, being unaware of this stand, I performed a citrate transfusion on a patient of one of these men, Dr. Julius Edenwald, and when the patient suffered a most violent reaction from which he nearly succumbed, I received a gentle, but none the less firm, admonition. Three subsequent transfusions of whole blood on the same patient were totally devoid of untoward after-effects, and he made a good recovery. The tests in each instance were made by the same laboratory man.

It does not mean to say that every patient of this type has a reaction will die! On the contrary, I believe a majority of them will recover. But there is a chance that the occasional one will succumb, and since the occurrence of the reaction cannot be foretold, it is the occasional patient that we should endeavor to save

by giving the whole blood. There are refinements of differentiation in medicine and surgery, and it is high time we were introducing them into this field of work. The master of surgery at the Mayo Clinic possesses a higher degree of skill, he has a more refined technic than his brother surgeon of less experience and opportunity, and his results show it. The art of surgery finds its highest development in a Halsted or a Finney. He uses the finest ligatures in tying vessels, he handles tissues with the utmost delicacy, he takes, for example, the most extreme pains in handling an appendix stump. Another surgeon is perhaps a more rapid operator, he is less considerate of tissues, he ties vessels more or less *en masse*, feeling that it is unnecessary to take the time required to separate out each vessel and ligate it individually. His results are good and he is quite satisfied. But he achieves a poor result a bit oftener than the master, and he loses that occasional case which perhaps is saved by the master's refinements of technic.

CONCLUSIONS

It will not do to pass this matter over lightly; we are entrusted with human lives, and it is little enough to ask that we assume the burden with serious thought. We may expect that in from 20 to 40 per cent. of all citrate transfusions, a reaction of greater or less severity will occur. In this state of uncertainty, let us attempt to sift those cases which would seem to run a fatal risk if a reaction occurred and give them the benefit of the more refined whole blood transfusion in which the percentage of reactions is hardly so much as 5 per cent. I have mentioned two great groups of cases in which citrated blood is unsuited, but as time goes on and more attention is paid to this matter, still further differentiation will probably be made. I would not have you think for one moment that this is an attempt to belittle the value of the citrate transfusion. No one realizes better than I how much that has meant to the medical profession and to humanity at large. But it is necessary to recognize the fact that there are definite limitations to this method of giving blood and that failure to observe these limitations has caused unnecessary loss of life.

It is most unfortunate that the giving of whole blood necessitates a far higher degree of skill than does the giving of citrated blood. It requires great and constant practice, a real knowledge of surgical technic. Therefore, it seems that this method of transfusion must always remain in the hands of surgeons. There should be in every community, at least one man who is competent to carry out the whole blood method, and physicians should learn to differentiate their cases so that they may take advantage of this man's skill, and give to their charges that chance for life for which they come to him.

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ABSTRACT OF DISCUSSION

DR. HARRY G. SLOAN, Cleveland: People needing transfusion are usually classed in the handicapped group. We feel that if we add any factor to the transfusion which is damaging to the patient we have discounted the benefit that we wish to confer on the patient receiving blood. Blood hemolysis is one of the principal dangers in transfusion. This can be avoided by the proper grouping and selection of cases. The selection of the technic in transferring the blood is a very important point. Next to direct blood vessel suture, which transfers the blood into the patient's veins in the least

changed condition, but which is a painstaking operation, the method of choice is the transfer of whole blood by means of a paraffined glass tube. We have recently been using this technic more and more in transfusions. Dr. Raffl, of the house staff of Lakeside Hospital, has recently gone over the cases for two years, which number 436, and has found reactions in 5 per cent. We classify as a reaction following transfusion any rise in temperature above 1 degree C. As for the ease with which blood is transfused by means of paraffined glass tubes, we no longer think of this as a real surgical procedure. In fact, the house staff does all the transfusions. There is no technical difficulty in carrying the blood from one room to another. Practically all the transfusions are done in the ward or in the patient's room. If further surgical intervention is necessary, patients are removed to the operating room. More and more we are using transfusions in the treatment of patients whose diminished blood volume handicaps their oxidation processes, not only in cases of acute shock, but also in cases of pyogenic or tuberculous infection. In this way, they receive a temporary boost until such time as they can overcome the effect of their infection by their own resources.

DR. BETH VINCENT, Boston: Various causes of reactions have been considered, such as the introduction of a foreign protein, early coagulative changes in the blood during transfusion, and hemolysis of the red corpuscle varying from that of such slight degree as to be undetected by ordinary clinical methods to gross hemolysis giving rise to hemoglobinuria. Sodium citrate is said to promote reactions because it increases the fragility of the red cell. The individual susceptibility of the patient is an important factor. This varies with the individual and the disease. Some patients are very resistant; in others the degree of susceptibility is just as striking. This susceptibility is especially marked in diseases which show active hemolytic changes, such as advanced malignancy, septic conditions with hemolytic manifestations, and the blood diseases of which pernicious anemia is the best example. Clinically, reactions appear in three forms. Possibly they are different degrees of the same reaction. The first is a mild form manifested by chills and fever, usually brief and comparatively harmless. The second form is more severe and may lead to a fatal result. This is the hemolytic reaction which sometimes comes after the introduction of incompatible blood. There is restlessness, flushing of the face, dyspnea and precordial pressure; nausea and vomiting or slight convulsions. The patient often complains of intense pain in the back. These are the early signs of a reaction, and they are a signal to stop the transfusion no matter how urgent the case. Thirty or 50 cubic centimeters of this blood may cause a profound reaction, and 500 c.c. has caused a fatal result. After the transfusion there may be chills, fever, jaundice, hemoglobinuria, vomiting, diarrhea and even delirium and coma. A fatal result may ensue, but the patient usually recovers within twenty-four hours unless too much blood has been given. The third form of reaction is very rare, fortunately, because at present we are unable to guard against it. This reaction sometimes occurs in cases of pernicious anemia in which repeated transfusions have been performed, and it may occur after the introduction of compatible blood or, at least, blood which has been proved compatible by all the tests now available. As yet, no adequate explanation has been given for this type of reaction; but it would seem that repeated transfusions may sensitize a patient with pernicious anemia so that a reaction will follow the introduction of any kind of blood.

DR. RICHARD LEWISOHN, New York: I agree with Dr. Bernheim that it is impossible to predict when the chills will occur following transfusion, and that these chills are a serious complication following transfusion. No method of blood transfusion is free from chills. The syringe method has 5 per cent. and the citrate method has about 20 per cent. of cases with chills. Ravdin and Glenn recently reported 138 citrates and forty-seven Kimpton transfusions. The percentage of chills was the same with both methods. They report one death following the Kimpton and one death following the citrate transfusion. I have repeatedly seen that in the same person citrate transfusion did not cause any

chills, whereas subsequent transfusion of noncitrate blood caused chills, and vice versa. The present popularity of transfusion depends entirely on the citrate method. All other methods require especially trained staffs. It therefore must be our object, not to abolish this method or restrict its use, but to prevent the chills. The sodium citrate is not the cause of these chills. Neuhof has given from 6 to 8 gm. sodium citrate intravenously to stop hemorrhage in more than 10 cases without any chills. In the citrate transfusion we never use more than 2.5 gm. for one single transfusion. It has been stated that small clots might form with the citrate method and that they may be the cause of these reactions; but clots form with any method. I have started a series of experiments to determine whether chilling of the blood during its transfer from donor to recipient may have something to do with the occurrence of the chills. In my observation of about 500 transfusions of citrated blood, I have never seen any serious accident, when proper indications for transfusion were followed. The simplicity of the technic is likely to bring about a laxity of indications. Without careful indications, transfusion of blood will not retain the popularity which it has acquired during the last six years.

DR. ARTHUR C. KIMPTON, Boston: In 1912 and 1913, Mr. Brown and I originated the so-called Kimpton-Brown tube. I have never seen any reason for modifying it or changing my technic, except in not cutting down on the donors. I have performed more than 500 transfusions by that means. I have had two deaths. The patients had been tested out by every known means. That does not mean that tests are of no avail. Why transfuse patients by a method the reader himself condemns? These patients are transfused because they are usually moribund. Why add a method that may possibly harm them further? What does citrate do to the blood? It destroys the platelets. That is one reason you want to transfuse, to give more platelets. If citrate destroys any part of the blood, why use it? Why use it when there is something better? If Dr. Lewisohn or Dr. Bernheim were to be transfused I believe they would select whole blood. The Kimpton-Brown method is difficult as a war method. I believe many men transfused with citrate on the other side would be alive today if they had been given whole blood. Many are alive because they were given citrate. I rarely see a reaction. I rarely cut down on a donor's vein. I have had difficulties in doing some transfusions, but I do not believe that will occur with the paraffin tube more often than with citrate.

DR. J. SHELTON HORSLEY, Richmond, Va.: I lost a patient from the citrate method of transfusion, when the blood had been properly matched. I believe that in transfusion, as in other operative procedures, if we will stay as close as possible to the physiologic normal, the results will be better. Sodium citrate is a foreign substance in the blood. The Kimpton-Brown method utilizes the whole blood without citrate; but when whole blood is not contained within vascular endothelium, it undergoes certain changes, even before clotting occurs. The direct method of introducing blood from the artery of the donor into the vein of the patient is ideal. For the last year I have gone back to direct transfusion and have done this about twenty-five times in succession without the slightest reaction. I use the tube devised by Dr. Bernheim. One half of the tube is placed in the radial artery of the donor and the other half in the vein of the patient. The donor walks to the patient's room and reclines in a Morris chair while the transfusion goes on.

DR. BERTRAM M. BERNHEIM, Baltimore: Conditions are such that not every one is able to have Dr. Kimpton or Dr. Lewisohn do his transfusion. If I were in Boston and wanted a transfusion, I would have Dr. Kimpton do it; if I were in New York and wanted a transfusion, I would have Dr. Lewisohn do it, but the fellow out in the country, away from the larger communities where men skilled in the whole blood transfusion are to be found, would be out of luck if it were not for this citrate method. I have tried to take an unbiased attitude. It was at my suggestion that the Surgical Department of the American Expeditionary Forces gave over the entire subject of blood transfusion to the Medical Department, and it was furthermore at my suggestion that the

trate method was the only one used in France. It was so simple that it was possible to instruct a hundred men to use this method, while only one was being instructed to use the whole blood method. And while there may have been wounded men who might have been saved equally as well by salt solution as by citrated blood, I saw practically none actually injured, as Dr. Kimpton guessed, by the giving of citrated blood. Most of them were tremendously benefited by this blood, and many were actually saved. But after all this is the greatest good for the greatest number, and that is the way I feel about the use of citrated blood throughout the length and breadth of this country, indeed, throughout the world. For the practitioner in a small community, with no one skilled in the giving of whole blood—for it does require a great deal of skill and rapidity of operation to use this method—the citrated method is certainly the one of election. But when you have refinements that go with hospitals, and some one capable of giving whole blood, it is only reasonable to use this method in those cases in which the condition from which the patient is suffering is such that he should not be submitted to the unavoidable danger that accompanies the use of citrated blood.

THE RELATION BETWEEN THE CHILD AND HOSPITAL SOCIAL SERVICE*

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Hospital social service should find both its best inspiration and highest development in the case of the child. The compelling necessities of the young in sickness or distress and their usual reaction to the hospital are cogent reasons why the latter should afford only a temporary place of refuge. This, however, should form a vantage ground for careful study and efforts at permanent relief.

In the case of children, many attacks of illness are due to individual and social causes that can and should be remedied. When the child leaves the hospital, we must be prepared to utilize all possible home and community resources in preventing relapses or in completing cures. Our efforts must be integrated with all existing helpful agencies. From the hospital to the home, there are, frequently, unforged links in the chain of relief. The social problems of childhood have a far-reaching influence, since the needs of the child constitute the surest index of both family and social conditions.

While the hospital may be a house of refuge for the treatment of certain diseases when home conditions are not favorable, the stay of a child here should be as short as possible. Children, and especially infants, do not respond well to prolonged hospital care. As soon as acute symptoms of disease have passed, they should be discharged. Otherwise, there is liable to be recurrence of the original disease or, since this is a most susceptible period, a development of one of the many forms of communicable disease or varieties of cross infection. In the case of infants, a slow wasting often takes place without any objective symptoms, frequently ending in hypostatic pneumonia. In older children, homesickness and general restlessness may seriously interfere with a favorable course of the disease. In order to insure speedy convalescence, the child should be carefully guarded from auto-infection

and hetero-infection while in hospital, and discharged as early as possible.

TREATMENT AT HOME

After many years of observation within and without the hospital, I believe that a great number of cases of illness in young children can be treated better at home, if proper nursing is procurable. A comparison of the results of home and hospital treatment in such a common and widespread disease of early life as pneumonia, will tend to throw light on this subject.

The data given herewith were obtained in two New York institutions having a large infant service. In one of them, during 1920, there were 282 cases of acute bronchopneumonia, with 117 deaths; nineteen cases of chronic bronchopneumonia, with six deaths, and fifteen cases of lobar pneumonia, with one death. In the other, during six months of last winter, there were forty-eight cases of pneumonia, with twenty deaths; the records do not specifically state whether the attacks were bronchopneumonia or lobar pneumonia, but undoubtedly most of them were the former. It may be added that these two institutions are among the best managed, with the most competent medical and nursing staffs in town. The same institutions, in 1914 and 1915, showed a mortality from bronchopneumonia of 48 and 53 per cent.,¹ respectively.

Table 1 shows the results of the home treatment of pneumonia cases by the Henry Street Settlement for four consecutive years:

TABLE 1.—RESULTS OF HOME TREATMENT OF PNEUMONIA BY HENRY STREET SETTLEMENT

Age	1916	1917	1918	1919
Birth to 2 years:				
Recovered	1,744	1,617	1,601	1,031
Died	178	193	240	139
From 2 to 5 years:				
Recovered	988	1,027	1,214	875
Died	43	45	75	39

There is no distinction made between lobar pneumonia and bronchopneumonia in these figures. It is only fair to observe that many mild cases of pneumonia are successfully treated at home, while the severer types and those doing badly are often sent to the hospital, which may partially explain the wide difference between the mortality of home and hospital.

A glance at the results (Table 2) of home care of diarrhea and enteritis during these years, by the same visiting nurses, may likewise be instructive.

TABLE 2.—RESULTS OF HOME CARE OF DIARRHEA AND ENTERITIS

Age	1916	1917	1918	1919
Birth to 2 years:				
Recovered	322	283	215	194
Died	33	32	24	22

These figures show what favorable results can be obtained at the home if good nursing can be secured. Here, again, many of the severe cases find their way to the hospital, where they swell the mortality rate; but the majority can be successfully treated at home, with a competent nurse at hand.

I believe that in work among sick infants and little children, the hospital feature can be reduced to a small unit, and more emphasis placed on home care. We must not overlook the educational value to the home of

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Chapin, H. D.: Pneumonia in Infants, J. A. M. A. 65:786 (Aug. 28) 1915.

such service, as the mother can learn much as to the future care and nursing of her family from these visits. In this way, it is possible to raise the whole standard of their living. If every infants' or children's hospital would thus reduce its inside work to a comparatively small unit, retaining its full medical and nursing staff to operate largely in the homes that supply the hospital, the best and most far-reaching results would be obtained, with the least expense. This would really constitute an enlarged and intensive form of hospital social service. The small inside service could be utilized for surgical operations, for severe illness requiring specialized nursing, and for scientific study of obscure cases demanding much laboratory service. In the few cases requiring hospital care, the stay would be short, as the corps of physicians and nurses would be available for speedy follow-up work after discharge. In this way, all possible benefits could be obtained from the hospital, without the disadvantages and dangers so often seen in the case of children. These efforts could be accomplished by an enlargement and a reorganization of the social service departments already in existence.

HOSPITAL SOCIAL SERVICE

The hospital could and should act as the health center of the neighborhood. To attain its widest usefulness, it should serve as a sort of social laboratory in which disease and distress might be traced to their ultimate sources. Only thus can relief be made permanent, and the recurrence of disease be prevented. This is preeminently true in the case of children. The child has always offered the best approach to a study of both medical and social problems.

It may be of interest to note that the broader conception of hospital usefulness, now known under the name of hospital social service, had its beginning in connection with children. Dr. Richardson states that the Children's Hospital of San Francisco started outpatient work about 1886, and early saw the folly of giving people medicine without knowing their living conditions. So they appointed one of their nurses to visit the home to give instruction in cooking and hygiene, and to supply extra diets when they were needed. The physicians acted as advisers to this nurse, and interested friends to contribute for individual cases. There were, however, no special records kept other than the financial bookkeeping demanded.

In 1890, I started a movement in connection with the children's division of the New York Post-Graduate Hospital, in an effort to make more permanent the work of this division of the hospital. Visitors were sent to the homes after discharge, to give relief when needed and to discover and report any faulty home conditions that might be remedied. The reason for this work lay in the fact that many children were coming back after an interval of time with a recurrence of the original disease or some other malady. For three years, we depended on two voluntary visitors, but they were women with special training and experience in social case-work. A history card was used in all the cases, so that the records could be studied and compared; but we have never employed the elaborate and complicated blanks now so generally in use. In 1894, a paid visitor replaced the voluntary ones, first, a woman physician, and, later, a trained nurse. From the first we have aimed to have the endeavors of the visitor expended in three principal directions: (1) In

trying to make the medical relief given by the hospital to the individual as permanent as possible. This may mean immediate material relief in cases of necessity, or instruction in diet and other factors that may be required to further convalescence. (2) In finding out, if possible, the underlying cause that produced the particular sickness, so that a recurrence could be prevented. (3) In making a broad study of social conditions that make for sickness and disability in the community that is served by the hospital. This becomes necessary in order that a general knowledge, in reference to future prevention, may be acquired and constantly kept in mind. All essential requirements of modern hospital social service have thus been met from the beginning of this endeavor.

It is believed that this work has been of the greatest utility to our children during the thirty-one years that it has been systematically employed. Most of the children come from the lower east side of New York, which is probably the most densely populated spot on the globe.

A full history of the child's parentage, family and personal condition having already been taken by the examining physician on admittance, a pretty complete record can be placed in the hands of the attending physician for his guidance in managing the case.

In line with the idea that one of the ultimate objects of hospital social service is to study the social relations and problems of the individual so as to initiate broad measures of prevention, a number of efforts in this direction were instituted. Four intensive group studies have been made to learn the character of the morbidity, and how this is being influenced by social conditions. Thus, an effort has been made to get a social diagnosis, as well as to ascertain what individual influences are making for sickness and disability in the community. As already noted, the child offers the best chance for such a study because he connects directly with all lines of inquiry—housing, food, parenthood, the wage problem, faulty hygiene in tenement or town, education, and every other factor in community life.

The first group study included 1,000 cases, extending from March, 1900, to March, 1902. The times were hard, and the earning capacity of most of the families was very low. In 552 families, the income was totally insufficient to maintain a proper standard of living. The housing conditions were bad, principally from overcrowding, and 764 dark rooms were noted. Most of the parents were ignorant.

The next group investigated included 700 families, and the period extended from March, 1903, to March, 1904. Most of the families were living in great poverty. As an example, 304 families received a weekly income not exceeding \$10, with many of them well under this figure. The housing conditions in most of the families were bad.²

Another group, investigated during a period extending from November, 1914, to November, 1916, included 1,000 cases. The earning capacity in most of the families did not show very much improvement over the data furnished thirteen and seventeen years previously. There were 557 large families (of more than five members), and 443 small families (of less than five members), on the list. An interesting point is that most of the families earning the higher wages were small, while the large families were almost invariably in the

2. Chapin, H. D.: Arch. Pediat., April, 1905.

low wage class. This may be of interest to birth control advocates. A marked improvement in the housing conditions was noted. This was undoubtedly due to better tenement house laws, both of construction and operation, which were doing away with dark rooms, ear houses, and other evils of past days. This forms a good example of how a social movement can improve conditions of life for the individual.

The final group study included 900 cases, from April 1, 1919, to April 1, 1921. The first and most marked contrast shown in this group was the great increase in earnings. Thus, 289 families earned between \$20 and \$30 per week; 296, from \$30 to \$40, and thirty, more than \$40 per week. There was, however, little if any improvement in the housing conditions since the last study, for well known reasons. A majority of the families lived in three and four room homes, and as 39 families numbered six members or more, and 511 had from three to five in the family, the congestion can be appreciated. It is also seen that small families preponderated in this group. The visiting nurse, Miss Weiss, reports that while the earning capacity has greatly increased over that reported before the war, the cost of living has increased correspondingly, and that, while during the first flush of the fuller pay developed some extra fineries might be indulged in, it is doubtful whether, in the diet of most of our families, any variety, greater than that noted years ago, is found. The increased cost of food and the increased rent do not leave the worker much better off than in previous years, even with the larger earnings. In many of the tenement homes, the rent now amounts to \$6, \$7 or \$8 per room, and, in practically all, the rent is at least \$5.

EFFECTS OF POVERTY AND IGNORANCE

It is always interesting to try to estimate the relative proportion of poverty or ignorance in the causation of disease in certain classes. At my request, our visitor recently tried to make an estimate of these factors:

In 171 homes, ignorance seemed to be the preponderating factor, and in 159 poverty alone appeared to be the principal cause of illness; while in 117 homes gross ignorance and poverty went hand in hand. However, during the two years covered by this study, one could scarcely call poverty the chief cause of overcrowding, since the housing shortage has been pronounced, and, even when unusually high rents were paid, proper homes were found with difficulty.

Our studies confirmed the conclusions of others, that poverty works particular hardship among the young, and that sickness is one of its leading manifestations. Many of our parents were likewise ill-nourished and sickly looking. Poverty and sickness often go hand in hand. The Charity Organization Society has found that fully two thirds of the cases of poverty which it is called on to investigate depend, directly or indirectly, on sickness. There is a shifting and alternating relationship of cause and effect between them. It is interesting to note how this vicious circle works at different ages. Thus, while in adult years, sickness is one of the principal causes of poverty, in childhood poverty is one of the principal causes of sickness.

While it is not contended that the social studies here recorded are absolutely accurate, yet by taking cross sections at intervals of time, we can certainly arrive at useful conclusions for individual prevention and social effort. They will at least serve to confirm and

substantiate certain impressions that many have already had in mind.

As to causation, these 3,700 cases may be explained along three broad lines—insufficient earnings, bad housing, and ignorance on the part of the parents. These were the real underlying causes of these children's sickness. This means that the efficiency and earning capacity of many individuals must be increased, that overcrowding and unhygienic housing must somehow be overcome, and that a wide campaign of health education must be carried on in the community served by the hospital. If these endeavors are not undertaken, we are simply doing the veriest patchwork, dealing with effects and leaving causes alone. This likewise means that much of our good work will be ephemeral.

A prolonged study along these and similar lines on the part of physicians and hospitals will eventually disclose the part played by biologic causes requiring individual action, and those induced by social defects and maladjustments, which call for collective effort, if permanent and really constructive results are to be obtained.

OPPORTUNITY OF THE PHYSICIAN

The physician can and should become the law giver in social as well as individual ills. He, more than any one else, has opportunity to see life as it really is, stripped of illusions, and on the bedrock of truth. Certainly he is a surer guide in social affairs than some reformers with crude but well meaning specifics, or hysterical world-betterers who are liable to do more harm than good, in spite of benevolent intentions. Too much of the work of the wise consists in correcting the mistakes of the good. We must also take into account the evil done by the physical, mental and moral quacks, who fill the air with their shortcuts and specifics.

What is most needed is a patient, slow, exhaustive study of individual and social ills that will furnish data to guide the physician, social worker and legislator in inaugurating broad and comprehensive measures of prevention and relief. In social medicine lies one of the hopes of the future.

In possibilities of service, the hospital can be one of the broadest human institutions. In this, as in many other advances, the little child should lead.

51 West Fifty-First Street.

ABSTRACT OF DISCUSSION

DR. HENRY I. BOWDITCH, Boston: The social side of hospital work is the very vital part of hospitals. Get next to the pregnant mother. Get next to the mother after the child has come. Do not expect the mother to be normal until she has recovered her physical condition and her mental poise. If we can make the mother and the father realize what that child is, we have done big work, medically, physically and mentally. The child must be enlightened and taught the sacredness of truth. I have four different groups of parents who are interested in their children. Once a month they get together over their tables, going from one place to another. They talk of their children and they find out how daily life touches children, how the police department affects them, how the schools influence them, how the hospitals—how everything in life touches our children, and we see that it does the right thing.

DR. FRITZ B. TALBOT, Boston: I agree, in general, with what Dr. Chapin has said, and emphasize the principle of the full enlightenment of children, but I disagree with his lack of distinction between a social service worker and a home visiting nurse, and I also disagree with his statement

that real social service started in the nineties. In 1905 it was recognized that there was a difference between home nursing and social service. It was recognized that social service was a specialty which required special training and separate training from the care of children. And it was on that basis that Dr. Cabot established in the Massachusetts General Hospital social service work and the training of social service workers. I believe that that is the first real social service that has been done. The great distinction between a visiting nurse and social service worker is that the visiting nurse primarily takes care of the patient, and the social service worker primarily investigates the social conditions that are back of the physical conditions. Those two specialties are very separate, and I want to emphasize that a social service worker cannot be a nurse any more than a socially untrained visiting nurse can be a social service worker. The specialties are very definite and with definite limitations. I believe with Dr. Chapin that patients should not be kept in hospitals any longer than is necessary. We send them to their homes as early as consistent with their well-being and health. Our social worker is the link between our visiting service and the hospital. As soon as the patient comes into the hospital, the social service worker investigates the home and gets in touch with some home nursing organization under whose charge the patient will receive good medical home nursing. For example, instead of having cases of endocarditis in our wards for many days, we find out whether treatment can be carried out in the home, and if not, foster homes are selected and the patient is sent out for treatment.

DR. R. S. YARROS, Chicago: In my opinion the apparent antagonistic attitude of most of the medical profession toward public health service is due, to a great extent, to the fact that it is a new manifestation in medical practice and is developing so rapidly that physicians who are by nature and training rather conservative are inclined to condemn it without giving it the thorough consideration it deserves. Whether they should be nurses instead of social workers, or both, is a matter for further consideration. But the fact is that all of us who have had long experience among the poor in their homes are absolutely convinced that such service is most needed if we are to do first class medical work—not only curative but preventive. The social service person who comes to the home of the patient and acquaints herself with the economic and sociological conditions of the patient is in a far better position to give instructions to the woman during pregnancy, especially if she is a nurse, and help her to prepare for confinement, as well as teach mother and father how best to care for the well child; and in case of illness—especially contagious diseases where quarantine is so essential—she can actually teach them how to accomplish it even under difficult conditions. She is practically preparing the parents in home nursing, cleanliness, orderliness, and how best to carry out the physician's orders. This phase of service has no doubt come to stay. It is a mistake for physicians to fight it. There are economic, social and psychologic aspects in treating diseases. The physicians have neglected them too long. The public is beginning to be suspicious of us. Let us take up these phases of work, study them carefully and use them for the healing of the sick as well as for the prevention of disease.

DR. CHARLES HERRMAN, New York: As to the relative value of home and hospital treatment of infants and young children, my experience coincides with that of Dr. Chapin. I have observed the course of disease in the tenement, in private practice, in a hospital for communicable diseases, and in the children's ward of a general hospital. There are two great disadvantages in hospital treatment: the absence of individual care, which is especially important in infants, and the danger of cross infection. Even in the best hospitals the latter can only be reduced to a minimum, not eliminated. Take the mortality in one of the commoner communicable diseases, measles. I have treated consecutively 400 children, almost all under 5 years of age, in their homes, with a mortality of a little over 1 per cent. In the best hospitals it is rarely under 10 per cent. and often as high as 25 or 30 per cent. This is also the case in foundling and other asylums

in which not the severe but the average run of cases is encountered. In a modern, properly constructed hospital, the expense of treatment is very great. It is a question whether the parents should be relieved of the responsibility of home treatment. The hospital treatment of infants and young children with communicable diseases should be limited to those who cannot possibly receive adequate treatment at home.

DR. HENRY DWIGHT CHAPIN, New York: I was astounded to hear Dr. Talbot say that a social service visitor could not be a nurse. That is not my construction at all. My conception of a social service visitor is a woman trained as a nurse, as a social worker and even as a physician. We do not make any such distinction in New York as to whether a social service visitor shall be a nurse or not. But the point on which I take issue with Dr. Talbot is this: In 1890 we started hospital social service. It was not home nursing. We tried three kinds of service, social visitors, the trained physician and the trained nurse. We have found a trained nurse with a social education the best kind of a visitor. From 1890 the work has gone on, but it is not simply home nursing. We have gone into the home to study and relieve causal conditions and have kept records for our guidance in these efforts. Thus, all the essential requirements of hospital social service have been met. The literature of April, 1905, will show that social service visiting was not started in Boston but in New York.

THE PSYCHIC FACTOR IN EXOPHTHALMIC GOITER*

ISRAEL BRAM, M.D.

PHILADELPHIA

The constant interrelationship between body and mind has been recognized from time immemorial, as emphasized by the dictum *Mens sana in corpore sano*. From the primary psychoses in which the psychic factor is predominant but in which secondary organic changes occur, to such primarily organic conditions as endocardial lesions or carcinoma of the stomach in which there is secondary distress expressed in moodiness, emotionalism, or even suicidal tendencies, many gradations are observed to substantiate the conclusion that the psychic factor plays its rôle throughout medicine.

In exophthalmic goiter, the observance of the psychic factor is manifestly of vital importance. I beg to state parenthetically that in this paper we are not concerned with the so-called "Basedowified" goiter, otherwise known as toxic adenoma, i. e., that form of hyperthyroidism superimposed upon an old-standing nontoxic goiter. We shall here consider true exophthalmic goiter—a condition not necessarily presenting exophthalmos or goiter, a disease the precise etiology of which is as elusive as the fountain of youth, an affection the symptomatology of which is as varied as the colors of the rainbow, a syndrome seemingly characterized by more vicious circles than are seen elsewhere in the domain of medicine—in brief, a disease presenting so great a confusion of structural, functional and psychic features for study that the keener the observer, the greater the problems still unsolved.

THE PSYCHIC FACTOR IN PATHOGENESIS

The study of the psychology of individuals during intense reaction to the instinct of self-preservation reveals a notable fact. During an earthquake, or a

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

fire in a large factory in which many are employed, or a massacre, or the wreck of a liner in midocean, on the firing line in battle, or in other situations of imminent danger to life, forty-nine out of fifty persons soon recover physical and mental poise after their experience and are themselves again. One of them, however, because of a singular susceptibility, may evince no psychic and endocrine recoil or adjustment to the previous functional balance. The trembling, the staring eyes, the cold, clammy skin, the heart hurry, and other features expressing fright, remain, become frozen or chronic, and we are confronted with a case of exophthalmic goiter. In but a small percentage of cases does the disease itself present hereditary tendencies; it is the psychopathic makeup or predisposing soil asserting itself in so-called nervousness, sensitiveness, high-strung temperament and the like, that is inherited. I find in at least 90 per cent. of my patients a clear history of psychopathic predisposition. In these persons, the factors concerned with emotionalism, i. e., the endocrines and the nervous system, are easily fired into hyperactivity. The threshold of nervous and emotional reaction is reduced; this peculiarity as the predisposing factor requires but the torch of an exciting cause in the form of an acute emotional strain of a sexual nature or disappointment in love, intense worry or anxiety, fright or terror—and the conflagration of exophthalmic goiter is begun.

It is thus evident that the neurogenic theory in explanation of the etiology of exophthalmic goiter is attractive. As most observers are now convinced that in emotional disturbances the functions of the endocrines, especially the thyroid, suprarenals and pituitary, are also involved, we must conclude that the neurogenic and pluriglandular theories are interdependent, constituting one theory which we might term the *neuro-endocrine* theory.

The following instances of exophthalmic goiter taken from my records, each presenting a history of underlying psychopathic makeup, indicate the exciting factor to be acute emotional strain.

REPORT OF CASES

CASE 1.—Mr. E. G., married, a merchant, was seated in the back yard of his home one hot afternoon in July, 1910, when, by way of a practical joke, a friend approaching him from the rear turned the garden hose on him. A few weeks following this fright, he noticed that his collars were becoming too tight, though he was strangely losing in weight. Soon he complained of nervousness, palpitation, insomnia and bulging eyes, and within nine months the syndrome became so severe as to lead to cardiac decompensation and beginning anasarca.

CASE 2.—Mr. S. B., aged 34, married, a salesman, in June, 1913, was so affected by the death of his mother that he developed the typical syndrome of exophthalmic goiter within two months.

CASE 3.—Mr. M. R., aged 39, married, a merchant, in March, 1920, developed a very virulent form of exophthalmic goiter following extreme worry over business troubles. Either as a coexisting etiologic factor or as a concomitant symptom in the syndrome, this patient's unreasonable sexual desires were bitterly complained of by his wife, who confided to me that at the time of his illness he had compromised his good moral standing by sexual relations with several women in his employ.

CASE 4.—Mr. R. L., aged 28, bachelor, a draftsman, who was referred for treatment in June, 1920, was a man of wholesome morals; but being engaged to be married and "keeping company," it seems that the internal conflict between chastity

on the one hand and the strong sexual urge on the other was responsible for the syndrome of the *fruste* form of exophthalmic goiter of six months' duration.

CASE 5.—Mrs. M. B., aged 42, a housewife, had shortly after her marriage, fourteen years before, developed exophthalmic goiter, which she claimed was the result of intense marital and conjugal incompatibility. Her household has been a battlefield of expressed and suppressed hatred. Ten years ago a ligation was performed, four years ago, a lobectomy. When she was brought to my attention two years ago, she presented a very tragic picture of chronic exophthalmic goiter, with large regenerated goiter, marked exophthalmos with edematous eyelids, trembling of the entire body, heart enlarged to the left axillary space and in a state of delirium, and mind verging on a major psychosis.

CASE 6.—Miss L. B., aged 26, single, a mill hand, referred for treatment in September, 1917, presented exophthalmic goiter in marked form, which developed shortly after the announcement of her engagement in 1915. The history indicates that the intense sexual emotion incident to her engaged life was the exciting factor in the production of the disease.

CASE 7.—Mrs. J. T., aged 32, a housewife, whom I first saw in June, 1920, presented a very virulent form of the disease, of four years' duration, without exophthalmos and without goiter. The onset began a few days following a fright. This was in the nature of a diminutive mouse which ran across the floor while she was alone in the house one night.

CASE 8.—Mrs. S. S., aged 21, a housewife, referred for treatment in September, 1920, shortly after her marriage, one year before I saw her, began to suffer with extreme nervousness which culminated within six months in an outspoken picture of exophthalmic goiter. The history, taken in the presence of the husband, pointed very strongly to temperamental and sexual incompatibility as the exciting cause.

CASE 9.—Mr. J. McK., aged 32, married, a typesetter, was in 1917 employed in a munitions plant in which an explosion occurred; and though he received no bodily injury, he was so badly scared that he fell to the floor in a faint. A few days later, symptoms of exophthalmic goiter began to assert themselves, and within three months he was a typical subject of the disease. When I first saw him, nine months ago, there was a large pulsating goiter, enormous, delirious heart with a rate of approximately 180, trembling of the entire trunk, extreme emaciation, and all the other evidences conspiring to make this patient a most pitiable sight to behold.

CASE 10.—Mr. J. G., aged 47, married, a coinbox collector for a telephone company, was in 1910 a passenger in an elevator which dropped nine floors. He was taken home in a state of shock, and within a few weeks developed the complete syndrome of exophthalmic goiter. When he was referred to me in February, 1921, there was a medium-size vascular goiter, moderate exophthalmos, extreme tremulousness, a very irregular heart with auricular fibrillation, emaciation, and distressing bladder and intestinal irritability.

Time does not permit mention of many other instances of like nature.

THE PSYCHIC FACTOR IN SYMPTOMATOLOGY

The mental manifestations in a subject of exophthalmic goiter vary with the nature of the preexisting psychopathic makeup, the age, sex, culture of the individual, and the severity and duration of the affection. In the average early case, the brilliancy of the eyes is associated with apparent acuteness of thought. Cerebration is quickened, speech eager and hasty; attention is concentrated, though unsustained; and there is a multiplicity of interests evidenced by the facility and speed with which there is change of subject during conversation. Soon the relatives and friends observe a change in the patient's disposition, which in some instances may become alarming. There is a tendency to the formation of hasty conclusions, irritability, moodiness, and a heightening of the emotional response,

so that on the slightest provocation there is uncontrollable laughter, anger or weeping. As the syndrome advances in duration and severity, the symptoms are intensified, with occasional remissions. Insomnia, which is now distressing, plus the heart hurry, serves to accentuate the psychic manifestations. In the event of auricular fibrillation (which may occur a year or longer after the onset of the disease), periods of disorientation alternating with periods of bewilderment, confusion and excitement may occur. I have often observed instances of visual hallucinations with persecutory delusions during which the closest relative was regarded as a designing fiend or a murderer. The persistence of this status soon stamps the patient as one in whom the major psychosis must receive primary attention. Indeed, it is not too much to say that all subjects of unmistakable exophthalmic goiter have approached the arbitrary threshold of insanity and may suddenly step into this category at any time.

THE PSYCHIC FACTOR IN TREATMENT

The still prevailing uncertainty in the management of exophthalmic goiter is responsible for the three schools of treatment, represented by the surgeon, the roentgenologist and the internist. But though they differ in their respective mode of therapeutic approach, surgeon, roentgenologist and internist fully agree on the importance of psychotherapy as a necessary element in their armamentarium. The careful, experienced surgeon does not operate precipitously, but rather gradually, leading his patient on by smiles, a friendly attitude, and suggestive influences, to the point where the scalpel can be employed with the least operative risk. Also, he is careful to extend his psychotherapy into the postoperative future in the hope of complete recovery. The careful roentgenologist, whether he cooperates with surgeon or internist, or treats the patient alone, likewise knows the value of psychotherapy, and in his own way endeavors by word and manner to cheer and encourage the patient to a healthy mental attitude. The internist who has been eminently successful in the management of these patients knows that without skilful psychotherapy as an element permeating and controlling all his instructions, failure is probable; for on mental adjustment depends cooperation in treatment—the vital factor in therapeutics.

Since a comprehensive discussion of psychotherapy would involve the consideration of the mental evolution of man himself we must here confine ourselves to a few brief generalizations. The purpose of psychotherapy is (1) to inspire a healthy faith in the physician and his art; (2) to effect subjective harmony, i. e., to assist the patient to become a healthy self to himself; (3) to establish objective harmony, i. e., a harmonious relationship between the patient and his environment—a healthy faith in God and man.

The psychotherapist must himself be made of firm mental stuff, a keen student of psychology, a sociologist, possessing a magnetic personality, at once friendly and irresistibly commanding, with a clearly apparent sincerity of purpose. Psychotherapy as indicated in patients with exophthalmic goiter is not synonymous with psychoanalysis as popularly conceived. The study of the mentality in exophthalmic goiter is a distinct, perhaps an isolated field, requiring a medical attendant possessing a broad experience with these patients. In his efforts to discover the mental

flaws of his subject, the physician must be able to enter into the patient's moods and win his confidence and admiration in a subtle, almost imperceptible manner, in order to make him feel that at last he has a true friend in his confessor, and that recovery is at hand.

The method of procedure in psychotherapy varies with the temperament of the patient, the environment, the culture and the financial status, and his personal peculiarities and idiosyncrasies. Conviction, persuasion and suggestion, each in varying dosage according to circumstances, are the instruments employed to reinforce the patient's will, overcome autosuggestion, and establish a state of mental adjustment consistent with intrinsic and extrinsic harmony. There is much good in each mental makeup; this good must be ferreted out and employed as a basis for the development of healthy cooperation.

Psychotherapy must extend even to relatives and friends, by a process somewhat similar to that directed toward the patient. However, when it is found that they are noncooperative, an appropriate institution is advisable for the patient.

The doctor must not permit himself to become the permanent instrument of psychic correction, but later he must outline or prescribe other means of mental adjustment, according to circumstances. In this category, always with an eye to individualization, is included the vocation of the individual, the social calendar, music, reading, conversation, attendance at lectures, and various other forms of diversion. Above all, the patient must be taught ever to keep the corners of his mouth turned upward; if he laughs outwardly, he will soon feel like laughing, and this becoming a habit, the victory is won.

CONCLUSION

It appears relevant to remark that the syndrome to which we apply the term exophthalmic goiter is not *goiter*, and the sooner this affection is removed from the classification of *goiter*, the sooner will a rationalization of therapeutics be effected. While non-toxic goiter and toxic adenoma are local conditions yielding satisfactorily to thyroidectomy, this cannot be said of exophthalmic goiter, the etiology and especially the symptomatology of which is as widespread as the body itself. Every organ and its function, every tissue, indeed, every cell of the patient is involved; and when thyroid swelling exists, it is not the cause of, but incident to or a link in the chain of events constituting the syndrome. Hence it is that in patients whose thyroids are not productive of marked pressure symptoms, whose vital organs are not too badly damaged, who are not insane, and in whom satisfactory cooperation is obtainable, the experienced individualizing internist obtains an excellent statistical showing. With the removal of any discoverable infectious foci, a properly outlined regimen of rest, diet, drugs and other measures, and a practical psychotherapy pervading the whole, there is effected a correction of physical and mental vicious circles; there is a restoration of emotional and endocrine balance; and this, without added shock, without scars, with almost no recurrences nor mortality rate. Such a patient, having been under the guidance of the physician for a year or longer, finally becomes self-supporting; evinces a stronger grasp on life and a healthier con-

ception of its meaning; possesses greater mental stolidity than ever, and is more than ever equipped to face the world "irreproachable and unafraid."

1431 Spruce Street.

ABSTRACT OF DISCUSSION

DR. TOM A. WILLIAMS, Washington, D. C.: Dr. Crile some years ago made the statement, in reference to cases of mild hyperthyroidism (with exophthalmic goiter or not), that he thought it necessary after thyroidectomy that the patient be sent to a convalescent home in the country for six months if the cure was to be permanent. He then went on to say that such patients made as great an improvement without thyroidectomy as did those who had been operated on. For ten years I have been trying to find an instance in which psychic trauma has been the agent, but I have not succeeded. Further, I have not considerably benefited hyperthyroidism by psychotherapy, save in a very few instances. Therefore, if Dr. Bram can so excite the admiration of the patient, he may have solved the issue which I have failed to do. He says one must apply the same psychotherapy to the patient's friends as to the patient, but that is even more difficult. If Dr. Bram has solved that problem, he may have given us the missing link which explains our failure.

DR. CHARLES H. MAYO, Rochester, Minn.: The points brought out in Dr. Bram's paper, that troubles of the central nervous system are responsible for exophthalmic goiter, that the thyroid may or may not be enlarged, without being the cause of disease, and that special kinds of rest are indicated for the cure of the patient, are of interest from an historical standpoint. Much more is known of the thyroid gland now than in the early days. Kendall has isolated the thyroid secretion, and Plummer and Boothby, from a study of the metabolism, have shown the effect of the lack of the thyroid gland in early life, and the effect of its loss in the adult. The effect of hypersecretion is known, as is the amount of secretion consumed by the body each day to maintain a metabolic rate. A small percentage of patients with goiter get well with or without treatment, and a very large percentage recover from the disease following surgical removal of varying amounts of thyroid tissue. The majority of these cases occur in the thirties; but I have seen a number of typical cases between the ages of 4 and 10 years, also a few at 60. No single form of medical treatment has yet been accepted by internists; they, however, plan many months of treatment, meaning disability and expense to the patient. If surgery is to cure, it should be instituted early, when the risk is no greater than that of operation for simple goiter.

DR. ISRAEL BRAM, Philadelphia: I was careful to say "by a process somewhat similar to that directed toward the patient," should psychotherapy be directed to the patient's friends and relatives. It is necessary to eliminate the psychic trauma directed toward the patient from other individuals, at least until such time as the patient's psychic condition is rendered more stolid. Confidence of the patient in the physician is vital to cooperation. Since admiration is a psychologic constituent of confidence, it follows that the former must obtain in the interests of satisfactory mental adjustment of the patient. Though we occasionally encounter refractory patients, the large majority of them are susceptible to proper management. From observation of a large series of cases of exophthalmic goiter, I wish to respond to the remarks made by Dr. Mayo, that though the mortality in his group is very small, it is still very high elsewhere among surgeons. But this is not the whole story. Many so-called cases of exophthalmic goiter cured by operation are really cases of toxic adenoma—a condition usually remediable by thyroidectomy.

The pathogenesis of exophthalmic goiter is a chronic one, often extending back for many years; indeed, the predisposition is frequently congenital. How can we expect to overcome this by surgical means and within a few weeks obtain recovery? In my series of patients, I have had 50 per cent. who, prior to the institution of nonsurgical treatment, had submitted to surgery in one way or another and were either

partially or not at all improved, or were markedly worse off than ever. Though there is hyperthyroidism in exophthalmic goiter, hyperthyroidism is a mere incident in the syndrome, and to attempt thyroidectomy is to endeavor to remove a symptom which will recur as soon as the thyroid is regenerated; and then we are frequently confronted with a worse condition than that which existed before the knife was employed.

Clinical Notes, Suggestions, and New Instruments

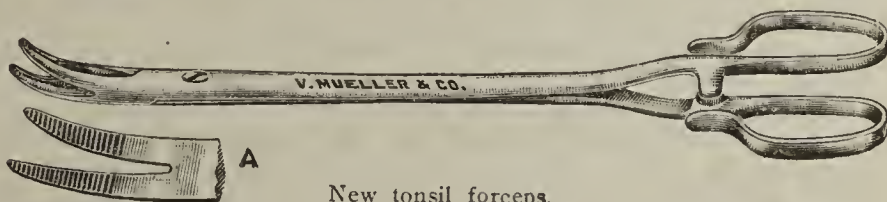
NEW TONSIL FORCEPS

L. P. WARREN, M.D., WICHITA, KAN.

To those who find dissection and snare the most satisfactory technic for enucleation of tonsils, the following method of using a modification of Sawtell's forceps may be of interest.

For the right tonsil the forceps are taken in the right hand with the blades closed, and carried as far to the left as the angle of the patient's mouth will permit until ready to grasp the tonsil. The distal or grasping portion of the blades is separated about three-eighths inch; the open blades are pushed deep into the tonsil. If the points of the blades when closed seize the so-called capsule of the tonsil, all the better. One locks the forceps handles and proceeds.

It will be found that the tonsil will evert much more easily because of the deep central, parallel fixation of the forceps blades: the central portion advancing under traction, while the poles are held stationary or are folded backward. The



New tonsil forceps.

incision may at will be carried along the pillar borders because with these forceps rotation of the tonsil on its long axis is readily accomplished so that the posterior pillar is easily seen, more so than with any other forceps with which I am familiar. It holds with great tenacity and gives the operator absolute control of the position of the tonsil.

For the left tonsil the introduction is better made with the left hand. The accompanying illustration shows the actual size of the grasping portion of the blades.

Schweiter Building.

A CASE OF ACRODYNIA *

PAUL W. EMERSON, M.D., BOSTON

Visiting Physician, Boston Floating Hospital; Junior Assistant Physician, Children's Hospital; Assistant in Pediatrics, Medical School of Harvard University

L. R., a boy, aged 4½, whose parents were healthy and had two healthy children, and whose past history was negative, was admitted to the Children's Hospital, Boston, Feb. 16, 1921, showing general weakness, loss of knee jerks, and redness and peeling of the finger tips and toes, which at first glance seemed on the one hand to be a case of multiple neuritis, and on the other, a postscarlatina case. I looked up the cases of acrodynia reported by Weston¹ and by Byfield,² and the case fits in so well with that disease that I believe it is worth reporting.

Six weeks before admission, he seemed tired, and after playing for half an hour, would want to sit down and rest. He did not want to eat anything, was constipated, and did not sleep well. His mother noticed that his hands and feet were

*From the Medical Service of the Children's Hospital.

1. Weston, William: Acrodynia, Tr. Sec. Dis. Child., A. M. A., 1920, p. 83.

2. Byfield, A. H.: A Polyneuritic Syndrome Resembling Pellagra-Acrodynia (?) Seen in Very Young Children, Am. J. Dis. Child. 20: 347 (Nov.) 1920.

cold. He could walk. Since the onset he had continued to be constipated and went three days without a movement. Itching of the legs and feet troubled him, but this could be relieved by salt water applications. He had lost much weight. His usual diet was milk, about 1 quart daily, bread and butter, one egg, meat or fish, candy, cake and raw fruit. He had had no vegetables. The water he drank was obtained from a well with iron piping. He had had no medicine and had had no preceding respiratory infection.

The patient was apathetic, with marked flabbiness and weakness of the muscles of the legs. In rising from a sitting position on the floor he used his hands in a manner suggesting knee-climbing. He showed no definite paralysis, but his hand grasps were weak, and there was a slight tremor in the fingers. The knee jerks were absent. He stood with a marked lordosis, and walked unsteadily.

It was difficult to make out any abnormality of sensation, but it was noticed that he did not mind the lumbar puncture at all, and he was not disturbed by the pricking of his skin to obtain blood for a white count. The skin was moist. Over the chest, abdomen and legs was a rash looking much like a heat rash. On the finger tips and toes, extending over half of the first joint, was a mild redness, diminishing gradually from the tip backward, on the dorsal surface, together with some peeling. A few of the nails showed some ridges near the matrix. The second toe of the left foot showed, beside the peeling, a vesicle-like lesion which looked as if it had broken.

The rest of the examination was negative. The white count was 7,800, the hemoglobin 80 per cent. The von Pirquet test was negative. The urine had a specific gravity of 1.022, and showed acetone and a few white cells. The spinal fluid was clear and came out at the rate of 60 drops a minute. It contained 6 cells to the cubic millimeter and reduced Fehling's solution. The globulin test with alcohol gave a ++ reaction, and with ammonium sulphate a + reaction.

While he was in the hospital he was apathetic, and if he was set up in bed would soon slide down. He was seen to go to sleep while sitting up, and fell asleep once while he was eating his dinner. His bowels were difficult to move and required a laxative of some sort every night, and an enema the next morning. He had no desire for food, but would eat rapidly enough if some one fed him. He sweated a good deal. The redness in the finger tips and toes varied in degree, but was more marked on the fingers. There was no sharp line of demarcation.

February 21, he developed lesions looking like paronychia on the tips of the third fingers. There was no discharge from them, no tenderness, and they remained the same until he left the hospital.

February 23, his upper lip became much swollen, and there appeared on the under side, bordering on the mucocutaneous line, a yellowish lesion, running back 1 inch, irregularly circular, not indurated and not painful.

February 24, the white count was 12,800.

February 27, the rash on the left hip became confluent and deeper, possibly from friction with the bedclothes.

March 7, the urine showed acetone and a few white cells. The patient complained all the time of the itching of his feet.

March 15, he developed a small yellowish lesion on the tip of his tongue, in the median line, quite similar to the one on his lip, but much smaller.

The temperature during his stay was between 98 and 100.4; the pulse, between 110 and 150; and the respirations were, on the average, 25. His weight on admission was 31½ pounds; it was down to 27¾, but on March 3 was 29 pounds.

His parents requested his discharge and he was allowed to go home. He was far from looking wretched and did not burrow in the bedclothes. He lost no hair and no teeth, and his gums were normal. On discharge his lip had nearly healed, but otherwise he was the same as at entrance.

He had no treatment except rest in bed, fresh air, and forced feeding. His past history ruled out poisoning with a drug; and no food deficiency could be made out. Pellagra was considered, but was manifestly out of the question.

June 17 I received word from his mother that the child had completely recovered.

86 Bay State Road.

A SIMPLE AND INEXPENSIVE APPARATUS FOR DIAGNOSTIC OR THERAPEUTIC PUNCTURES *

ROGER S. MORRIS, M.D., CINCINNATI

Exploratory punctures, whether of the pleura, pericardium, joint, lung or liver (abscess, cyst), is a procedure which every clinician has occasion to employ frequently. A simple apparatus has been devised for this purpose. It consists of a glass T tube (*G 1, G 2, G 3*), with a two-way glass stopcock (*S*). This is connected with a needle (*N*) by heavy rubber tubing (*R 1*) and with a Luer glass syringe (*Sy*) of 20 or 50 c.c. capacity by means of light rubber tubing (*R 2*), such, for example, as a soft rubber catheter. A third piece of rubber tubing (*R 3*) may be added, if desired. The tubing is cut in convenient lengths.

The apparatus possesses several advantages:

1. It is inexpensive. All of the parts are in every physician's office, with the possible exception of the glass T, which may be purchased at small cost.

2. A single puncture suffices both for diagnostic exploration and for aspiration. If fluid is obtained, the syringe is filled; the two-way stopcock is then turned, and the fluid is ejected through tube *G 3*. A sterile test tube is filled for culture or for guinea-pig inoculation, and other portions are obtained for determining specific gravity, protein content and cytology. By reversing the stopcock and alternately filling and emptying the syringe, aspiration may be continued until the fluid is evacuated.

3. The light rubber tubing (*R 2*) collapses when a vacuum is produced by gently drawing on the plunger of the syringe, provided the end of the needle is *not* in the fluid. This is an obvious advantage; it serves as a useful guide. With very thick pus, however, the tubing may collapse, even though the needle is in the fluid.

4. The apparatus is easily cleaned and sterilized.

5. It is readily portable, occupying practically no space in the bag—a great advantage over the liter vacuum bottle usually employed. Thus, an aspirating outfit may be at hand always, when the physician is making his calls; and if exploration or aspiration is indicated, it may be done without delay.

6. The joints are simple, air-tight, and do not become clogged.

7. The apparatus is also suitable for intravenous injections.

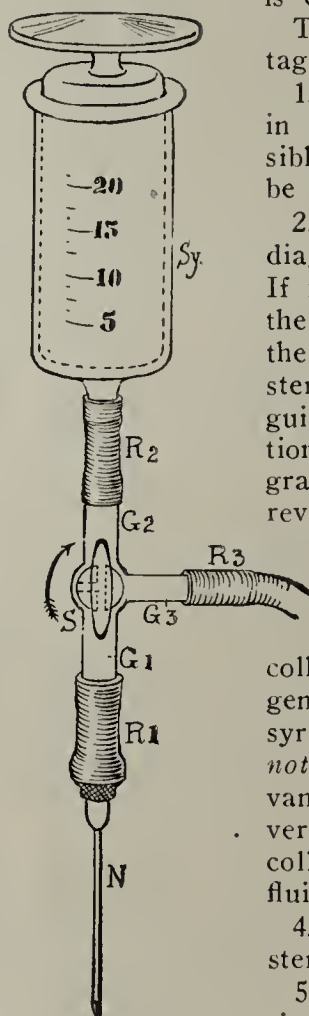
APPARATUS TO AID IN DIFFERENTIATION BETWEEN AN OBSTRUCTION IN THE URINARY OUTLET AND PARALYSIS OF THE BLADDER

GEORGE WALKER, M.D., BALTIMORE

Inability to void may be due to an obstruction somewhere in the urinary outlet or to muscular weakness of the bladder. In not a few instances, patients have come under my care who have undergone an operation for a supposed prostatic obstruction, whereas in reality the condition had been due to a partial paralysis of the bladder muscle. In order to aid the diagnosis in these obscure cases and to study the bladder function with more precision, I have devised an instrument, which is represented in the accompanying illustration.

DESCRIPTION OF INSTRUMENT

The instrument consists of a catheter (*A*), a two-way cock with three openings (*B*), a wide-mouthed 2-ounce bottle with



Apparatus for diagnostic or therapeutic punctures.

* From the Medical Clinic of the Cincinnati General Hospital.

rubber cork (C), an ordinary blood pressure gage (D), and a piece of rubber tubing (E) for the purpose of introducing fluid into the bladder or letting it out. Connections are made with rubber and glass tubing. The stopcock has three openings so that by turning the valve the bladder can be connected alternately with the gage or with the tube. In this way water can be introduced into or taken out of the bladder. The empty bottle acts as a buffer and prevents the fluid from going into the gage. The whole instrument can be easily constructed at a very small cost, since the only expensive part, the pressure gage, is in the possession of every physician.

MODE OF USING

The whole instrument, except the pressure gage, is sterilized by boiling. The catheter is introduced into the bladder and the stopcock turned so as to evacuate any urine which may be present. One hundred cubic centimeters of sterile water is then injected into the bladder through the tube and the catheter, a syringe or a graduated gravity bottle being used. The valve is then turned so that the pressure in the bladder will be recorded on the gage. Another 100 c.c. is injected and a second reading made in the same manner, and so on until 500 c.c. has been introduced. The patient is now directed to exert his utmost effort to void the fluid. This pressure is registered on the gage and is recorded. One hundred c.c. is then evacuated and another reading is taken, and so on until 100 c.c. remains in the bladder.



Apparatus to aid in differentiation between an obstruction in the urinary outlet and paralysis of the bladder.

THE NORMAL STATIC AND VOLUNTARY INTRAVESICAL PRESSURE

A series of young and middle-aged men with normal bladders was selected and the static and voluntary intravesical pressure taken. The accompanying table shows the general average.

100 c.c. of water, without voluntary effort	= 10 mm. of mercury.
200 c.c. of water, without voluntary effort	= 12 mm. of mercury.
300 c.c. of water, without voluntary effort	= 14 mm. of mercury.
400 c.c. of water, without voluntary effort	= 16 mm. of mercury.
500 c.c. of water, without voluntary effort	= 20 mm. of mercury.
500 c.c. of water, utmost voluntary effort	= 120 mm. of mercury.
400 c.c. of water, utmost voluntary effort	= 130 mm. of mercury.
300 c.c. of water, utmost voluntary effort	= 150 mm. of mercury.
200 c.c. of water, utmost voluntary effort	= 110 mm. of mercury.
100 c.c. of water, utmost voluntary effort	= 80 mm. of mercury.
50 c.c. of water, utmost voluntary effort	= 70 mm. of mercury.

With this apparatus we are not only able to differentiate between a weakened bladder and an obstruction in the urinary outlet, but also to determine the exact capacity of the bladder, that is, the full relaxing power. Our studies have also shown that in the condition commonly known as paralysis of the bladder, three distinct pathologic conditions must be taken into account: (1) a paralysis of the bladder muscle; (2) a paralysis of the sphincter muscle with no change in the bladder muscle, and (3) a tonic contraction of the sphincter which does not relax sufficiently to allow the patient to void.

These observations were made on adults in the recumbent posture; when made with the subjects in the sitting or standing position, the pressure was increased from 15 to 20 points. The experimental work is being continued and will be reported later.

Charles and Centre Streets.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

ARGYN.—A colloidal compound of silver oxide and serum albumin, containing from 25 to 30 per cent. of silver. The silver is in a form not readily ionizable.

Actions and Uses.—See general article, Silver Preparations, under Silver Protein Preparations, Argyrol Type, New and Nonofficial Remedies, 1921, p. 330.

Dosage.—Argyn is employed in from 10 to 25 per cent. "solutions" (colloidal suspensions), or even stronger.

Manufactured by the Abbott Laboratories, Chicago. No U. S. patent. U. S. trademark No. 137522.

Argyn occurs as black, lustrous, hygroscopic granules. It readily forms colloidal solutions with water and glycerin, but not with oils or with alcohol. A "solution" of argyn 1:1000 is deeply colored.

To 1 Cc. of a 2 per cent. colloidal solution of argyn add 1 Cc. of sodium chloride test solution; no precipitate forms (*ionizable silver compounds*). To an acidified colloidal solution of argyn add 1 Cc. of ferric chloride test solution; a white precipitate is formed and the dark color of the solution is discharged.

About 1 Gm. of argyn, accurately weighed, is placed in a 500 Cc. Erlenmeyer flask; about 20 Cc. of strong nitric acid solution is added and the contents heated in the steam bath for one-half hour; about 200 Cc. of water is added and sufficient hydrochloric acid solution to precipitate the silver as silver chloride. The silver chloride is collected on a tared Gooch crucible, washed well with hot water, dried and weighed. The silver content corresponds to not less than 25 per cent., nor more than 30 per cent. of metallic silver.

CASEIN.—Caseinas.—The protein separated from milk by the action of acids or enzymes and purified. It contains not less than 15 per cent. of nitrogen, as calculated on the moisture-free material.

Actions and Uses.—Casein is used as a food, being added to other ingredients of the diet when it is desired to increase the content of protein in the diet. This occurs occasionally in the feeding of infants, in the nutrition of adult convalescents, and undernourished persons, and in the dietotherapy of diabetes. Casein is readily digested, furnishes phosphorus in addition to the usual amino-acid derivatives of proteins, and represents a protein of good nutritional quality. Casein is also used in the preparation of special foods for diabetics or others for whom a regimen poor in carbohydrate or fat may be desired.

Dosage.—The quantities which may be desirable to use vary widely in accord with the purpose of the feeding. Hence the dosage cannot be designated in definite terms.

Casein is soluble in ammonia water and in aqueous solutions of the fixed alkali hydroxides; insoluble in water, alcohol, ether, chloroform, or benzene. A suspension of casein in water slightly reddens blue litmus paper, but casein has both acidic and basic properties.

Char about 2 Gm. of casein, accurately weighed, extract with hot water, using 5 successive portions of about 10 Cc. each, dry the insoluble portion, heat it to obtain a white or gray ash (moistening with nitric acid if necessary), add the aqueous extract, evaporate the mixture, heat the residue, and weigh. The ash does not exceed 2 per cent. of the weight taken.

Weigh accurately from 1 to 2 Gm. of casein and dry it in an air oven at 100 C. to constant weight. The loss does not exceed 10 per cent.

Add 10 Cc. of water to about 1 Gm. of casein, accurately weighed. Mix thoroughly with a glass rod and allow to stand for 15 minutes. Transfer to a Rohrig tube or a separator with 10 Cc. of ammonia-alcohol (1 volume of stronger ammonia water and 4 volumes of alcohol). Mix thoroughly to completely dissolve the casein. Add 25 Cc. of ether, shake thoroughly for half a minute, add 25 Cc. of petroleum ether and shake again for half a minute. Allow to stand for about 20 minutes or until the liquids have separated. Draw off the ether solution as completely as possible, filtering through a pledget of cotton into a weighed flask. Repeat the extraction with ether and petroleum ether, using 15 Cc. of each solvent. Evaporate the combined extracts and dry the residue at 100 C. to constant weight. The residue corresponds to not more than 1 per cent. of the weight taken.

Determine the nitrogen in a weighed quantity of casein by the Kjeldahl method. The nitrogen corresponds to not less than 15 per cent. of the moisture-free material.

PAPAVERINE SULPHATE-ROCHE (See New and Nonofficial Remedies, 1921, p. 211).

The following dosage form has been accepted:

Papaverine Sulphate Tablets-Roche, 0.04 Gm.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 23, 1921

WHERE CAN A PERFECT CLIMATE BE FOUND?

Climatotherapy has been defined broadly as the use of climate for checking or preventing the development of disease, and for aiding the recovery of those who are ill or convalescent. If, indeed, the meteorologic conditions of a place or locality, if temperature and humidity and diverse other related factors are potent elements in determining the well-being of mankind, the physician has the imperative duty of learning where they are to be found within easiest reach for his patients. Hence the query: "What constitutes a good climate?" To this a well known climatologist¹ has frankly replied that "perfect" climates do not exist, that every climate has some disagreeable features. Health resorts are never equally desirable at all seasons. Ward regards it probably safe to say that every climate has advantages of its own for some special purpose, but some climates have more, and some have fewer, disadvantages.

Although scouting the idea of a perfect climate, Ward regards as a pretty general agreement among physicians, physiologists and climatologists that, excepting those who are distinctly ill, the best climate for most persons and most of the time is one that has frequent moderate weather changes; fairly marked annual and diurnal variations in temperature; a reasonable amount of cold during at least part of the year; a refreshing variety in the amount of cloudiness, and sufficient rainfall to provide enough moisture for the growth of grass and crops. Such a climate, Ward adds, is an intermediate one. It is neither invariably hot nor permanently cold. It is neither monotonously arid and cloudless, nor always dull and rainy. It is between all extremes. The climates of much of the so-called "temperate zones" are of this general type. Their physiologic effects are intermediate between those of the equatorial and those of the polar zones. They exercise the body's power of reaction and adaptation, keeping it physiologically active.

The search for a better climate frequently means, as every clinician well realizes, a change in something more than meteorologic environment. It is not the air

for the lungs, the temperature for the skin, the altitude for the circulation, or such incidents that alone are sought. Social, mental and physical changes occasion their own beneficial or baneful transformations. Many of the advantages which rest, recreation, diversion, outdoor life, relaxation, altered diet, expert medical attendance and proper hygiene secure under the guise of a "change of climate" could frequently be secured at home with less real hardship to the patient. Frequently the home will become a health resort if it can be made a pleasure resort. In the case of specific diseases such as tuberculosis, we have gradually learned the importance of teaching the patients how to live at home. The burden of recovery is no longer shifted solely to the "resort" in a faraway place. Have we not neglected all too often the possibility of taking advantage of local climates? Perhaps it will become more popular in the future to seek health at home. Then the choice of climate will no longer require "a nerve-racking decision."

ORGANIZED LABOR AND PREVENTIVE MEDICINE

The "right to health" is a privilege which many persons are beginning to regard as one of the inalienable rights attached to citizenship in a great republic. Without health there can be no happiness; and all the vaunted advantages of the liberty of a democracy are useless if the individual is unable, owing to physical defect or encroachments of disease, to enjoy what he is taught to esteem as priceless possessions. Most persons have acquired the habit of regarding good health as something God-given and fortuitous over which they have no very direct control; or, realizing that health may be jeopardized by environmental conditions or personal neglect, they fall into the attitude of expecting either the state or the employer or some philanthropic organization to provide the safeguards and furnish the remedies which lead to hygienic happiness.

No one needs good health in greater abundance than the worker, yet he belongs in most instances to the group of those who are either ignorant of the menaces and the means to avert them, are indifferent to the wasting of human health, or not uncommonly are hoping for some outside help toward solving personal problems. Hence many have come to depend on the diverse social agencies, such as enlightened employers may furnish or charitable organizations may provide in the domain of preventive medicine. Mrs. Grace M. Bernheim¹ has struck a new and important keynote in a communication addressed to organized labor. She points out that the traditional attitude of the latter has been to look on workingmen's health as "the boss's business." Insisting that this is a serious mistake, she urges that a physical examination should be the worker's first introduction to his union. It should be closely

1. Ward, R. D.: Climate and Health, with Special Reference to the United States, Sc. Month. 12: 355 (April) 1921.

1. Bernheim, G. M.: A Health Program for Organized Labor, New York Call, March 20, 1921.

tied up with the local and its employment department. It should be the foundation on which the whole future of the individual rests. Knowing the needs of his body, he can select work for which he is fitted. Knowing his weak spots, he can build up his health.

If it is not entirely novel, it is at least unusual and unconventional in most trades for the union leaders to accept any degree of responsibility for their followers' health. The working hours, the scale of wages, the apprenticeship and many other items have long been solicitously guarded against unfair exploitation on the part of employers. Surely the union can afford to make an equal effort or investment in relation to the health of its members, one of its chief working assets. There is common sense in Mrs. Bernheim's insistence that the worker himself must learn how his body is affected by his work, by his food, by his pleasures. Of what use, she asks, are shorter hours, higher wages, even being a "great man," if the body is broken and the mind too sick to care? It is a splendid plea for the larger participation of organized labor in the aims of preventive medicine.

AN INTERPRETATION OF DEATH

Biologists have pointed out that the longevity of man is in a sense determined not only by the innate constitutional properties of the protoplasm of his living tissues but also by the possible appearance of adverse environmental conditions. The latter are to a considerable extent controllable; they can be averted or rendered less frequent by many precautions such as form part of the dictates of modern preventive medicine and personal hygiene. By improving the environment of the individual and limiting the likelihood of detrimental forces being brought into play against him, it is not unlikely that the average expectation of life may continue to be increased.

This possibility rests on the assumption, however, that the inherent capacity of protoplasm to grow and be restored is not self-limited. If senescence and death are necessary attributes of living matter, even ideal conditions of existence will sooner or later be without avail. Weissmann long ago concluded that originally protoplasm possessed "the property of potential immortality." Expressed otherwise, the living matter was assumed to be capable of reproducing itself indefinitely, if accidents, disease, etc., are barred. Others have argued that some sort of contribution from other protoplasm, as in copulation or conjugation, is indispensable to the continuity of life. The elaborate studies of Woodruff have shown, however, that this is not necessarily the case. He¹ has succeeded in maintaining a culture of *Paramecium* through reproduction by mere division of its protoplasm without conjugation for more than thirteen and one-half years during which time

more than 8,400 generations were thus attained. Hence we may conclude with Woodruff that under a favorable environment the protoplasm of a single cell may be self-sufficient to reproduce itself indefinitely. This is essentially an asexual method of development. The long continued growth of the tissue cultures maintained by Carrel and his associates at the Rockefeller Institute point to a similar conclusion for certain types of mammalian cells.

It will then be asked why natural death is so inevitable in the higher organisms. To this question Pearl² has found an answer in the complexity of these forms of life—in the differentiation of structure and function in the body. It is, to quote Pearl, a complex aggregate of cells and tissues, all mutually dependent on one another and in a delicate state of adjustment and balance. If one organ for any accidental reason, whether internal or external, fails to function normally it upsets this delicate balance, and if normal functioning of the part is not restored, death of the whole organism eventually results. Protozoa may in a sense be immortal. Germ cells are likewise immortal. The modern transplantation experiments have demonstrated that certain somatic cells, such as tumors contain, may continue to live and grow indefinitely. But by their specialization the higher forms forego the power of independent and indefinitely continued existence. This is the price paid for the differentiation of special functions. Thus, says Pearl, if in such an interlocking and mutually dependent system any one part through accident or in any way whatever gets deviated from its normal functioning, the balance of the whole system is upset. If the departure of any part from its normal functional course is great enough to be beyond correction promptly through the normal regulatory powers of the organism, death of the whole will surely ensue.

NUTRITIONAL REHABILITATION

The chemist distinguishes between certain changes of state that matter may undergo by designating them reversible and irreversible. In these respective cases the product of the reaction can, in the one instance, readily be converted back into its precursor form. When an irreversible reaction takes place, on the other hand, the resultant substance can no longer be restored to exhibit its earlier properties. Thus, a soluble protein undergoes an irreversible reaction when it is converted with the aid of heat into insoluble coagulated protein.

Similarly, there are biologic changes in living matter which partake of an irreversible character. When they are of a sort that deteriorates the organism, a permanent undesirable effect is produced. There are bodily damages that can never be repaired. Certain functions may become perverted beyond the possibility of recovery. Interferences with growth and normal nutrition

1. Woodruff, L. L.: The Present Status of the Long-Continued Pedigree Culture of *Paramecium Aurelia* at Yale University, *Proc. Nat. Acad. Sc.* 7: 41 (Jan.) 1921.

2. Pearl, R.: The Biology of Death, IV, The Causes of Death, *Sc. Month.* 12: 49 (June) 1921.

not infrequently leave evidences of harm in the guise of dwarfed forms and malnourished persons. Are these changes likewise irreversible in character?

An affirmative answer has often been given to this question. It has been alleged, for example, that when once growth is retarded beyond the period during which it usually takes place, a condition of permanent stunting is likely to ensue. In their experiments on laboratory animals, Osborne and Mendel, as well as other workers, have clearly demonstrated, however, that the individual may be stunted by a variety of specific deficiencies in its food, yet subsequently recover when the diet is made adequate. More recently, Sherman¹ and his collaborators at Columbia University have attempted to determine whether this favorable outcome is also attainable when the stunting results from the use of an unbalanced dietary of ordinary food, simultaneously deficient in more than one factor, and particularly when the deficiencies are such as may frequently occur in human experience. A striking illustration of the positive results observed by them was obtained in the case of diets rich in bread. Animals which had been seriously stunted in early life by feeding on bread alone resumed growth at a normal rate and subsequently produced and reared healthy young when a liberal supply of milk was added to the cereal diet. This wonderful supplementary value of milk cannot be too often emphasized. The modern "nutrition classes" in some of the present day child-health activities bear similar testimony. The upshot of these evidences from now diverse sources is that we must not despair of the "nutritional rehabilitation" of individuals or families whose vitality has been reduced by living on unsuitable proportions of staple articles of food. For such persons it is rarely too late to thrive when the opportunity is given.

Current Comment

BRAIN LECITHIN

When a well known continental physiologist of the last century first made the oft-quoted remark that "our thoughts depend upon the element phosphorus," he doubtless had in mind the peculiar phosphorus-containing nitrogenous compound lecithin, first discovered in egg yolk by Gobley three quarters of a century ago, and soon thereafter reported by him to be present also in brain tissue. During the succeeding years lecithin, though ill defined by the chemists and always admitted to possess an uncertain chemical structure, remained as a striking characteristic of the organ on which our thinking, our feeling and, in ultimate analysis, our doing, depend. Whether current fashions in nomenclature happened to designate it as a lipoid, a phospholipin, a phosphatid or, perhaps, still differently, the substance originally known as lecithin continued to exercise a sort of mysterious spell in biochemistry. When, therefore,

about ten years ago Fränkel and Linnert¹ denied the presence of lecithin in the brain tissue of man, many who had struggled in student days to memorize the elaborate structural formula of the leading chemical component of the central nervous system experienced the sensation which fruitless labor often evokes. Then, too, there were mysterious virtues in lecithin which the medical advertiser detected best of all. But the Austrian investigators were wrong. Lecithin is present in the brain. This assurance is now given by Levene and Rolf,² who have isolated and identified it at the Rockefeller Institute for Medical Research. Furthermore, the brain lecithin is found to have the same composition as that from egg yolk. The distinction between lecithins lies apparently in the differences of the character of their fatty acids. The fatty acids isolated from the egg lecithin are oleic, palmitic and stearic acids. The same acids were also isolated from the brain lecithin. Lecithin and the traditional "brain phosphorus" have been saved to keep the physiologist thinking about their functions.

COST OF MEDICAL EDUCATION AND TUITION FEES

The statement is being made that the cost of obtaining a medical education has so increased in recent years as to make it prohibitive except for the well-to-do. The facts do not warrant this statement. It is true that the cost of furnishing a medical education has greatly increased, but this has affected tuition fees to only a moderate extent. Fifteen or twenty years ago the majority of medical schools were meeting their expenses from students' fees, and some were declaring dividends; now it is considered quite impossible for a medical school to teach modern medicine unless, in addition to students' fees, it has a generous income either from state appropriations or from private endowment. The actual expenditures for the teaching of medical students by eighty-two medical colleges during 1913-1914 gave an average of \$419 a year for each student, as compared with an average of \$150 a year for each student paid in tuition fees. On the average, therefore, the expenditure was nearly three times what the student paid in fees. The tuition fee which each student paid in some medical schools was only one tenth or even less of the money expended for his instruction. With the general increase in the cost of maintenance since the World War, tuition fees have been increased, but not at all in comparison with the increased cost of furnishing the education. The highest fee now is \$350 a year; in 1914 it was \$250. There are still, however, about twenty high grade medical schools in which the fees are less than \$150, and in ten of these they are less than \$100 a year. Among the latter are several state university medical schools in which low fees are charged to students living within the state. At the same time, greater provision has been made for deserving but needy students than previously in that more than 300 free scholarships and generous loan funds

1. Sherman, H. C.; Rouse, M. E.; Allen, B., and Woods, E.: Growth and Reproduction upon Simplified Food Supply, I, J. Biol. Chem. **46**: 503 (May) 1921.

1. Fränkel and Linnert: Biochem. Ztschr. **24**: 268, 1910; **26**: 44.
2. Levene, P. A., and Rolf, Ida P.: Lecithin, IV, Lecithin of the Brain, J. Biol. Chem. **46**: 353 (April) 1921.

have been established in about forty of our better medical schools. Aside from the higher living expenses, the cost to the student for obtaining a medical education is only slightly higher than it was fifteen years ago.

THE DESTRUCTION OF LEUKOCYTES FOLLOWING PROTEIN THERAPY

Marked leukocytosis accompanies a variety of more or less clearly differentiated clinical conditions. In addition to the classic leukemias or leukocythèmias a number of diseases are known that give rise to somewhat similar blood pictures. In view of the obscure etiology of most of these conditions, and particularly of the uncertain significance of the large increments in one or another of the types of white blood cells, a critical student cannot avoid doubt as to the real wisdom of those modes of therapy which lead to a wholesale destruction of the increased numbers of leukocytes. The methods used are essentially empirical, yet they have found considerable application in the current management of the leukemic disorders. Application of roentgen rays has found vogue, and is justified by the alleged selective action which the rays are said to have for cells of the lymphocytic and myelocytic type. During the decade following the demonstration by Selling that benzene is a leukotoxin, this substance has been employed in the treatment of certain forms of leukemia, and the employment of radium has also been suggested. Another method of producing a leukopenia or decrease in circulating leukocytes has been described by Gow¹ from the Medical Clinic of St. Bartholomew's Hospital in London. A rapid diminution in the number of all forms of the white cells in the peripheral circulation is stated to follow the intravenous injection of so-called "peptone," usually a mixture of the products of the peptic digestion of proteins. The phenomenon was noted incidentally by earlier investigators, who were unable to account for the disappearance of the leukocytes; for peptone has no leukocytolytic action in vitro. This type of leukopenia, which usually is followed by a transient polymorphonuclear leukocytosis, would have little more than academic interest except for the fact that the intravenous injection of peptone has been recommended for several years by the Belgian clinician Nolf in the treatment of septic infections. The procedure is admittedly a drastic one, and considerable further study is required of this as well as of many other forms of specific protein therapy.

ACIDEMIA AND ALKALEMIA

Although the expression "acidosis" has long been in use, having been coined by Naunyn many years ago, its precise meaning appears of late to have become somewhat confused. Originally it was applied to what has sometimes been termed acid intoxication, that is, to conditions in which large amounts of nonoxidized organic acids are formed in metabolism and circulated in the body. Beta-oxybutyric acid, aceto-acetic acid (so-called diacetic acid) and lactic acid are illustrations of the types of chemical compounds just referred to.

One of the consequences of the circulation of such products, that is, of an acidosis in the original sense, may be a lowering of the content of carbonates in the blood. This led Van Slyke and Cullen a few years ago to introduce the expression "decreased alkali reserve" to denote this condition. It has found wider acceptance with us than abroad. Meanwhile, evidence has accumulated to show the existence of conditions of the blood in which the reverse status applies; that is, there may be a relatively high content of carbonate, to which the expression "alkalosis" has fittingly been applied. Instances of such possibilities, notably in relation to tetany, have repeatedly been discussed in *THE JOURNAL*. Poulton¹ has recently pointed out anew what many American workers have long regarded as unfortunately confusing, namely, that the word acidosis is being employed by investigators and others to signify increased acidity as exemplified in increased hydrogen ion concentration. Changes in reaction sufficiently marked to justify reference to such conditions rarely occur in fact, owing to the composition and equilibrium phenomena of the blood whereby the reaction is kept extremely constant. According to Poulton, it was proposed at the meeting of the British Medical Association in Cambridge that increased and diminished hydrogen ion concentration should be known as "acidemia" and "alkalemia," respectively, and that diminished and increased alkali reserve should be designated as "acidosis" and "alkalosis," respectively. It would be well, in the interest of uniformity as well as accuracy in scientific nomenclature, if English-speaking investigators would adopt this or some other widely acceptable solution whereby confusion will be avoided in the future.

SENSORY FACTORS AND TOBACCO SMOKING

The physiologic action of tobacco has long been a subject for acrimonious discussions in which prejudice and propaganda often seriously distort the judgments of the disputants. It has taken a long time to unravel fact from fiction in the behavior of alcohol so as, for example, to demonstrate conclusively that it almost invariably acts as a depressant rather than as a true stimulant in the body. Tobacco is today also a popular theme for scientific and pseudoscientific controversy. Many have wondered how the widespread habit of smoking is to be explained, and observations by Mendenhall² at the Dartmouth Medical School may throw some light on the custom. In studying the sensory thresholds of trained persons, both smokers and non-smokers, to faradic stimulation, it was noted that the effect of smoking was conditioned on the state of the sensory mechanism at the time of observation. If the person's threshold was at or near normal, smoking was not usually effective in changing it; whereas if his threshold was low, indicating high irritability or nervousness, smoking often depressed the irritability. On the other hand, if the person's sensory mechanism was in a depressed state (with a high sensory threshold), then smoking had a stimulating effect in the sense of

1. Poulton, E. B.: Acidosis and Alkalosis, Correspondence, *Brit. M. J.* **1**: 508 (April 2) 1921.

2. Mendenhall, W. L.: Effect of Tobacco Smoking on Human Sensory Thresholds, *J. Pharmacol. & Exper. Therap.* **17**: 333 (May) 1921.

1. Gow, A. E.: Certain Effects of Peptone Injections in Septicemia, *Quart. J. Med.* **14**: 187 (Jan.) 1921

lowering the threshold. The depressant effect of smoking was much more marked than was the stimulating tendency. Rest accomplished the same sort of restoration of the threshold for sensory stimuli to the normal, though the effect of smoking in this respect seemed to be more marked. The psychophysiologic measurements made at Dartmouth harmonize with the statements of those who experience a stimulating action of smoking when they are depressed, and a depressing effect when they feel nervous or irritable. Smokers will find in this research a justification for the belief that the use of tobacco under certain conditions may lead to such sensations or feelings as approach the normal most nearly; that is, an adjustment which brings the smoker to a physical state which is desirable because normal in its sensory features. Of alcohol it has been said that, whereas it may at times be a blessing in disease, in health it is mostly a detriment. Perhaps it will eventually appear that the smoking of tobacco also has a variety of effects, the importance of which depends on the state of the smoker quite as much as on the pharmacology of the smoke.

PROGRESS IN THE TREATMENT OF LEPROSY

The latest reports¹ of the progress of the investigations which Dean and his medical and chemical confrères in the Hawaiian Islands have been conducting in recent years on the treatment of leprosy deserve careful study. The problem, which has frequently been discussed in *THE JOURNAL*, has involved many disturbing factors complicated by the difficulty of determining with certainty whether leprosy has actually been cured in the individual cases treated. There can be little doubt, however, that a potent remedial agent resides in some of the fatty acids which can be separated from chaulmoogra oil. The first larger group of successful cases in which the newer discoveries were applied were treated by the use of mixed ethyl esters of chaulmoogra oil acids carrying 2 per cent. of iodine in chemical combination. Intramuscular injections were supplemented by oral administration of a similar product. In the latest series the iodine has been omitted without noteworthy difference in the favorable outcome of the treatment; and the oral dosage has likewise been discontinued because it has failed to give any evidence of added advantage in respect to the period of treatment or the character of the results attained. Furthermore, two definite constituents of chaulmoogra oil, chaulmoogric and hydnocarpic acids, have been separated and employed in the form of esters therapeutically with obvious success. Thus, the practice of treatment has become simplified to involve the injection of ethyl esters of one or the other of the two chemical compounds noted. An opportunity is now offered to the chemist to prepare a variety of similar products for tests of their possible superior value in the important work of curing lepers. The "last word" has not been spoken; but a truly great advance has been made in the demonstration of a chemically distinct type of substance with potent remedial properties.

1. McDonald, J. T., and Dean, A. L.: The Constituents of Chaulmoogra Oil Effective in Leprosy, *J. A. M. A.* 76: 1470 (May 28) 1921.

Association News

THE ST. LOUIS SESSION

Dates Announced for Annual Session in 1922

The next annual session of the American Medical Association will be held in St. Louis, May 22 to 26, 1922. The Board of Trustees has appointed Dr. Robert E. Schluter, St. Louis, Chairman of the Local Committee of Arrangements. The committee will establish an office in the headquarters of the St. Louis Medical Society, 3525 Pine Street. All communications for the attention of the Local Committee of Arrangements should be sent to that address.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Chiropractor Sentenced to Term in Jail.—It is reported that on May 26, H. A. Kittle, chiropractor of Los Angeles, was sentenced to ninety days in jail on the charge of practicing medicine without a license.

GEORGIA

Venereal Institute Clinic.—More than 200 physicians of Georgia attended a series of lectures and clinics on venereal disease control at Emory University, Atlanta, July 11-16.

ILLINOIS

Personal.—Dr. Charles E. Humiston, Chicago, president of the Illinois State Medical Society, appeared before the House Committee at Washington, D. C., on Monday, July 18, in opposition to the Sheppard-Towner bill.

Chicago

Personal.—Dr. Alfred S. Burdick has been elected president of the Abbott Laboratories, to fill the vacancy caused by the death of Dr. Wallace Calvin Abbott. Dr. Burdick has been associated with the Abbott Laboratories for more than seventeen years, and for the last six years has been vice president and assistant general manager.

INDIANA

Muncie Academy of Medicine.—At the last meeting, before adjourning for the hot months, which was a joint meeting with the state board of health, Dr. George Crile, Cleveland, spoke on the "Control of Mortality in Abdominal Operations for Cancer."

Public Health Survey.—Dr. Murray P. Horwood, Massachusetts Institute of Technology, is conducting a public health survey of Tippecanoe County during July and August, under the auspices of the Tippecanoe County Tuberculosis Association. The purpose of the survey is to ascertain the condition of the factors affecting the public health and to formulate a program for the improvement of the public health, based on the findings of the survey. It will include an investigation of the water supply, sewerage and sewage disposal, refuse collection and disposal, milk supply, sanitation of food stores and restaurants, school sanitation, school hygiene, organization and activities of the health department, hospital facilities, antituberculosis activities, vital statistics, and analysis of the city budget.

KENTUCKY

Typhoid Fever Outbreak.—An outbreak of typhoid fever in Kentucky prompted Surgeon-General Cumming to send Asst. Surg. M. V. Ziegler to Louisville to confer with state and city health authorities and to assist in the application of control measures in the epidemic that is spreading in the city of Louisville.

MARYLAND

Personal.—Dr. Maurice C. Pincoffs has been appointed professor of medicine and head of the department of medicine in the Medical School of the University of Maryland, to succeed Dr. Gordon Wilson. This is the first step in the reorganization of the whole medical school, which was made possible recently by members of the medical faculty placing their resignations in the hands of Dr. Albert F. Woods, president of the university. Under the new administration, several of the present staff are expected to be asked to remain. Dr. Pincoffs is a graduate of the Johns Hopkins Medical School, class of 1912.—Dr. Ysidro Espinosa, chief medical officer in charge of the child hygiene bureau in the department of health, Mexico, is in Baltimore studying the methods of similar work in operation in this city.

MINNESOTA

Personal.—Dr. William F. Wild, Clarkesdale, Miss., recently with the Rockefeller Foundation, has been appointed executive secretary of the Minnesota Public Health Association, to succeed Dr. Hibbert W. Hill, who resigned last year.

NEW JERSEY

Election of Health Board Officers.—At its annual reorganization meeting, July 6, at Trenton, the state board of health elected Dr. Harry Spence, Jersey City, president, and Dr. Thomas B. Lee, Camden, vice president.

NEW YORK

Conference on Public Health.—The annual conference of public health officers and public health nurses of New York state will take place, September 13-15, at Cornell University, Ithaca.

Personal.—Because of failing health, Dr. Hortense V. Bruce has resigned as superintendent of the New York State Training School for Girls at Hudson, to take effect on August 1.

Dinner for Health Department.—The Yonkers department of health held a dinner, July 15, to celebrate the first anniversary of the establishment of the department of health. During the year Yonkers has had the lowest death rate and the second lowest infant mortality rate among second class cities of the state of New York.

The One Hundred and Second Medical Regiment.—At the state camp of instruction, at Peekskill, July 9, Col. Lucius A. Salisbury, division surgeon for the Twenty-Seventh Division, N. G., N. Y., was sworn in as colonel of the new One Hundred and Second Medical Regiment, and will take control of all the medical activities of the state guard. This regiment is the first to be organized and federalized, and will be the model followed by the National Guard of other states.

Appeal for Medical Volunteers.—In view of the lack of experienced physicians in the Orient capable of conducting postgraduate work, the American Jewish Physicians' Committee has issued an appeal, through its president, Nathan Ratnoff, to experienced physicians and surgeons throughout the country to volunteer for medical instruction service in Palestine. The courses are planned to assist medical men and medical missionaries working in the East, and will be nonsectarian. The committee hopes to found a medical college in Palestine as a gift from American Jewish physicians.

Health Legislation.—Among the new laws and amendments to existing laws relating to public health passed by the last legislature are the following:

Chapter 249.—Authorizes second and third class cities to create public health departments in place of boards of health, and provides for full-time health executives who will be known as commissioner of health in second class cities and health officer in third class cities. The term of office of such officials is made four years instead of two as at present. No person will be eligible to such appointments, unless he is a physician or surgeon, licensed to practice under the laws of New York state, has practiced as such or been engaged in public health work for a period of five years and has complied with the qualifications prescribed by the public health council. Exception is made in the case of physicians who have received the degree of doctor of public health in an institution recognized by the University of the State of New York.

Chapter 509.—Empowers county boards of supervisors to establish a general health district which may include the county or any part of the county or parts thereof; except that no first or second class city, and without its consent, no third class city, may be included in such district. The act makes provision for the continuance of present existing local health districts, and for the completion of the term of office of present local health officers.

Chapter 708.—Repeals the narcotic drug law and abolishes the department of narcotic drug control. All books, papers, records and documents are turned over to the state commissioner of health, but no duties are transferred.

Chapter 510.—Provides for a division of sanitation of the state department of health and transfers certain duties heretofore assigned to the state department of health to the state engineer.

Chapter 130.—Empowers board of supervisors in counties not having a tuberculosis hospital to appoint and employ such public health nurses as such board may deem proper.

Chapter 263.—Empowers board of supervisors in counties not having a tuberculosis hospital to organize and operate clinics for the medical examination of persons who are or may be suffering from tuberculosis.

Chapter 248.—Empowers county superintendents or overseers of the poor to utilize in addition to hospitals, such sanatoriums and boarding houses as are approved for such purposes by the state commissioner of health for the care and treatment of indigent sick persons.

New York City

Personal.—Dr. Henry W. Frauenthal, medical director of the Hospital for Joint Diseases, will sail, July 27, to visit the various modern hospitals in England, France and Italy.—Dr. Arnold Knapp sailed for Europe, July 16, on the Royal Mail Steam Packet *Oropesa*.

Physician's License Revoked.—A report from the board of regents of the University of the State of New York states that the license of Dr. Samuel J. Bernfeld was revoked, June 20, 1921, on the ground that Dr. Bernfeld has been convicted of conspiracy to evade the Selective Service Act.

New Jewish Memorial Hospital.—Plans for the new Jewish Hospital to be erected at Dyckman Street overlooking the Hudson have been completed. It is proposed to utilize as a part of the hospital a building now in the grounds. This will undergo reconstruction and a new wing will be added so that the capacity of the new institution will be 165 beds. The completed structure will cost about \$350,000 and will be dedicated to the memory of the Jewish soldiers, sailors and marines who died in the World War.

Test Right to Treat Drug Addicts.—Indicted in the federal court on the charge of violating the Harrison Narcotic Law, it is reported that Dr. Morris Behrman expects to make a test case of one of the indictments. Dr. Behrman is charged with having given a prescription to a Pullman porter for 150 grains of heroin, 360 grains of morphin and 210 grains of cocain. The demurrer is on the grounds that the dispensing of drugs by the physician was in the course of his professional practice only; that there is no allegation that he wrote the prescription with criminal intent, and that there was a desire on his part to cure the addict.

OHIO

Physicians Honored.—The Allen County Medical Association held a special meeting and banquet recently in honor of Drs. Jonathan B. Vail and Enos G. Burton, Lima, and Newton Sager, Lafayette, each of whom had been in active medical practice more than fifty years. Drs. Vail and Burton, both graduated the same year, 1871, at the Ohio Medical School, now the Ohio and Miami Medical School of the University of Cincinnati.

OREGON

New Officers of the Oregon State Medical Association.—At the recent meeting of the state medical association, the following officers were elected for the ensuing year: president, Dr. Abram L. Houseworth, Marshfield; vice presidents, Drs. Edward B. McDaniel, Portland, George E. Houck, Roseburg, and Henry E. Pernot, Corvallis; secretary, Dr. T. Homer Coffen, Portland, and treasurer, Dr. Jessie N. McGavin, Portland.

North Pacific Medical Association.—At the meeting of the Tri-State Medical Association, referred to in THE JOURNAL, July 16, there was organized the North Pacific Medical Association, to comprise Oregon, Idaho, Montana, Utah and British Columbia, which will meet annually, independently of the different state medical associations. Dr. John Earle Else, Portland, will serve as chairman, and Dr. Homer Dudley, Seattle, will serve as secretary, until the first annual meeting, which will probably be held in Vancouver.

PENNSYLVANIA

Tuberculosis May Be Quarantined.—According to a recent statement of the state health department, tuberculosis, being classed as a communicable disease, may legally be subject to quarantine—as in the case of smallpox, scarlet fever or diphtheria—when a patient fails or refuses to take the necessary precautions to protect others from infection.

Philadelphia

Opium Seized.—More than \$2,000 worth of opium was seized, one Chinese was arrested and another escaped, July

14, when Agent Unfreed of the narcotic division of the International Revenue Department raided a Chinese laundry at 909 Locust Street. Opium was secreted in secret compartments in the wall, floor and stairway.

Schools on Insanitary List.—Sixteen out of the 328 school buildings in the city are given a rating of "bad" in the annual sanitation survey presented to the board of education at its regular meeting by Dr. Walter S. Cornell, director of the medical inspection division of the public schools. The survey lists seventy-seven buildings as "excellent"; ninety-four as "good," and thirty-two as "poor," in addition to those already mentioned as "bad."

The Temple University School of Medicine.—In the reorganization of the School of Medicine, the following have been elected full-time professors: Dr. David Gregg Metheny, professor of anatomy and histology; Dr. Joseph Garrett Hickey, professor of physiology; Dr. William H. Reese, professor of chemistry; Dr. Max H. Bochrock has been elected clinical professor of neurology and will be visiting neurologist to the Samaritan and Garretson hospitals; Dr. Albert Strickler has been elected clinical professor of dermatology, and becomes visiting dermatologist to the Samaritan and Garretson hospitals.

TENNESSEE

Election of Officers of State Medical Board.—The state board of medical examiners, at its annual meeting, June 27, at Nashville, elected Dr. William I. McCreary, Knoxville, as president, to fill the unexpired term of the late Dr. Ambrose McCoy, Jackson. The other officers elected, were: vice president, Dr. Benjamin L. Simmons, Nashville, and secretary, Dr. Alfred B. DeLoach, Memphis.

UTAH

Personal.—Dr. James Earle, Salt Lake City, who during the war had charge of the eye department of the American Aviation Training Station at Issoudon, France, has recently been appointed as a surgeon in the U. S. Army and ordered to report for duty at the government hospital at Biltmore, N. C.

WISCONSIN

Department of Public Health Nursing.—The governor has signed the bill creating a department of public health nursing. A director of nursing will be appointed sometime before September, and the work of the department will be reorganized along the lines set forth in the bill. The measure was supported by the nursing organizations of the state.

Public Health Laws.—The last legislature appropriated \$51,000 per year for general administration for the state board of health; \$41,250 for venereal disease control work; \$13,300 for the bureau of communicable diseases; \$5,000 for supervision of public comfort stations and rest-room construction, and \$31,000 during the first year and \$21,000 the second year, for the bureau of child welfare and public health nursing. Former appropriations of \$7,490 per year for laboratories and \$1,500 per year for silver nitrate for the prevention of infant blindness, were renewed. A full-time health officer was provided for all cities of 25,000 or more. Vaccination of schoolchildren at the expense of the municipality, except where parents choose their own physician, was also provided for. Pneumonia and epidemic encephalitis were made reportable diseases.

CANADA

Ontario's New Marriage Law.—Section 2 of the amendments passed last session of the Ontario legislature gives power to the provincial secretary to issue to ministerial applicants or church authorities on their behalf, certificates of registration, and stipulates that, where it is apparent that any person registered has ceased to possess the qualifications entitling him to be registered, he may annul such registration and revoke his authority to perform marriages. The right to perform marriages is extended to properly ordained clergywomen. The enforcement of these amendments is to come into effect, October 1. The registration is taking place under Dr. John W. S. McCullough, of the provincial board of health. Heretofore the privilege of issuing marriage licenses was in the hands of the jewelers of Ontario, but now it is taken out of their hands and vested in municipal clerks; and only duly registered clergymen of recognized denominations may legally perform the marriage ceremony.

GENERAL

Special Course for Physicians.—The Graduate School of the University of Minnesota announces a special one-year course in ophthalmology and otolaryngology, to begin Sept. 28, 1921.

American Nurses' Memorial in France.—The cornerstone of the new Florence Nightingale Training School for Nurses at Bagatelle was laid, June 5, by Miss Helen Scott Hay, Savannah, chief nurse of the American Red Cross in Europe, on behalf of Miss Clara D. Noyes, Washington, D. C., president of the American Nurses' Association and chairman of the fund for the memorial, who was unable to be present. The school is dedicated to the memory of the 284 American nurses who gave their lives in the war, and it will be built with money collected through the three national organizations of America—the American Nurses' Association, the League of Nursing Education, and the National Organization for Public Health Nursing.

Infant Mortality.—According to a recent report, issued by the Children's Bureau, on infant mortality in the registration area since it was established in 1915, Pittsburgh lost more babies in proportion to its births in each year of the five-year period, 1916-1920, than any other of the nine large cities in the area. In 1920, there was a loss of one infant in every nine—the rate varying in different parts of the city from 64 per thousand in the most favorable ward to 157 per thousand in the most unfavorable. Nearly one half of the babies who failed to survive died before they were a month old, and nearly one fourth of the deaths reported were caused by gastro-intestinal diseases. Washington, Philadelphia and New York showed the most satisfactory progress toward a reduction of rates, though Minneapolis has consistently maintained the lowest rate of all of the nine cities.

Medical Week in Kansas City.—The Medical Association of the Southwest, the Medical Society of the Missouri Valley, and the Medical Veterans of the World's War are planning to hold a combined meeting, October 24-28, at Kansas City, Mo. The committee of the Medical Veterans of the World's War is arranging a series of clinics for the mornings at all the Kansas City hospitals. The afternoons will be devoted to scientific sessions of both the other societies. The Midwestern Association of Anesthetists will be organized and will present a program, October 25. The Jackson County Medical Society will arrange special entertainments, which will include a golf tournament and a dinner dance at one of the country clubs. Arrangements are also being made for special home-coming festivities for the graduates of the University Medical College, and one evening has been reserved for alumni dinners for representatives of the various colleges and universities attending the session.

Development of Medical Education in Brussels.—Mr. H. Goosens-Bara, as official delegate from the hospital board of the city of Brussels, and Mr. J. B. Dewin, who has been appointed by the city of Brussels as architect of the new hospital of St. Pierre—a public hospital to be used as a teaching hospital of the medical school of the University of Brussels—have come to the United States in connection with a plan for the development of facilities for medical education in Brussels. The Rockefeller Foundation is contributing more than \$3,000,000 for new buildings and endowments for the medical school of the University of Belgium. The laboratories and classrooms of the medical school will be entirely rebuilt and redeveloped on a new site adjoining that of the municipal hospital of St. Pierre, which is also to be rebuilt and reorganized. The new hospital will contain 350 beds with a well equipped outpatient department, laboratories and accommodations for teaching and research. As a part of the general plan, a nurses' training school is being established in memory of Edith Cavell and Madame Depage. Mr. Goosens-Bara and Mr. Dewin will be the guests of the Rockefeller Foundation while investigating hospital administration in this country. They will also visit hospitals and medical laboratories in Great Britain, on their way back to Belgium.

LATIN AMERICA

Street Named for Dr. Gorgas in Havana.—The name of Virtudes Street in Havana has been officially changed to "Mayor Gorgas," and metal plates with the new names have been affixed.

Radium in Brazil.—The *Brasil Medico* announces that Dr. Cleef, professor of chemistry at Bello Horizonte, reports the discovery in Minas Geraes of a mineral substance hitherto unknown, which possesses great radioactive properties.

Memorial to Nuñez.—A statue of Dr. Enrique Nuñez has been erected at the entrance to the grounds of the García Hospital at Havana, the construction of which was due to his initiative. He was long chief of the national public health service.

Finlay Park in Havana.—The park that has been constructed opposite the headquarters of the national public health service in Havana has been named for Dr. Carlos J. Finlay, and a fine statue portraying him was recently unveiled. It stands in the center of the park, and it is proposed to place in the corners of the park statues of the three members of the American commission which, with Dr. A. Agramonte, confirmed the transmission of yellow fever by the mosquito, as Finlay had suggested.

Personal.—The new monthly published at Mexico, *Medicina*, states that Dr. A. Román has resigned the chair of medical pathology in the National Medical School of Mexico, and Dr. J. T. Rojas has been appointed in his place. The latter has been commissioned by the medical faculty to go to Europe on a special mission, and Dr. Canale is to serve pro tem.—At the same school Dr. E. Cervera has been appointed professor of microbiology.—Dr. J. Azpuru España has been appointed professor of anatomy on the medical faculty of the University of Honduras.—Dr. H. Valenzuela has returned to Tegucigalpa from a trip to foreign medical centers.—Dr. Miguel H. Alcívar has been elected vice rector of the University of Guayaquil.

Campaign Against Yellow Fever.—In Brazil where yellow fever was formerly prevalent from Rio along the east coast and the Caribbean littoral to the Amazon and up the Amazon Valley to Yquitos in Peru, the infected area has been gradually reduced to a relatively small region on the east coast. The disease seems now to be confined to a zone along the coast from Pernambuco to Bahia. These ports are regarded as the endemic foci from which the infection is distributed from time to time over the surrounding region. Recent reports indicate relatively high stegomyia mosquito index, particularly in Pernambuco. One or two epidemics of minor importance during the year were brought under prompt control. Active measures are being carried out under the direction of the Brazilian National Department of Health which has provided adequate funds for the purpose.

On the west coast of South America the government of Ecuador has declared the country free of yellow fever, no case having been reported since June, 1919, a period of more than two years.

Before the infection had been exterminated in Guayaquil, it appeared in epidemic form in the department of Piura just across the Ecuadorean border in northern Peru. Here it had spread over a considerable area before attracting the attention of government authorities. Some months later, in 1920, the Peruvian government instituted active measures under the direction of Dr. Henry R. Carter, of the U. S. Public Health Service, and the epidemic was promptly suppressed. No reinfection has occurred in this department.

Before completion of the work in Piura, however, the infection had been introduced from this region into the department of Lambayeque, further south, and again had spread over an extensive region before being detected and reported. Here with a more dense population and a high stegomyia index the epidemic became relatively severe. Early in 1921 the government took charge of this second epidemic. Dr. Henry H. Hanson has been placed in charge with full authority. Funds for the work are being supplied by the government and the International Health Board. Dr. Hanson and his staff seem to be getting the situation in hand. Recent reports indicate a steady lowering of the mosquito index and a corresponding fall in case reports.

The situation in Mexico and Central America seems most encouraging. Health authorities have been disposed to regard Merida, Yucatan, as an endemic focus of yellow fever of long standing. In the transcribed records of the early Maya civilization there are references to epidemics of a disease in this region, the principal symptom of which, was the vomiting of blood. The mortality appears to have been so great that vultures came into the homes and devoured the bodies before other disposition could be made of them. The last visitation of the blood vomiting disease, which is referred to in the records as the fourth, has been interpreted to have occurred during the year 1648. Sanitarians have looked upon Merida as the seed-bed from which the fever has spread from time to time, to appear in epidemic form throughout Mexico and the Central American countries. Within the last two years epidemics of more or less severity have occurred in east and west Mexico, Guatemala, Honduras, Nicaragua and Salvador.

The war against yellow fever is now on in all these countries. The plan of operations made possible by a fine spirit of international team play brings all the work under unified administration. In each country the government has created under its national department of health a yellow fever commission and has given to this commission full authority to deal with the situation. The simple device of making one man director of each of these commissions has effected the necessary concert of effort. The region to be covered is a large one. First attention is being given to strategic centers with particular concentration on Merida, Yucatan.

There seems to be no yellow fever at the present time in and about Merida and only a few sporadic cases have been reported within the last two months anywhere in Mexico.

For more than four months no case has been reported from any of the Central American countries. The rainy season, the period of greatest danger from yellow fever, is now coming to an end. Those who are responsible for the work understand, however, the importance of continuing energetic measures against mosquitoes. The plan of operation provides for holding the mosquito index below the danger point for at least a year after the last reported case of yellow fever.

FOREIGN

Statue of Professor Fuchs Unveiled at Vienna.—A marble bust of Prof. E. Fuchs, the Vienna ophthalmologist, was unveiled, June 14, the occasion being his seventieth birthday. He retired in 1915.

Rollier's Graduate Course in Heliotherapy.—A theoretical and practical course in heliotherapy is to begin at Leysin, Aug. 16-20, 1921. Address the Secrétariat Médical de M. Rollier, Leysin, Switzerland, for further details.

The Donders Memorial.—A large statue of Donders, the great Holland ophthalmologist and physiologist, was recently unveiled with much ceremony at Utrecht where he had been professor of ophthalmology and of physiology until his death in 1889.

Memorial to Achúcarro.—A tablet has been placed in the provincial hospital at Madrid commemorating the work of Dr. Achúcarro, the promising young histologist whose research had carried his name far before his untimely death a few years ago.

International Physiotherapy Congress.—The *Medicina Ibera* states that the date of the Sixth International Congress on Physiotherapy has been appointed for May, 1922. Professor Calatayud is to preside at the meeting, which is to be held at Madrid. Dr. Bartrina Costa is the secretary-general.

The Roentgen Institute of the Dresden Gynecologic Clinic.—The inauguration of this new institution occurred June 1. It was organized by means of donations from America to a total of 274,000 marks; the sum for this special purpose was raised by a concert in New York.

Venereal Disease in Germany.—The *Deutsche medizinische Wochenschrift* states that the collective inquiry in regard to the number of cases of venereal disease in medical care during the last month of 1919 has yielded the preliminary figure of 136,000 cases, that is, 2.2 for each thousand inhabitants.

Medical Legislators in Italy.—About eighty physicians were candidates for the national legislature at the last elections, according to the *Riforma Medica*. Twenty-three were elected, including Dr. Raffaele Paolucci, the hero of Pola. Eleven who had previously been members of the lower house failed of reelection.

Prize to Dr. Friedrich.—At the recent annual meeting of the German specialists in digestive and metabolic diseases, the 1,000 mark prize of the Ismar Boas Foundation was awarded to Dr. L. von Friedrich, assistant at the Frankfurt medical clinic, for his work "Influence of the Act of Mastication on Secretion in the Stomach in Health and Disease."

New Medal for Medical Profession.—The Council of the Royal Society of Medicine, at the annual general meeting, July 6, made the first award of its gold medal to Sir Almroth Wright, F.R.S. (London), in recognition of his valuable services to medicine during the war. The medal is to be awarded triennially for original discovery in medicine and other allied sciences, or for the practical application of the results of previous investigations of other scientists, or for the most valuable contribution in any other way toward the progress of the art and science of medicine, preventive medicine, or surgery.

Graduate Courses in Germany.—A course on exotic pathology and medical parasitology is announced to open at Ham-

burg, September 19, in the Institute for Marine and Tropical Diseases. The twelve lecturers include Giemsa and Nocht. —The German Radiotherapy Society is organizing a series of course: one, especially intended for gynecologists, opens under Wintz, August 1-6, at Erlangen. A course on radiotherapy for tuberculous affections will be held, October 3-8, at Freiburg. A graduate course in dermatology is planned for the fall at Hamburg in the Arning clinic and the lupus institute. For information on the radiotherapy courses address Prof. H. Meyer, Parkallee 73, Bremen. The third international graduate course at Karlsbad is announced to open September 11-17. Dr. E. Ganz of Karlsbad is in charge.

Official Expression of the Gratitude of France.—The *Presse Médicale* for June 29 gives a list of Belgians and others to whom the silver medal de la Reconnaissance Française has recently been awarded. The list contains the names of three American physicians: Dr. Carroll Bull, a collaborator of Carrel. The medal is awarded, it is said for his "immense services in scientific research and as assistant to Carrel." The other recipients are Dr. J. P. Hoguet and Dr. MacRobert, physicians to the French Hospital in New York, where they are said to have rendered "signal aid to French soldiers and marines on service in New York and to other persons of French nationality during the war." One medal was awarded to Dr. Max Jessurun of Harlem, the Netherlands. He is said to have been the moving spirit in the Harlem committee which provided free hospital care for French children and free medical care of the French refugees in Harlem during the war, and helping to ameliorate conditions for them.

Arrangements for Foreign Assistants in Paris Clinics.—The *Paris Médical* announces that the Paris medical faculty has now decided to accept foreign physicians as assistants in its clinics. Those desiring such a position must apply to the dean of the faculty with credentials and a letter of recommendation from the dean of their own medical faculty. The credentials are examined by a special committee and laid before the faculty board. If accepted, the candidate becomes assistant in the clinic for a period not less than three months or longer than one year. At the conclusion of his service he receives a certificate signed by the president of the university and registered at the ministère de l'instruction publique. Another advantage of the plan is said to be that some of the professors will allow the assistants to serve as *moniteurs*, thus associating them with the teaching force. Our exchange adds that competition for service as interns in the hospitals is also open to foreign candidates, saying that many physicians of various countries have served a term as intern in the Paris hospitals. The address of the medical faculty is merely Faculté de Médecine de Paris.

German Scientists Make Prohibition Appeal.—An appeal to the profession in Germany, signed by Kraepelin, Abderhalden, Strümpell and Gaupp, is being published in the German medical press. The appeal states "About fifteen thousand million marks are spent annually for alcoholic beverages in Germany. A large proportion of German grains, potatoes and sugar are diverted annually to the production of liquor. Our children and students are being fed by the Quakers in the lands of our late foes, and already we are hearing from these Quakers the reproach that while they are voluntarily imposing privations on themselves to carry on this charitable work in order to help us, we Germans are squandering such vast sums on alcohol and tobacco that with the tenth part of this expenditure for luxuries the distress of the children in Germany could be done away with." . . . "Is such a condition as this compatible with the dignity of Germany, and is it to be borne that the authorities on the questions of feeding our suffering people can look on placidly while the people are thus in heedless folly destroying the future and bringing contempt on the nation? Alcohol and tobacco are not indispensable, they are actually harmful for some; they are a terrible drain on the economics of the land, they hinder the progress of our children and grandchildren and their escape from the hard yoke now pressing so heavily upon us. What we need is an iron will, unwearied industry, good common sense and nourishing food with its economical utilization." The appeal urges physicians to dispel the illusions in regard to alcohol, and combat the frivolous heedlessness of the masses so that history may not record that the profession failed in its duty during the time of the country's greatest distress. The *Münchener medizinische Wochenschrift* commends this appeal and urges the profession to work for national prohibition, like that in America. "What was possible in America, must be possible also in Germany."

Registration of Syphilitics in Denmark.—The central laboratory of the national public health system in Denmark

inaugurated last year a card index for all the specimens of serums sent in for analysis by physicians. A special form is used by which, without infringing on professional secrecy, each syphilitic thus listed can be identified and his case history traced through the years. Five data are recorded for each case: sex; day and year of birth; the initial of the surname; the date when the disease was first diagnosed; the name of the first physician or institution giving treatment. Dr. O. Jersild is in charge, and he has recently published in the *Ugeskrift for Læger* a report on the first six months' working of the institution. There are now 10,000 cases thus card-catalogued. The institution aims merely to serve like the central office of the telephone service. Every physician sending in the above data, or even the first three, of a case is at once put in touch with the physician or physicians or institution which have given this individual patient treatment before. On each card is entered the date of each course of treatment, the name of the institution, the institution's register number for the case, and the Wassermann findings at the time. As the enquiring physician is thus enabled to supply these data, it is an easy matter for the hospital or physician to give him the desired information in regard to details of treatment, etc. As the years pass the value of such a record will become more and more apparent, as the outcome of the case can be compared with the exact treatment, dosage, etc. Jersild has invented a name for this card index, the *kartotheek*, using the last syllable in the Danish word for library, as if we should say card-ary instead of libr-ary.

Deaths in Other Countries

Dr. V. Urbantschitsch, professor of otology at the University of Vienna and author of numerous works on the embryology, etc., of the ear, aged 74.—Dr. C. Moreau, president of the Tournai Union Médicale, Belgium, aged 81.—Dr. T. Schilling, a leading internist of Nürnberg.—Dr. Tirso Luis Crespo, chief of the public health service in Placetas, Cuba, aged 54.—Dr. J. Paes de Carvalho Sobrinho, a rising ophthalmologist of Rio de Janeiro, aged 34.

Government Services

Training Division in Surgeon-General's Office

By order of the Secretary of War a training division has been established in the Surgeon-General's Office of the Army under the direction of Brig.-Gen. Walter D. McCaw. General McCaw will assume these duties in addition to his duties as commandant of the Army Medical School at Washington. His chief assistant is Lieut.-Col. Robert U. Patterson. The training division will have general supervision of all training in the Medical Department of the Army, including the Medical Field Training School at Carlisle, Pa., Army Medical School at Washington and all reserve officers medical training schools established at the various universities in the country. General McCaw began his work on July 1.

Tuberculosis Wards in General Hospitals

Opening of tuberculosis wards in all the general hospitals is being recommended by the U. S. Public Health Service, thus giving support to a recent resolution adopted by the American Medical Association. Such a move, according to the statement issued by Surgeon-General Cumming of the Public Health Service, will be of enormous benefit, not only to most of the 2,000,000 known victims of the disease in the United States, but also to thousands of others in whom the disease is incipient and easily suppressable if promptly treated.

MEDICAL OFFICERS, UNITED STATES NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA	MASSACHUSETTS
Los Angeles—Castle, C.	Chelsea—Shoenfeld, D. D.
Lowell, C. H.	
San Diego—Elliott, R. D.	
San Francisco—Ehrenclou, A. H.	
DISTRICT OF COLUMBIA	VIRGINIA
Washington—Hiden, M. B.	Haymarket—Lightner, G. H.
Troxell, J. W.	Norfolk—Gilmer, W. P.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 27, 1921.

Graduate Medical Teaching in London

The report of a postgraduate medical committee appointed by the minister of health to investigate the needs of physicians practicing in this country and other graduates for further medical education in London has just been issued. The continent, and in particular Vienna, has long been regarded as the place where medical graduates can most easily secure what they need in the way of general and specialized instruction. An opportunity now presents itself for providing in this country a center at which students from overseas, whether from our own colonies, from America or from foreign parts, may find facilities for graduate medical instruction; and the metropolis, with its unique supply of clinical material and its 38,000 beds, seems singularly well placed to provide such a center. Cottage hospitals, it is urged, should be used to a greater extent than at present for increasing the experience and efficiency of physicians. All physicians should have the facilities for bringing their own patients into the wards, and of attending them there. The chief recommendation is for the establishment of a central postgraduate hospital and school, which should be devoted to graduate work. It is not recommended that a new hospital should be built. The hospital should be one equipped in an up-to-date fashion, with at least 300 beds, and a fully developed outpatient department. Associated with it would be the great special hospitals of the metropolis. One of the existing undergraduate schools might be converted into such a center. The committee also recommends the institution of a central office, which would link up graduate study in the United Kingdom, and in due course with that of the continent of Europe and America; and an institute of state medicine, directly connected with the University of London and under its administration, occupying a position analogous to that held by the Institute of Historical Research. The institute, in addition to providing instruction in public health, would furnish courses in forensic medicine, toxicology, and in industrial medicine. It would accommodate students from overseas and foreign countries, and create an imperial link between them. The scheme would involve an annual charge of \$140,000.

Impotence Quoad Hanc

A case of considerable medicolegal importance has been decided in the divorce court. After nearly ten years of married life, a woman withdrew from cohabitation with her husband and instituted a suit for nullity of marriage on the ground that the husband was unable to consummate the marriage. He denied this and alleged that sexual intercourse had taken place. The evidence showed that the relations between the parties were not normal. The war accounted for the delay in bringing the suit. In giving judgment the judge (Lord Birkenhead, the Lord Chancellor) pointed out that the allegation was not that the respondent was generally impotent but that he was incapable of consummating this particular marriage. Doubt had been entertained as to whether impotence quoad hanc (that is to say, with regard to the particular woman in question) entitled a woman to a decree of nullity, but before and after the Council of Trent the Church had admitted and indeed enjoined nullity on that ground. Recent authority on the point was, however, scanty. Difficulty arose from the parties being the only important witnesses. In this case the medical evidence as to the physical conditions observable in the petitioner and the respon-

dent was important. It was consistent with the petitioner's evidence and not with that of the respondent. Her story might be true; his could not. He therefore accepted hers as to the material facts and found that the marriage had never been consummated, and that over a period of years the respondent tried unsuccessfully to consummate it. It followed that he had always been incapable of consummating this particular union with this particular woman. There was no allegation against her of frigidity, denied access or physical malformation. The judge therefore granted her a divorce.

The Hospital Crisis

The financial difficulties of the voluntary hospitals resulting from the effects of the war have been mentioned in previous letters. The position became so serious that the minister of health appointed a committee to consider the position and make recommendations. Its report has just been published. There are in Great Britain 952 voluntary hospitals containing 52,194 beds. In some cases the governing bodies have been able to meet the difficulties caused by the war without permanent injury to the institutions under their care; but the position of a large number of hospitals is such as to make it improbable that they can be continued on a voluntary basis unless prompt and vigorous measures are taken to reestablish the position of 1914. The receipts have not fallen off—indeed, they have increased; but the cost of provisions, drugs, dressings, fuel and labor has so grown that it far more than counterbalances the increase of income. Unless some remedy is found there will be deficiencies in the present year in respect of the hospitals in the whole of Great Britain, including London, amounting to not less than \$5,000,000, and this without provision for the necessary extensions and improvements. The position thus disclosed appears to involve danger to the whole of the existing voluntary hospital system. Two of the large London hospitals (King's and the London) have recently closed some of their beds owing to lack of means, and others have indicated their intention to take a similar course. If any considerable number of hospitals should close down, the shortage of accommodation would be such that the public would be compelled to step in and supply the deficiency, and the position of the hospitals throughout the country would be imperiled. It has been suggested that liability for the hospitals should be taken over by the state or thrown on the rates, or at least that a regular yearly grant in aid should be made from one of those sources. The committee considered that either proposal would be fatal to the voluntary system. If this system falls to the ground hospitals must be provided by the public, and the expense of so providing them would be enormous. They must then be carried on without the aid of the voluntary subscriptions and donations estimated at not less than \$15,000,000 a year, and presumably without the income (about \$5,000,000 a year) from endowments which were given to support only voluntary hospitals. But the money loss to the state would be a small matter compared with the injury that would be done to the welfare of the sick for whom the hospitals are provided, the training of the medical profession, and the progress of medical research. The combination of the hospital with the medical school is of inestimable value to both. On the one hand, the teaching of medicine would be ineffective without the opportunities for observation and experience which the hospital affords, and, on the other hand, the constant presence in the wards of teacher and student and the desire of both to maintain the reputation of their hospital are an incentive to care and vigilance in the treatment of the sick. The voluntary hospital system, which is peculiar to the English-speaking peoples, is part of their heritage; and it would be lamentable if by our apathy or folly it were suffered to fall into ruin. The committee thinks

that the voluntary system can be saved by a more systematic appeal for donations, by increased weekly contributions out of wages from the classes who use the hospital, and by increased payments. But in order to tide over the present acute difficulty, it recommends that Parliament should vote a sum of \$5,000,000.

Professional Secrecy Again in the Courts

The unsatisfactory position arising from courts of law in this country in not recognizing the obligation of professional secrecy has already been referred to in these columns. The recent arrangements of the Ministry of Health for the free treatment of venereal diseases has raised the difficulty in a new form, for it is provided in the regulations that "all information obtained in regard to any person treated shall be regarded as confidential." In a case before Mr. Justice Horridge in the divorce court the question arose when the husband's lawyer called a physician who had treated his wife. The physician asked to be relieved from giving evidence, and claimed privilege as such. He referred to the regulation mentioned above. The judge said that the Ministry of Health had no power affecting the jurisdiction of the courts; physicians were subject to the orders of the court and must disclose what they knew. The physician said he was placed in a painful position by this ruling. The judge replied, "I cannot see that. You are bound to observe the regulations not to disclose voluntary information you have obtained; but so far as giving information which you are bound to give in assisting the administration of justice, it is your duty to give it." The physician then gave the evidence required.

The Rockefeller Foundation in London

Mr. George E. Vincent, director of the Rockefeller Foundation, and Mr. Wickliffe Rose and Mr. Victor G. Heiser, members, have arrived in London to confer with representatives of the Colonial Office on the problems of tropical diseases. It is possible that the foundation will assist research by grants. The government gave a dinner, to which leading physicians were invited to meet the representatives of the foundation. Mr. Churchill, colonial secretary, who presided, welcomed the guests and made an eloquent speech on the benefits conferred on mankind by tropical medicine.

Overpopulation

Addressing members of the Economic Circle of the Lyceum Club on "Progress and Population," Mr. Harold Cox said that Malthus in 1798 was the first to deal with the problem of limiting the population. He said that there was a tendency for the population to increase beyond the nourishment provided for it. Unless the growth of the population was checked by prudential methods, it would inevitably be brought to an end by cruel methods, such as starvation or war. In various places we had famines; among others, in India and China, two countries which together contained nearly half the whole population of the world. A large proportion of that population was living on the verge of starvation. The resources of the world were exhaustible, and already we could see signs of exhaustion. We had to dig deeper for our coal, and this would inevitably come to an end. Nations were competing with each other, notably Japan and Australia. Such rivalry was the outcome of the population problem. People thought the problem was remote, and, with a great deal of unction, repeated the Biblical text to be fruitful and multiply. This illustrated the power of the constantly repeated word: These words were probably said to Noah when there were only eight people on the earth. It seemed awful that people should be engaged in producing children doomed to die within a few weeks of birth. During many centuries our population had not grown appreciably, but we

had not suffered by this. There was no brighter era in our history than the reign of Queen Elizabeth. Bacon had said, "Numbers alone do not determine a nation." The whole question was affected by theological considerations, and it was an interesting fact that the early Christian Church advocated celibacy. If the population of England and Wales doubled itself every sixty years, as it did during the last century, in a less period than separated us from the reign of Elizabeth there would be more people in this country than the whole world now contained. Emigration would not solve the problem. The only solution was to teach the feckless classes the wisdom which the more prudent classes had already learned.

PARIS

(From Our Regular Correspondent)

June 17, 1921.

A New Treatment for Syphilis

The daily press has made much ado about a new method for the treatment of syphilis. The subject may be thus summed up: Drs. Levaditi and Sazerac of the Pasteur Institute presented a communication to the Academy of Sciences concerning the use of a new substance in the treatment of syphilis; namely, potassium sodium bismuthate. This substance is still in its experimental stage. Intravenous injections of a watery solution of this compound were made in three syphilitic rabbits. The following day no spirochetes could be found in the blood. In a fourth rabbit given a subcutaneous injection of this salt, spirochetes disappeared in about four days. No recurrence was noted in these animals four months after treatment. The same results, namely, complete disappearance of spirochetes, were obtained in rabbits suffering from spontaneous infection, a natural occurrence in these animals and caused by spirilla. Levaditi and Sazerac have brought about a prompt cure of primary symptoms of syphilis in man, and have noted at the same time the disappearance of spirochetes from the blood. But no final conclusions, the authors state, can be drawn from these experiments, as several years must elapse before we can ascertain whether or not the treatment is adequate and whether or not recurrences may be anticipated.

The Future University City

I mentioned in a previous letter the project relative to the erection of the university city. The purpose of the movement is to procure for both French and foreign students of both sexes attending the University of Paris healthful boarding and rooming places, at moderate prices, under the best living conditions from a material, intellectual and moral standpoint. The 9 hectares needed for the project will be secured by dismantlement of old fortifications of the city. The following items will be at the expense of the University of Paris: (1) construction of buildings of the university city; (2) the landscape-gardening; (3) various installations in the park of the city for games and sports, and (4) upkeep of the city and its park. The public highways leading to the university city will be constructed and kept in repair by the city of Paris.

Dangers of Radium

At recent sessions of the Academy of Medicine, considerable attention was given to the dangers of radium. Dr. C. Regaud, director of the biologic laboratory and the therapeutic service of the Radium Institute of the University of Paris, presented an interesting communication on the subject from which I take the following excerpts: The accidental absorption, by inhalation, of radium emanations is not dangerous except in a confined space. The rays of radioactive substances present for the skin and deep-seated organs (and especially for the hematopoietic system) dangers similar to

those connected with roentgen rays. Operators and attendants can protect themselves by forming the habit of: (1) taking judicious advantage of the law of distance (especially through the use of special tongs in performing manipulations), and (2) interposing between the operator's body and any source of radiation leaden screens several centimeters thick and impervious to penetrating rays. The few accidents that have happened up to the present time have been the result of ignorance of the danger and lack of precautions. Regaud believes that in a well organized establishment with an instructed and well trained personnel, the nurses and others near the patients under treatment will not run any risk through the action of radioactive bodies. Dr. Tuffier, professor at the school of medicine of the University of Paris, was anxious to obtain documentary information on the dangers of radium from the important American centers where radium has been in use for a long time and in large quantities, since there entire hospitals are devoted to the study of radioactive action. He has received replies from the Cancer Commission of Harvard University, the Howard A. Kelly Hospital in Baltimore and the Mayo Clinic. At the Mayo Clinic no menstruation troubles of any kind have been observed among the nurses handling radium applicators. There have been only accidents of a local nature, such as cutaneous lesions, not at all serious. To prevent accidents happening the personnel is changed very often. However, the Cancer Commission of Harvard University, and the Kelly Hospital gave him the following information: Soon after the study of radium therapy was begun, several cases of menstrual and general disturbances were noted among the nurses in charge of radium applicators. These disturbances occurred when the nurses were in contact with radium for two or three months in succession. They disappeared when the nurses left this service. Five cases have been noticed during recent months, and since that time a rotatory schedule has been established to prevent these accidents, so that now no nurse remains longer than two months in the service, and they are taught not to handle radium tubes without using tongs, and to keep them in a box specially constructed to prevent radiation. At Harvard University manifestations of azoospermia were also noted, but these disappeared after a few months when the operators were protected against radiation. At the Kelly Hospital, where the operators have had a great deal of experience in handling radium, a careful study has been made concerning accidents due to radiation. A reduction of polymorphonuclear elements and an increase of lymphocytes in the blood were noted, sometimes also a slight leukopenia. The disturbances that were noted at the beginning disappeared, thanks to precautions taken by the nurses. Time is the most important factor in the case, for since the nurses have been changed every month no disturbances have been noted either in menstruation or in the blood. The results of this inquiry show that accidents occurring through the handling of radium can be prevented by taking into account the duration of service and the factor of distance in the application of radium.

A Colony of Wards of the State

The department of the Seine is the guardian of more than 50,000 wards. Most of these children are entrusted to peasants and are brought up like the children of the family with which they live. They remain loyal to country life and to the home that adopted them. Pierre Godin has suggested that the department of the Seine might very properly send to northern Africa a certain proportion of these wards, since through their early training they are accustomed to agricultural work. It would help them by increasing their "life coefficient," and at the same time they would be useful to our colonies.

BUDAPEST

(From Our Regular Correspondent)

June 9, 1921.

Pellagra in the Southern Part of Transylvania and in Bukowina

Pellagra has existed in the southern part of Transylvania (now Roumania) and Bukowina for many years, and before the war a vigorous attempt was made by the Austro-Hungarian government to check the disease. When it was shown that pellagra might be caused by eating damaged maize, good flour was distributed by public officials, and means were taken to inform the population how to avoid the danger. In various districts the government established bakeries where bread could be obtained at a nominal cost, and a good result was obtained in diminishing both the prevalence and the severity of the disease. Successive bad harvests during the war and the consequent want of a sufficient number of agricultural laborers impoverished the people, particularly the mountain population in the Carpathians, and thereby neutralized to some extent the good work that has been done; while, on the other hand, the more careful examination of hitherto unsuspected districts has also caused an increase in the number of cases reported. In 1913 there were 387 cases reported in the affected counties of southern Hungary (Temes, Krasso, Hungary and Doboka), which have an area of about 10,000 square kilometers with a population of 60,000. The number steadily increased since 1919. The same conditions prevail also in Bukowina, now belonging to the Roumanian kingdom. The cases of pellagra in the hospitals of the respective territories are also more numerous than formerly. Luckily, the death rate of the disease is unimportant, one out of every hundred cases ending fatally. Even this is doubtful, as pellagra, being strictly a disease of undernourishment, it can be surmised that the lack of proper food caused other ailments too, promoting the fatal issue of the pellagra. The treatment consists, as mentioned before, in free distribution of maize, healthy food, administration of iron and quinin free of charge, and if necessary, surgical interference. Migrating commissions, consisting of physicians and teachers, travel in the affected districts and teach the people how to live hygienically and how to feed themselves properly.

Tuberculosis and Pregnancy

At the recent meeting of the Budapest Interhospital Association, Dr. Karsay gave an excellent summary of the views held at the present day on tuberculosis and pregnancy. He also related five cases which came under his observation. He states that pregnancy is a severe complication of tuberculosis, the severity of which increases with each pregnancy. Important among the prophylactic measures should be the prevention of conception among tuberculous women. If pregnancy has taken place, the woman should be kept under careful medical observation, and if the tuberculous disease grows worse, abortion should be strongly recommended. During the later months of pregnancy the induction of premature labor does not offer any advantages over labor at full term, and is fraught with seriousness for a tuberculous patient. Moreover, as a tuberculous mother may give birth to a healthy child with fair chances of good health later on, it would be unfair to sacrifice needlessly the life of an infant. He does not believe in universally interrupting the pregnancy, as advocated by Maragliano and Hamburger.

Koplik's Spots Not Constantly Present in Measles

Dr. Sontagh has looked for the spots on the buccal mucous membrane first described by Koplik as preceding by some days the general eruption of measles, and has found them in twenty-four cases. In one case they preceded the eruption by six hours, in eleven cases by one day, in five by two days,

in three by one and one-fourth days, and in two by four days. The spots were generally situated on the mucous membrane of the cheeks, opposite the molar teeth, but occasionally on the lips, beginning as slightly raised bluish white, circular, sharply defined points, and surrounded by a narrow red areola. In a few days they generally increase slightly and become more prominent, and the areola enlarges and becomes more irregular in outline. Their number varied between six and twenty, and the time during which they persisted, from two to six days. They were not marked just before or at the time of the general eruption. They were not present in fourteen cases (17.1 per cent.). Since they are never seen in other conditions accompanied by fever, they are of the greatest importance for the early diagnosis of measles. Sontagh claims that the buccal eruption in measles was first mentioned by Gerhardt and that their importance was recognized by Filatow in 1895, a year before their independent discovery by Koplik.

The Spread of Venereal Diseases

A census of venereal patients, be it made with ever so much care, is always incomplete, partly because of the great number of irregular practitioners or quacks who compete with medical men in treating venereal diseases. Owing also to the long duration of venereal diseases, those who are affected often lose patience and go from one medical man to another, with the result that the same patient appears in the statistics several times. In the military statistics, however, all these difficulties of the enumeration are avoided and trustworthy data are obtained. According to the military statistics, the prevalence of venereal diseases per thousand men in the Transylvanian army (eastern group of the Roumanian army) was 73.6 in 1919, and 61.0 in 1920. Thus, the incidence of syphilis is decreasing, owing to the fact that in 1920 (and since then continually) soldiers are examined once each week by venereal specialists, and if anything is found, they are sent to special hospitals where they are kept until they are radically cured. Those suffering from syphilis are called in every three months for a course of treatment through the first year, and afterward they are called in for a blood test every six months during the next two years. If in the meantime the soldier goes into civilian life, he is registered by the parish medical officer and has to present himself every six months at the nearest venereal hospital for testing his blood.

BELGIUM

(From Our Regular Correspondent)

Liège, June 16, 1921.

Results of the Antivenereal Campaign

Chief Inspector Rulot has just published the first statistical results on the antivenereal campaign in Belgium since the armistice. In some of our previous letters we have mentioned the organization of this campaign and have referred to official manifestations and private undertakings. In this connection the author has published a series of curves that is rather suggestive. It will be seen that a greater number of patients have been treated in private consultations, and there are good reasons why this is true. These consultations given by general practitioners are easier of access, and the opportunities are found everywhere throughout the country. It is here that the patient finds also the maximum of privacy and discretion, factors still very much appreciated. This attitude of mind may possibly change in the future, but for the present it still exists and must be taken into account if we are really desirous of combating effectively the progress of venereal diseases. The patient received here, as in various other organizations, absolutely gratuitous treatment, there being no physician's fees or charges for drugs. In large centers of population polyclinics were in favor, with an average of 212 clients. The

reason lies near at hand. Here also patients find discretion observed. Then dispensaries follow with an average of 193, hospital consultation, 100, and finally university consultations, 47. In this last case the fear of the student is a factor. The general course of the curves for syphilis and gonorrhea is the same. An upward trend is noticeable until August, 1920, with syphilis showing a marked decrease from December, 1919, to January, 1920. The curves for men and women show the same fluctuations with identical intensity. The same is true for children, but the fluctuations are less pronounced. This progressive increase in the number of cases does not necessarily mean that the disease has spread. That may be the case, but the data are also capable of the interpretation that the lectures delivered by members of our society, the Société belge d'eugénique, by numerous practitioners and by government public health officers have also borne fruit by bringing to the physicians patients who would have otherwise remained ignorant of their condition and the existence of organized prophylaxis.

Appointment of Dr. Gengou

The city of Brussels has appointed Dr. Gengou general director of the Bureau of Public Health and Medicine. This office could not have been entrusted to more experienced hands, and the new incumbent is sure to render excellent service. Gengou is a professor in the Université libre of Brussels. He is also director of the Pasteur Institute of the province of Brabant, but he will resign this post, where he worked in close collaboration with Professor Bordet.

Psychologic and Anatomic Study of Senility

The Belgian Society of Neurology and Psychology held recently a special session to celebrate the twenty-fifth anniversary of its foundation. The psychologic and anatomic study of senility was the principal topic for discussion. Dr. Alexandre presented some interesting facts on the psychology of old age. A knowledge of the psychologic aspects of the normal state of the aged is of importance to legal medicine on more than one account. The relative ability of aged persons to make a will has been frequently discussed, and the question has been asked whether their testimony does not awaken *a priori* the same suspicion as that of a child. And when an old man has to answer for a crime, have we not the right to suppose that, on account of his age, there is a certain weakening of responsibility? These are questions which cannot be answered until we have been able to examine systematically a sufficient number of aged persons. Also for general medicine this study will be very interesting. Alexandre has reached the conclusion from his personal studies and from numerous articles in the literature that senile decadence of intellectual faculties is not portentous in its character. It is pathologic and due to the accumulation of infectious or toxic substances. It often occurs, however, that an old man through a series of experiences and an unconscious choice of habits reaches a state of egoism combined with euphoria and general indifference. From the anatomic standpoint Dr. Ley has shown the importance of changes in the endosecretory organs. The organ in which individual differences are most strongly marked is the thyroid. It does not seem, however, possible that changes found in these various organs can justify the theory that would explain old age as the consequence of changes in endosecretory organs. He also directed attention to the difficulty of connecting various lesions of nerve centers with phenomena occurring during life. It is evident that clinicians must continue to be dependent on pathologic anatomy, which alone can give the necessary precision for the delimitation of disease entities; but it seems that, up to the present time, the changes in the nervous system of normal aged persons have not been the object of

sufficient study. This is why authors who have described lesions falsely typical of senile dementia, have, in reality, described the ordinary lesions of normal senility.

Reforms in Belgian Penitentiary System

Important reforms in Belgium's penitentiary system are in course of realization. For some time past certain scientists have declared that abnormal prisoners, of whom there are great numbers in prisons (a minimum of 25 per cent., according to Dr. Vervaeck) are entitled to special treatment. Among the abnormal delinquents and the irresponsible insane patients who are interned in asylums, there is a large number of persons for whom no adequate special provision has been made. Among this number are found the constitutionally feeble-minded and degenerate; also many neuropaths and drug addicts. As a result of the labors of Drs. Heger-Gilbert and Vervaeck, an anthropologic service has just been established in prisons, under the direction of Dr. Vervaeck. Anthropologic laboratories have been installed in all the large prisons, with a psychiatric annex in which delinquents can be examined, observed and, when necessary, treated. Thus the classification of delinquents and the study of their condition from a professional standpoint will be made possible. The contamination of the good elements that are still susceptible of improvement will be prevented. Among these abnormal prisoners there are some who should be confined neither in a prison nor in a hospital for the insane; for example, the criminal insane, kleptomaniacs, those with perverted instincts and abnormal sexual impulses. Some of these ugly customers who cannot or will not submit to social restraint constitute, on account of their vices, a very grave danger to society. The asylum-colony of Reckheim has been created to take care of some representatives of this class.

BERLIN

(From Our Regular Correspondent)

June 4, 1921.

Delimitation of General, Local and Lumbar Anesthesia

At the recent Berlin meeting of the German Surgical Society, Professor Braun of Zwickau and Professor Denk of Vienna discussed the problem of the delimitation of general, local and lumbar anesthesia. According to Braun, lumbar anesthesia causes a higher mortality rate than general narcosis and should, therefore, be restricted to definite indications. The secondary effects of anesthesia depend on the kind of anesthetic used. In lumbar anesthesia the injections must not be made too high up. Elevation of the pelvis should be avoided. Its principal field of application is in amputations on the aged; more particularly in arteriosclerosis and dislocations of the hip, and in fact in operations on the lower extremities and on the abdominal organs below the umbilicus. In the hospital services it is indicated in about 1 per cent. of all cases. In epidural sacral anesthesia the element of danger is equally as great as in lumbar anesthesia. Resorption from the epidural space is very great. It should not be overlooked that the maximal dose of procain; namely, from 0.4 to 0.5 gm., should be reduced in dealing with weakened patients. Sacral anesthesia is only to be considered when it is desirable to block the sacral plexus, for which purpose local anesthesia is sometimes to be preferred. Its range of indications is therefore somewhat limited. Intravenous anesthesia has not found many advocates as yet. Local anesthesia by means of procain with the addition of epinephrin is entirely harmless, but even here the natural limitations must not be exceeded. Braun himself employs local anesthesia in about 50 per cent. of all operations. Under certain circumstances the peculiar psyche of the patient may constitute a contraindication. It will never be possible to dispense with general narcosis entirely, and it should be

used from time to time if for no other reason than to demonstrate it to the oncoming generation of physicians. The principal field of local anesthesia is minor surgery of the extremities. Even in insignificant interventions general narcosis sets up rival claims on our attention. Of the more extensive interventions, operations on the skull are mainly to be considered. However, anesthesia of the dura is impossible to accomplish. For opening up the skull, general anesthesia is to be recommended. Local anesthesia may be employed for operations on the neck, also for strumectomy. In exophthalmic goiter, general narcosis is more appropriate on account of the excitable condition of the patient. Local anesthesia applied to the cervical plexus is not devoid of danger. For operations on the thoracic wall, local anesthesia may be employed; but for thoracoplasty, general narcosis is better. In major abdominal operations he recommends that first a scopolamin-morphin solution be injected, after which the abdomen may be opened under local anesthesia, and then during the remainder of the operation general anesthesia may be resorted to from time to time, as necessary. Post-operative lung affections and embolisms cannot be prevented by local anesthesia. Anesthesia of the splanchnic nerve by the Kappis method has resulted fatally in some cases. Its application after opening the abdominal cavity, after the manner proposed by Braun has proved its value but is not yet sufficiently developed for general use. For blocking the sacral plexus in prostatectomy and cancer of the rectum, lumbar, sacral and parasacral anesthesia are rival claimants for favor; in his last 400 cases he had only eighteen failures. In operations on the upper extremities, anesthesia of the brachial plexus by the Kulenkampff method has a claim on our attention. To be sure, there is a danger of pleural injury in this form of anesthesia, but with correct technic it can be avoided. Among other uses, it makes possible the reduction of fractures by means of the fluoroscope. For operations on the lower extremities, lumbar anesthesia frequently asserts successfully its rights. Many as are the excellent features of local anesthesia, it has its limitations, which must be observed.

In taking up the subject, Professor Denk remarked that during recent years great changes had been brought about in general anesthesia, through which the element of danger has been much reduced. In almost all circles, ether is coming to be regarded as the best general anesthetic. It is being used by the drop method with an open mask. Primary death from heart failure does not occur with this method of narcosis. Intermittent narcosis should be avoided. The injection of a narcotic before the anesthesia has proved to have a certain value, as it betokens a saving of 35 per cent. in chloroform and 40 per cent. in ether narcosis. To prevent lung complications after anesthesia, patients should be encouraged to breathe deeply (expectorants, oxygen). Chloroform is contraindicated in affections of the liver and in disturbances in the portal circulation. By some surgeons the Billroth mixture is preferred. Diminution (*Verkleinerung*) of the circulation by the Klapp method has proved efficacious and saves large quantities of whatever anesthetic is employed. Ethyl chlorid anesthesia has proved its value, but in larger doses ethyl chlorid constitutes a poison and is not adapted for narcosis. Lumbar anesthesia occupies a midway position between local and general narcosis. The form of anesthesia to be employed depends on the exigency of the case. We should not attempt to establish any general rules but should leave the decision to individual judgment. Aside from cases in which a contraindication obtains, owing to some disease or affection of the patient, the wishes of the patient may be the decisive factor, as in hernia operations. It is better if the various methods are regarded not so much as rival claimants as they are as supplements of each other.

Marriages

FREDERICK H. STIRES, Hoydenville, Ohio, to Miss Anne Pauline Warfield, Somerton, Ohio, June 14.

FRANCIS MARION STARR BOWERS to Miss Mary Catherine Keen, both of Wilkesburg, Pa., June 21.

WILLIAM EZARD BUCKLEY, Redgranite, Wis., to Miss Etta Costello of Fond du Lac, Wis., June 25.

JOSEPH NEWTON SISK, Fort Worth, Texas, to Miss Elizabeth M. Reed of Dallas, Texas, July 3.

JAMES EDWARD FURR, Marks, Miss., to Miss Jessie May Chrestman of Lyon, Miss., in July.

FRANCIS BRIAN GRYCZKA, Reading, Pa., to Miss Rose Summa of Kingston, Pa., June 30.

JULIUS A. JOHNSON, Bottineau, N. D., to Miss Ruth Collins of Barnesville, Minn., in June.

RODERICK F. MCHUGH, Aitkin, Minn., to Mrs. Victoria L. Taylor of St. Paul, in June.

J. SAMUEL CONNOR to Miss Elva Catherine Negley, both of Waynesboro, Pa., July 1.

FRED CRENSHAW, Fairfield, Ala., to Miss Alberta Thomas of Macon, Ga., June 11.

PHILLIP RAPHAEL LEHRMAN to Miss Wanda Scheps, both of New York, June 28.

GEORGE HERRMANN, St. Louis, to Miss Anna Williams of Vandalia, Ill., June 30.

NATHANIEL BAINBRIDGE LIEF to Miss Mildred Glass, both of New York, June 29.

PAUL A. O'LEARY to Miss Ruth Youmans, both of Rochester, Minn., in June.

EDGAR EVERETT POOS, Okawville, Ill., to Miss Helen Duzeski of Chicago, July 2.

MYRON I. INGRAM to Miss Cecile Friedman, both of Chicago, June 15.

HAROLD SCHWARTZ to Miss Lulu Nimmo, both of Butte, Mont., in June.

The notice of the marriage of FOREST BERTRAM AMES to Miss Mildred Mabel, published last week, should read Miss Mildred Mabel Wilder.

Deaths

Norman H. Morrison, Los Angeles; Kansas City (Mo.) Medical College, 1880; member of Medical Society of the State of California; chief surgeon of the Santa Fe Railway system; formerly chief surgeon of the California Railroad Company; builder of the Los Angeles Hospital; died, July 3, following an operation at the Santa Fe Coast Lines Hospital, Los Angeles, of which he was founder, aged 68.

Henry A. Connolly, Kingston, Ont.; Queens University, Kingston, Ont., 1908; died, June 26, from cerebral hemorrhage, at Ottawa, Ill., while on a visit from Warracknabeal, Australia, where he had made his home for the last twelve years, aged 49.

Ezra B. Potter, Rochester, N. Y.; University of Pennsylvania, Philadelphia, 1872; for thirty-eight years assistant superintendent at the Rochester State Hospital; member of the Medical Society of the State of New York; died, June 24, aged 73.

William W. Stuart, Clarksdale, Miss.; Eclectic Medical Institute, Cincinnati, 1858; served in medical department, Confederate army; member of the Mississippi State Medical Association; died, June 29, from general debility, aged 86.

John H. Moon, Cooperstown, N. Y.; Albany Medical College, Albany, N. Y., 1872; member of the Medical Society of the State of New York; died, June 28, in the Thanksgiving Hospital, of uremia, following an operation, aged 72.

James R. Carroll, Henderson, Tenn.; Kentucky School of Medicine, Louisville, 1876; Vanderbilt University, Nashville, 1881; member of the Tennessee State Medical Association; county health officer; died, June 29, aged 69.

LeRoy Rogers, Huntingdon, Ind.; Eclectic Institute, Cincinnati, 1880; veteran of the Civil War; died, June 13, at the

National Soldier's Home, Danville, Ill., from acute cardiac dilatation, mitral insufficiency, aged 76.

James S. Washington, Somerville, Tenn.; Jefferson Medical College, Philadelphia, 1861; Confederate veteran; practitioner in Somerville for more than half a century; died, June 29, after an illness of two weeks, aged 83.

Joel M. Ingersoll, Rochester, N. Y.; Bellevue Hospital Medical College, New York, 1879; specialized in otology, laryngology and rhinology; died, July 3, at Brigham Hall, Canandaigua, N. Y., aged 64.

Dwight Dudley, Endicott, N. Y.; Medical Department of Columbia College, New York, 1864; Civil War veteran; for twenty years on the U. S. Pension Board; died, May 19, from chronic nephritis, aged 79.

John T. Seale, Neches, Texas; University of Alabama, Tuscaloosa, Ala., 1897; member of the Medical Association of the State of Alabama; died, June 26, after an illness of two months, aged 59.

John Turner Roberts, Kountze, Texas; Southern Methodist University, Dallas, Texas, 1911; died, June 27, at Beaumont, Texas, from a complication of diseases, following an operation, aged 33.

Alice Burritt, Washington, D. C.; New York Medical College and Hospital for Women, Homeopathic, New York, 1879; died, July 6, at the Homeopathic Hospital, Washington, aged 67.

Andrew Jackson Smith, Garner, N. C.; Vanderbilt University, Nashville, Tenn., 1912; died, June 22, in a hotel at Winston-Salem, N. C., from an overdose of morphin, aged 41.

James Lonsdale, Sauk Rapids, Minn.; Rush Medical College, 1879; Civil War veteran; died, June 29, at St. Raphael's Hospital, St. Cloud, Minn., from heat prostration, aged 74.

Abraham Suter Metzler, Coshocton, Ohio; Charity Hospital Medical College, Cleveland, 1868; veteran of the Civil War; died, May 14, following a long illness, aged 81.

Harry Vaughan, Morristown, N. J.; College of Physicians and Surgeons, Baltimore, 1895; assistant to staff, All Souls Hospital, Morristown; died, June 22, aged 46.

Daniel Webster Rumbaugh, Willard, Ohio; University of Wooster, Cleveland, 1873; died, May 11, from a complication of diseases, in Sandusky Hospital, aged 75.

William J. Moore, Adams, Minn.; Bennett Medical College, 1893; died in St. Mary's Hospital, Minneapolis, from chronic nephritis, June 21, aged 50.

Eli S. Warlick, Morgantown, N. C.; University of Tennessee, Memphis, 1881; member of the Tennessee State Medical Association; died, July 4, aged 67.

John William Norris, Oregon City, Ore.; Rush Medical College, Chicago, 1872; Civil War veteran; died, June 30, after a lingering illness, aged 77.

John C. Johnston, La Grange, Tenn.; College of Physicians and Surgeons, Memphis, 1908; died, May 12, after an illness of two weeks, aged 51.

George Porter, Orlando, Fla.; New York Homeopathic Medical College and Hospital, 1880; died, April 29, from heart disease, aged 65.

Thomas T. Earle, Greenville, S. C.; George Washington University, Washington, D. C., 1870; Civil War veteran; died, June 30, aged 76.

William Rohder, Valier, Ill.; National University of Arts and Sciences, St. Louis, 1912; died, June 24, from heart disease, aged 46.

Howard C. Fickes, Owen, Wis.; Jefferson Medical College, Philadelphia, 1886; died in June, at Chippewa Falls, Wis., aged 68.

Henry North Graves, Dallas, Texas; University of Nashville, 1868; served in the Confederate army; died, June 28, aged 75.

Austin B. Fuller, New Haven, Conn.; Yale Medical School, New Haven, 1892; formerly a dentist; died, June 26, aged 83.

Agnes V. Swetland, Omaha; State University of Iowa College of Medicine, Iowa City, 1891; died, April 16, aged 74.

Benjamin Frankson, Upham, N. D.; Milwaukee Medical College, Philadelphia, 1874; died in June, aged 54.

Orella S. Martin, Salamanca, N. Y.; Homeopathic Hospital College, Cleveland, 1870; died, June 15, aged 60.

Marion Koogler, Marion, Ohio; Jefferson Medical College, Philadelphia, 1874; died in June, aged 73.

Charles W. Hall, Tacoma, Wash.; Rush Medical College, Chicago, 1887; died in June, aged 58.

⊕ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Manhood Pills, Phoenix Chill Cure, Spanish No-Kink and Phoenix Skin Success Ointment.—In February and December, 1919, Lewis A. Fitzpatrick, Sr., and Lewis A. Fitzpatrick, Jr., trading as the Fitzpatrick Co., Helena, Ark., shipped a quantity of the nostrums just listed.

The "Manhood Pills," which were labeled "Phoenix Mfg. Co., Helena, Ark.," were found to contain very small quantities of strychnin (possibly with nux vomica), zinc (probably as phosphid) and cantharides ("Spanish fly") together with plant extractives from damiana. The pills were falsely and fraudulently represented as effective to restore lost manhood and bring strong, healthy sexual power.

The "Phoenix Tasteless Chill Cure," alleged to be "Prepared by Phoenix Mfg. Co., Helena, Ark.," was found by the federal chemists to be a syrup prepared from glucose containing quinin, sulphuric acid and plant extractives from senna and possibly licorice, together with a small amount of alcohol. It was falsely and fraudulently represented as a preventive, treatment, remedy and cure for chills and fever, ague and all malarial disorders and for driving out "all the poison that is in the body."

The "Spanish No-Kink or Hair Straightener" was declared by the federal chemists to be a mineral jelly scented with citronella. It was falsely and fraudulently represented as a preventive, treatment, remedy and cure for head itch, tetter and all scalp troubles, to remove dandruff and the cause of dandruff and—more wonderful still—"to cause five hairs to grow in place of one."

The "Phoenix Skin Success Ointment" which was labeled as containing 10 per cent. mercuric oxid was reported by the federal chemists to consist of mineral wax, talc, and carbonate of lime, scented with citronella and containing no mercury compounds. It was falsely and fraudulently represented as a cure for eczema and all other itching skin troubles and eruptions, all parasitic skin diseases, running sores and scalp troubles, etc.

In October, 1920, the two Fitzpatricks pleaded guilty and were fined \$120 and costs.—[Notice of Judgment No. 8796; issued May 13, 1921.]

Arthur's Sextone Tablets.—A quantity of this preparation alleged to have been shipped by the Palestine Drug Co. of St. Louis, in January, 1920, was declared misbranded. The Bureau of Chemistry reported that analysis showed the pills to be composed essentially of iron and zinc salts, caffein and unidentified plant extractives and traces of phosphates. The package contained such claims as:

"Designed to Correct . . . the Evil Results Following Sexual or Alcoholic Excesses, Overwork, Worry, Etc. . . ."
"Sextone Tablets for either sex Composed of . . . the Most Potent and Dependable Aphrodisiac Agencies. . . ."
"Stimulate the Sexual Plexus . . . nourish the nervous system and build it up. . . ."

These claims were declared false and fraudulent in that the product "did not contain any ingredient or combination of ingredients capable of producing the effects claimed." In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8839; issued May 20, 1921.]

Palmó Tablets.—The McCullough Drug Co., Lawrenceburg, Ind., are alleged to have shipped in May, 1920, a quantity of this product which was declared misbranded. The Bureau of Chemistry reported that the tablets consisted essentially of

plant extractives, including damiana and nux vomica, iron phosphate and a small amount of phosphorus. They were falsely and fraudulently recommended for nervous exhaustion, depression or despondency, irritability and for "excesses of the usual kind" and were declared to "re-animate and re-vitalize." In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8809; issued May 20, 1921.]

Savatan.—In May, 1920, the S. Pfeiffer Mfg. Co. of St. Louis is alleged to have shipped a quantity of this preparation which the federal authorities declared misbranded. Analysis by the federal chemists showed the product to consist of capsules containing, essentially, oils of tansy and mint and green apiol. The product was labeled in part:

"The Effectual Emmenagogue . . ."

"To Prevent Irregularities Take one Savatan three (3) times a day for four or five days before the expected appearance of the menstrual period."

These and similar claims appearing on the package were declared false and fraudulent and, in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8805; issued May 20, 1921.]

Parto-Glory.—In June, 1920, the Partola Service Corporation, New York, consigned a quantity of this preparation which the federal officials held was misbranded. Analysis of a sample of the article by the Bureau of Chemistry showed it

Ansieta', Eccitabilita', Paura
SONO I NEMICI PIU' TEMIBILI DELLA NOSTRA SALUTE E DELLA NOSTRA VITA

Avete mai notato come dopo un periodo d'intensa ansia, dopo un gran dispiacere, dopo una forte paura o dopo un periodo di eccitazione violenta ci si sente stanchi, spossati ed esauriti? Avete mai notato come abbiate più un dispiacere che qualsiasi sforzo fisico o mentale? Le persone troppo sensibili, le persone troppo delicate e suscettibili fanno bene a mantenere il sangue rifornito di sostanze fortificanti per non risentire troppo le accuse nervose a cui vanno soggetti. L'unico mezzo per conservare l'orgasmo

sano e fortificato si è di prendere prima di ogni pasto un bicchiere di acqua fresca con un cucchiaino di Parto-Glory. Il Parto-Glory incorpora nel sangue materie fortificanti, mantiene le vene ricche di sangue ben nutrito, calma e preserva l'appetito. Il Parto-Glory non è comune sedativo, ma un vero e proprio cibo concentrato nel sangue e quindi un creatore di forza e vigore. Il Parto-Glory costa \$1.25 alla bottiglia e cinque bottiglie \$5.50 nella Premia Farmacia Parlos, 100 Second Avenue, New York. (Adv.)

PARTO-GLORY l'unico tonico - concentrato che incorpora nel sangue sostanze fortificanti, nutritive

to consist of a solution containing essentially an iron salt, strychnin, quinin and potassium bromid. The trade package contained such claims as:

"For every form of nervous affliction . . . used with remarkable success whenever nerves have been affected . . ."

"The great Upbuilder of the Nervous System."

"Great Wonderful Nerve Tonic."

" . . . a genuine, powerful nerve tonic that builds up from the bottom."

"Parto-Glory is a friend in need for men and women who have indulged too freely in the excesses and frivolities of life, and who are alarmed by the evident decline of capacity, ability, and even desire to take part in the joys of healthy, vigorous, ambitious manhood and womanhood."

"Parto-Glory is what the drinker needs to steady his nerves, clear his mind, brace him up, give him a hold on himself."

These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8884; issued May 18, 1921.]

Damiana Compound with Saw Palmetto.—The Hollander-Koshland Co., Baltimore, Md., were alleged to have shipped in June, 1920, a quantity of Damiana Compound with Saw Palmetto which was misbranded. The federal chemists reported that analysis of the article showed it to be a solution containing damiana extractives, an iron (ferric) salt and nux vomica alkaloids. It was falsely and fraudulently represented to be effective as a remedy, cure, and preventive of sexual weakness, loss of manhood, debility, lack of virility and impotency, psychic impotency, spermatorrhea, etc. In October, 1920, the court ordered that the cartons in which the product came should be destroyed and the labels removed from the

bottles and the product be sold by the United States marshal, provided, however, that, if the sale could not be effected in such a way as to realize a substantial amount, it should be destroyed.—[*Notice of Judgment No. 8887; issued May 18, 1921.*]

Bick's Sextone Pills.—The Palestine Drug Company of St. Louis are alleged to have shipped in January, 1920, a quantity of this product which the federal authorities declared misbranded. The Bureau of Chemistry reported that the preparation consisted of two pills, chocolate-colored and orange-colored, respectively. The former consisted essentially of calcium carbonate, iron oxid, a small amount of plant extractives and sugar. The latter consisted essentially of finely divided metallic iron, nux vomica alkaloids and calcium carbonate. They were falsely and fraudulently labeled as aphrodisiacs. In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8827; issued May 20 1921.*]

Lewis' Nerve Pills.—The A. H. Lewis Medicine Co., St. Louis, Mo., shipped a quantity of these pills in May, 1919, which the federal authorities charged were misbranded. The Bureau of Chemistry reported that analysis showed the pills

LEWIS' NERVE PILLS

A Bracing, Invigorating Tonic to build up the systems of the weak and nervous. Recommended for General Debility, Sleeplessness, Weak, Trembling, and Nervous Sensations where an invigorating Tonic is indicated. They strengthen the nerves, add iron to the blood and supply a want among people who have been humbugged by the lost manhood and debility quacks. This preparation is composed of the purest of drugs and is put up to relieve the mind and body and not to relieve the pocket book.

We do not believe it is possible to compound a better remedy than "Lewis' Nerve Pills" for the relief of these ailments, or one that will more quickly restore the strength, snap and vigor.

PRICE 50¢ A BOX-6 BOXES FOR \$2.50 POSTPAID.

to consist essentially of an iron salt, strychnin, phosphorus and unidentified plant extractives. The trade package recommended these pills for "Nervousness, General Debility, Lack of Energy, Self Distrust, Loss of Memory and Diseases arising from Mental Worry, Overwork, Excesses, etc." These claims were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8958; issued May 24, 1921.*]

Bick's Daisy 99.—A quantity of this preparation alleged to have been shipped by the Palestine Drug Co., of St. Louis, was declared misbranded. The federal chemists reported that analysis showed it to consist essentially of a solution of sodium acetate and buchu in alcohol and water. The presence of extractives of cascara was also indicated. It was falsely and fraudulently recommended for the treatment of gonorrhea, leucorrhea, etc. In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No 8828; issued May 20, 1921.*]

Planten's Capsules.—In December, 1919, G. J. Fajardo of New York City is alleged to have shipped to San Juan, P. R., a quantity of Planten's Capsules which were misbranded. The federal chemists reported that the contents of the capsules consisted of balsam of copaiba. The preparation was fraudulently represented as a cure for chronic and acute gonorrhea, gleet, cystitis and all forms of urethritis. In August, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8833; issued May 20, 1921.*]

San Methyl.—Several packages of this preparation consigned in July, 1919, by the Grape Capsule Co., Allentown, Pa., were declared misbranded. Analysis of a sample by the Bureau of Chemistry showed it to consist essentially of copaiba, cubebs, oils of santal and cinnamon, methylene blue and phenyl salicylate. It was represented as an excellent cure for gonorrhea, gonorrheal rheumatism, gleet and urethral diseases generally. These claims were declared false and fraudulent. In October, 1920, judgment of condemnation and

forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8725; issued April 27, 1921.*]

Pendleton's Vegetable Panacea.—A quantity of this product, alleged to have been shipped by the G. I. Robinson Drug Co., Thomaston, Maine, in March, 1920, was declared misbranded. The Bureau of Chemistry reported that analysis showed the preparation to consist essentially of an alcoholic solution of red pepper, camphor, myrrh and oils of spear-mint, thyme, cedar and cloves. It was falsely and fraudulently represented as a cure for rheumatism, headaches, palpitation of the heart, diphtheria, sore throat, etc. In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8717; issued April 27, 1921.*]

Vagiseptic Discs.—This preparation alleged to have been shipped in January, 1920, by the Palestine Drug Co. of St. Louis was declared misbranded. Analysis by the federal chemists showed the "disc" to consist essentially of sodium chlorid (table salt) a small amount of alum, sugar, starch and talc. It was falsely and fraudulently represented as a remedy for gonorrhea and for "Amenorrhea and other Uterine and Vaginal Disorders. . . ." In November, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8829; issued May 20, 1921.*]

Arthur's Emmenagogue Pills and Leslie's Emmenagogue Pills.—The Palestine Drug Co., of St. Louis, Mo., are alleged to have shipped in January, 1920, a quantity of Arthur's Emmenagogue Pills and Leslie's Emmenagogue Pills. These preparations were declared misbranded. Analyses of samples of the articles by the Bureau of Chemistry showed that both brands of pills consisted essentially of iron (ferrous) sulphate, aloes, and an unidentified alkaloid. They were both sold under the false and fraudulent claim that they were emmenagogues. In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8908; issued May 23, 1921.*]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SALIVARY AND SERUMAL CALCULUS

To the Editor:—Please give the most recent theory as to the cause of the formation of tartar on the teeth and preventive measures.

ROBERT WATT, M.D., Philadelphia.

ANSWER.—Black, in his "Special Dental Pathology," gives the results of studies on salivary calculus (tartar) by himself and also by Burchard. After an extensive study of the subject, Black was able to prove, by a certain ingenious method for the collection of deposits on teeth, that the quantity of food taken governed the amount of the deposits. If one ate sparingly, no deposit was found; if one ate freely, much deposit was observed. The kind of food ingested made no perceptible difference in the quantity of the deposit.

Salivary calculus is always soft when first deposited; later it becomes hard. Since the deposits are soft at first, thorough brushing of all parts of the teeth will remove the soft deposit before it hardens. The other method, restricting the diet, prevents the deposition. A combination of the two is the ideal preventive measure.

Serumal calculus is different from salivary calculus. The latter is a combination of certain constituents of the saliva, micro-organisms and food debris. This is grayish, and forms on the teeth down to, but not below, the gum margins, while the serumal calculus is black and is deposited only on the roots of the teeth below the gum margins. The cause for the serumal deposit is unknown, but it is probably some local irritation. Both contain lime, but the serumal deposit is much harder. It is often associated with pyorrhea alveolaris.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
FLORIDA: Jacksonville, Aug. 1. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan Concord.

District of Columbia April Examination

Dr. Edgar P. Copeland, secretary, Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, April 12-14, 1921. The examination covered 16 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 12 candidates examined, 6 passed and 5 failed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University Medical School.....	(1908)		88.8,
(1920) 80.1, (1921) 82.3			
Howard University	(1920)		77
Cornell University Medical College.....	(1917)		88.5
University of Pennsylvania.....	(1919)		90.8
FAILED			
College of Physicians and Surgeons, Boston.....	(1916)		62.2
Kansas City College of Medicine and Surgery.....	(1920)		32.7
St. Louis College of Physicians and Surgeons.....	(1920)		26.1
Lahnemann Med. Coll. & Hosp. of Philadelphia.....	(1918)		70.1
Temple University Department of Medicine.....	(1919)		62.1
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University	(1890)		Ohio
University of Vermont College of Medicine.....	(1896)		Vermont
Medical College of Virginia.....	(1913)		Virginia

Kentucky May Examination

Dr. A. T. McCormack, secretary, Kentucky State Board of Health, reports the written examination held at Louisville, May 10, 1921. The examination covered 11 subjects and included 110 questions. An average of 70 per cent. was required to pass. Of the 50 candidates examined, 49 passed and 1 failed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Phys. and Surgs., San Francisco.....	(1921)		85
University of Louisville Medical Dept. (1920) 79, (1921)			
79, 81, 81, 82, 82, 83, 83, 83, 83, 83, 84, 84, 84,			
84, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86,			
87, 87, 87, 87, 87, 87, 88, 88, 88, 88, 89, 89, 93, 94			
Eclectic Medical College.....	(1921)		77
Ohio State University College of Homeo. Med.....	(1921)		82
Vanderbilt University Medical Department.....	(1920)		87
FAILED			
Loyola University	(1917)*		72
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hospital College of Medicine, Medical Department,			
Central University of Kentucky.....	(1903)		Texas
Johns Hopkins University Medical Department.....	(1913)		Maryland
Boston University School of Medicine.....	(1905)		Mass.

* Fell below 60 per cent. in more than one branch.

Oregon January Examination

Dr. Urling C. Coe, secretary, Oregon State Board of Examiners, reports the written examination held at Portland, Jan. 6, 1921. The examination covered 13 subjects and included 2 questions. An average of 75 per cent. was required to pass. Of the 20 candidates who took the physician's and surgeon's examination, 15 passed, including 1 osteopath, and 5 failed. Of the candidates who took the osteopathic examination, 5 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
eland Stanford Junior University School of Medicine.....	(1917)		88.9
(1921) 85			
Chicago College of Medicine and Surgery.....	(1909)		81
Indiana Medical College School of Medicine of Purdue			
University	(1906)		82

State University of Iowa College of Medicine.....	(1897)	80.1
University of Louisville.....	(1916)	75
Long Island College Hospital.....	(1899)	80.9
Eclectic Medical Institute, Cincinnati.....	(1891)	71.4
University of Oregon.....	(1918) 81.1, (1919)	82.2
Temple University Department of Medicine.....	(1920)	78.9
University of Toronto Faculty of Medicine.....	(1907)	82.1
Western University Faculty of Medicine.....	(1906)	83.4
University of Naples.....	(1897)*	79.4
Osteopaths	75, 75, 75, 76.5, 77.1, 80	

FAILED

Curtis Physio-Medical Institute.....	(1893)*	28.6
Homeopathic Medical College of Missouri.....	(1900)	63.7
Southwest School of Medicine and Hospital.....	(1916)	56.1
Columbia University College of Phys. and Surgs.....	(1908)	73.2
Gate City Medical College.....	(1908)*	52.3
Osteopath		†

* Graduation not verified.
† No grade given.

Rhode Island January Examination

Dr. Byron U. Richards, secretary, Rhode Island State Board of Health, reports the written and practical examination held at Providence, Jan. 6-7, 1921. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Eastern University of Medicine.....	(1913)		80.8
Harvard University.....	(1900) 92.8, (1918)		87.3
Jefferson Medical College of Philadelphia.....	(1917)		87.4
Medical School of American University of Beirut.....	(1913)*		86.3

FAILED

Laval University Faculty of Medicine.....	(1919)	76.9
-------------------------------------------	--------	------

* Graduation not verified.

Book Notices

GROWTH OF THE SOIL. Translated from the Norwegian of Knut Hamsun by W. W. Worster. Two volumes. Cloth. Price, \$5. New York: Alfred A. Knopf, 1921.

Knut Hamsun, winner of the Nobel prize for literature in 1920, is the author of numerous novels, dramas, essays and poems depicting Norwegian life. In "Growth of the Soil" he presents an epic, the chief plea of which is the call to go back to the land and the simple life. The story concerns a simple peasant who goes into the wilds, builds himself a farm, marries, raises his family, and through his success attracts to the uncultivated forests more and more people until he establishes a farming community. Incidental to the story there are many medical aspects, for Hamsun is a realist and knows that few human lives are untouched by the problems of medicine. Thus Inger, wife of Isak, chief character of the story, is afflicted with a harelip. The great fear of her life is that one of her children will be similarly afflicted. At the coming of each child she sends her husband away and delivers herself so that she alone may know the appearance of the infant. Before the coming of the third child, the house is visited by a wandering Lapp, who carries with him in a sack a hare poached from the neighboring forest. Inger's superstitious fear of a prenatal impression is brilliantly depicted. Unfortunately, the child born is a female infant, likewise afflicted with a harelip. Inger commits infanticide and buries the infant. The story details her subsequent arrest and considers the Norwegian law which condemns her to a long prison sentence. Again a social side of the question is touched, since her life in prison is the determining factor in her future. In prison she comes in contact with modern medical science. The harelip is cured by a plastic operation. She also receives instruction in reading, writing and many household arts which make her a better partner in the building of the family when she returns.

The author also shows how city residence gives an outlook on life which causes the city dweller to look down on the simple peasant. As the community grows and new persons come in, life becomes more complex. An insight is afforded into the jealousies and difficulties of intimate country life. Another woman, familiar with city life, returns to the country and takes up an occupation with one of the farmers in the neighborhood. She, too, commits infanticide. In her

case, however, a number of persons become interested. When the case is tried the wife of the district superintendent makes a brilliant address which results in her acquittal. It is in this address that the author preaches his views regarding the attitude of society to the unmarried mother. The address is dramatic and one of the strongest pleas for equal responsibility of the father that one can find in modern literature.

Novels of the type of the "Growth of the Soil" are as instructive as many nonfictional works, and have the added advantage of intense interest.

THE ANATOMY OF THE NERVOUS SYSTEM FROM THE STANDPOINT OF DEVELOPMENT AND FUNCTION. By Stephen Walter Ranson, M.D., Ph.D., Professor of Anatomy in Northwestern University Medical School, Chicago. Cloth. Price, \$6.50. Pp. 395, with 260 illustrations. Philadelphia: W. B. Saunders Company, 1920.

In this volume, Ranson presents the anatomy of the nervous system from the dynamic rather than the static point of view. Recognizing the difficulty of teaching by structural details alone, he points out their functional significance as well; in doing this he lays the foundation for physiologic and clinical neurology. The descriptions are comprehensive, accurate, easily understood and not burdensome. The subject matter includes the recent, important contributions to the science of neurology. Where disputed points occur, the author's name and date of his contribution appear; a full list of these references and the literature is included in a bibliography. Among recent contributions to neurology with which the neurologist is familiar may be mentioned the work of Ingvar on the cerebellum. The spinal paths for sensation are clearly described and clinical research on this subject is utilized. The extrapyramidal motor system is described and its relation to clinical neurology noted. The original illustrations of dissections assist in no small way in making the subject interesting and lucid. Special note may be made of the internal configuration of the cerebral hemispheres. Considerable original work is referred to in the sympathetic nervous system. The laboratory outline of neuro-anatomy is practical. The index is complete and lends itself readily to efficient guidance. The volume is an excellent textbook and a good reference handbook.

LEHRBUCH UND ATLAS DER AUGENHEILKUNDE. Bearbeitet von Prof. A. Elschmig, Prof. R. Greeff, Prof. L. Heine, Prof. E. Hertel, Prof. E. v. Hippel, Prof. E. Krückmann, Prof. J. Oeller, Prof. A. Peters and W. Stock. Herausgegeben von Dr. Theodor Axenfeld, Professor der Augenheilkunde in Freiberg. Sixth edition. Cloth. Price, 78 marks. Pp. 840, with 650 illustrations. Jena: Gustav Fischer, 1920.

Evidently the quality of glue used in the German binderies is sadly below that of former years, judging from the rapidity with which this textbook fell to pieces. But this defect is more than made up for by the good printing and evidences of careful proof-reading throughout (only two errors were noted), and completely overshadowed by the excellence of the illustrations. The latter far surpass the standards set by the higher class textbooks, although, in a few instances, the plates are not sufficiently illustrative of the matter in hand. The photomicrographs are uniformly good, and the fundus illustrations by Oeller live up to the reputation he established some years ago. Many of the newer phases of ophthalmology are considered at length and fully discussed, even though they have not been universally accepted. For example, parenteral injections of milk are still considered by Axenfeld as being on an experimental plane. The slit lamp of Gullstrand is described, but the enthusiasm of the workers with that instrument is not reflected among these pages. But in every chapter, the most modern accepted concepts of diseases of the eye and the treatment are dealt with in a comprehensive manner. The American ophthalmologist will disagree with the views in several phases which, in this country, are considered of major importance. The art of retinoscopy is dealt with in a very stepmotherly manner by Axenfeld, and refraction as a whole does not receive the consideration that our own textbooks give it. Again, the etiology of ocular disease of other than local origin is not given the attention that American ophthalmologists are wont to employ. There are several chapters that stand out supreme. That on the conjunctiva, by Axenfeld, is a masterpiece, and every sentence deserves careful study. He stresses the falsity of the older

conception of pinguecula and emphasizes the fact that it is not composed of fat, but is a localized hypertrophy (even to hyaline thickening) and is due to irritation through the palpebral aperture. The chapter on the cornea, by Elschmig, is equally good and contains lucid descriptions of corneal conditions. Greeff contributes the chapters on the retina, and the optic nerve and visual tract. These are very well written and complete, and the etiologic phase of diseases of these structures is elaborated on far better than in other chapters. The chapter on injuries, both civilian and war, by Hertel, contains a short, but excellent treatise on sympathetic ophthalmia, and is concluded by a short discussion of the question of compensation for ocular injury. Heine closes the text with a compilation of the possible ocular complications of systemic disease. Taken by and large, this may be considered as one of the best textbooks of ophthalmology that has appeared. To the student, it presents a lucid picture of ocular disease; to the general practitioner, it lends a diagnostic and therapeutic hand in puzzling conditions; and to the ophthalmologist it offers an excellent modern concept of ocular disease, one that will bear rereading.

ELEMENTS OF HYGIENE AND PUBLIC HEALTH FOR THE USE OF MEDICAL STUDENTS AND PRACTITIONERS. By Rai Bahadur Jaising P. Modi, L.R.C.P. & S., L.F.P.S., Lecturer on Medical Jurisprudence, King George's Medical College, Lucknow. With an Introduction by Lieut.-Col. E. J. O'Meara, F.R.C.S., D.P.H. Second edition. Cloth. Price, 12 shillings net. Pp. 497. London: Butterworth & Co., 1920.

This is an interesting book written for use in the medical colleges of India by an experienced teacher and health officer. All the phases of public health work usually treated in a book of this character are touched on, but particular stress is laid on subjects of special interest in India. The author is apparently more familiar with English than with American methods in sanitation. For example, the brief paragraph on chlorination of water supplies contains no mention of the use of liquid chlorin. We cannot agree with some of Dr. Modi's inferences with respect to air-borne infection, particularly that regarding sewer air as a factor in the spread of disease. Also, the subject of room disinfection following contagious diseases is treated from a point of view fast disappearing among up-to-date American health officers. In general, however, the subjects are adequately and sanely treated. A few discussions of particular interest might be mentioned. For example, the chapter on personal hygiene portrays living conditions which are found rarely, if at all, in this country. The subject of malaria is unusually well treated, as are also plague and cholera. The book is a valuable contribution to the literature on public hygiene in tropical countries.

THE GENUINE WORKS OF HIPPOCRATES. Translated from the Greek with a Preliminary Discourse and Annotations. Two volumes in one. By Francis Adams, LL.D. Extra muslin. Price, \$5. Pp. 366. New York: William Wood & Company.

The publishers have reissued under one cover the two volumes of the original translation by Francis Adams of the Works of Hippocrates. This is a well known translation, copiously annotated, originally published under the auspices of the Sydenham Society. The name of Hippocrates stands next to that of the mythical Esculapius as the father of medical science. All who presume to follow medical science should be familiar with his work; if he had written only the first of his famous aphorisms he would have contributed enormously to medical science:

Life is short, and Art long; the occasion fleeting; experience fallacious, and judgment difficult. . . . The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants and externals cooperate.

MOTHER AND CHILD. By Edward P. Davis, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College. Fourth edition. Cloth. Price, \$2.75 net. Pp. 278, with 33 illustrations. Philadelphia: J. B. Lippincott Company, 1921.

This well known book has been revised and brought up to date by the author, and numerous well-chosen illustrations have been added. It is a valuable book for the aid of mothers, especially, the part assigned to the child. Mothers will find all the information they may need on the care of the child, such as the feeding and the treatment of diseases incident to childhood.

Miscellany

THE OFFICE OF IMPERIAL PHYSICIANS, PEKING *

E. V. COWDRY, PH.D.
NEW YORK

Admission to the Office of Imperial Physicians was obtained through the kindness of the emperor's tutor, Mr. R. F. Johnston, who gave me a card of introduction to Mr. Ch'i Ling, a minister of the household. Mr. Ch'i received us in his yamen with great courtesy and made arrangements with the director of imperial physicians for our proper reception. My thanks are also due Mr. Ma Kiam, of our Department of Chinese, who, with his intimate knowledge of Chinese classics, has helped me immensely.

The sentry in a gray uniform, taking it easy at the entrance, is symbolic of the respect with which the present republican government seems to regard all monarchical institutions (Fig. 1). On Chinese New Year, and other festal occasions, the president, or his representative, calls on the emperor in his palace in the Forbidden City. The emperor is said to receive from the republic \$4,000,000 Mexican a year as an honorarium in consideration of his partial abdication. A few heads are lopped off after each attempt at restoration and the emperor continues to be treated with deference. From his private purse he maintains the Office of Imperial Physicians and several other Manchu organizations and yamens. The rebuilding and elaborate decoration of these offices, after their destruction by foreign troops during the Boxer uprising in 1900, is indicative of the tenacity with which the Chinese cling to their traditions.

Visitors are usually received at the entrance and are conducted through spacious court yards to the library, where tea is served and the usual compliments are exchanged. The official textbook called the "Golden Mirror" occupies a place of honor on the central table (Fig. 2). It was written under the supervision of the Emperor K'ang Hsi (1661-1722 A. D.) from originals attributed first to the Han Dynasty (206 B. C. to 220 A. D.) and still earlier to the mythical Yellow Emperor (2696 B. C.), who is considered to be the father of Chinese medicine. Perhaps no other medical book has held its popularity through so many centuries. Even today, about two hundred million Chinese are content to be treated in accordance with its dictates, so that, in a very real sense, it is for them an arbiter of life and death.

It consists of eight large volumes in Chinese cases covered with blue cloth. Each volume contains from six to twelve books bound in imperial yellow. It teaches that the air passes through the larynx to the heart and other palpable absurdi-

ties. Turning over the pages, we come upon many interesting drawings indicating different disease conditions, such as the "grain pustule sickness" (erysipelas) in children and in adults. There are also charms and mystic diagrams in profusion. The "Sixty Year Cycle of the Forces of Nature" is very popular. Diagrams illustrating the relation between masculinity and femininity are not only of common occurrence in the "Golden Mirror" itself but are used as symbolic decorations in many of the buildings.

After leaving the library, visitors usually inspect some native drugs in an adjoining room and then pass through the north court, reception hall and south court to a small shrine where a large brass statue is kept. A suitable gratuity to one of the attendant coolies results in the speedy removal of all the clothing, the altar and sacrificial vessels so that the acupuncture holes may be closely examined (Fig. 3). The girdle about its loins is pure camouflage because all the external genitalia are omitted in deference to Chinese antisexual feelings. The holes indicate the proper places for the insertion of needles in various diseases, the idea being that all ailments are due to an improper association between the various circulating male and female principles which consequently require liberation. In the Golden Mirror:¹

"Life is said to depend on the action of a female-principle which embraces a male-principle. These principles are opposite powers of vigor or strength which are equal in weight. When they are properly balanced, there will be no disease of any kind and the person will be productive and healthy. These principles are distributed quite differently in the body. The exterior is male and the interior is female; the back male and the abdomen female; the viscera male and the paren-

chymatous organs are female. Each principle has three degrees in quality, namely: great female principle, female principle proper and young female principle; great male principle, male principle proper and young male principle. These three degrees of principle are evenly distributed in their respective organs and viscera. . . ."

Miniature statues of this kind are used in China for instruction in different ways. We read that one method is to cover the body with a layer of paraffin and paper, to fill it with water and to let the novices try their skill at locating the holes with needles. If they are successful, the water gushing forth typifies the liberation of male and female principles from the living body. But very little, if any, instruction is now given in the Office of Imperial Physicians. Images are worshipped, not used: good food is offered and cheap incense burned lavishly.

From this small shrine we are led to a large temple, at the entrance to which some of the officials consent to group themselves for a photograph (Fig. 4). Within the temple, large gilt images of the Emperors Huangti, Fuhsi and Shennung



Fig. 1.—The sentry in gray uniform resting at the entrance symbolizes the respect with which the present republican government regards all monarchical institutions.

1. From a translation (or paraphrase) of a portion of the "Golden Mirror" by E. T. Hsieh: A Review of Ancient Chinese Anatomy, Anat. Record 20: 101, 1921.

* From the Anatomical Laboratory, Peking Union Medical College.

are worshipped during the spring and autumn festivals.² Shennung and Fuhsi are thus idolized because they are credited with the invention of writing, about 4,000 years ago. Huangti is even more highly venerated since, in addition to being the father of Chinese medicine, he is also supposed to have invented clothing, as may be seen in the accompanying photograph (Fig. 5).

In these imperial offices, 110 physicians are registered (March, 1921), none of whom have any foreign training. Two of them visit the Emperor Hsuan Tung in the Forbidden City about twice a week and make prescriptions when necessary. One can imagine the deference with which they approach the "Son of Heaven" and the solemnity with which they beg him to take spirit pills (tapeworms soaked in children's urine) or some other remedy popular for at least a thousand years. It is said that the emperor is not permitted to seek the advice of foreign trained physicians, but I have been unable to confirm the statement.

The visit helps to give us a true conception of the difficulties which have to be overcome in the introduction of modern medicine into China. The book of authority, the idolization of leaders long since dead and the complete satisfaction with present conditions, are obstacles to progress which have to be reckoned with. No wonder that "a modern Chinese anatomist" expresses himself thus, quoting from John Dudgeon's (1919) translation:³

"If I do not, however, speak there are many diseases whose origin cannot be known, so I cannot but speak out. Not only do the medical books assert that memory and mind come from the heart but the learned, in treating of reason, virtue, and conscience, all say that intelligence and memory are located in the heart, because at the beginning people did not

the lungs unite to form one vessel which enters the heart; then it goes out of the left side of the heart, passes the lungs, and enters the spine. This is the wei-tsung vessel. In front it connects with the ch'i-fu and spermatic road; behind with the spine; above with the two shoulders; in the middle with the two kidneys, and below with the two lower extremities. This is the vessel that preserves the original or vital air and juices.

This air goes out and in the heart; how then can the heart produce mind and store up memory? Why do I say that the mental qualities are in the brain, because food and water produce air and blood which grows the flesh; the pure delicate juice is converted into marrow which advances by the spine and so up to the brain and therefore is called nao-sui (brain marrow).

"In regard to the nature of the pulse, what I inform posterity is the truth; if there are those who speak or write not according to what they know, or believe and assert themselves to be genii and do not conscientiously discourse of things, they must suffer punishments at the hands of Heaven.

"The ancients did not know that the pulse was the air vessels, although they discoursed on a great variety of pulses and their positions, in which every man was different. They said there were twenty-seven characters of sorts and I dare not

say they were wrong in their doctrine of the pulse, not because they have not a leg to stand upon (in Chinese no footing for their views) but because posterity in their treatment of disease would have no doctrine of the pulse to go upon. By feeling the pulse and knowing whether a person is going to live or die is easy, but to decide on the disease is difficult.

"Lang Chai opposed my view. He said the hearts of animals contained blood, why is it that man's contains none? I replied by asking him what animals' heart contained blood? And he replied that in ancient prescriptions there is mentioned the sui-sin-tan pills taken to cure madness. These pills are made of a species of *Wickstraemia* (kan-sui) ground to powder and mixed with pig's blood and thereof the pills are made, and is this not proof that the pig's heart contains blood? I replied that this was an error of the ancients; it was pig's blood but not out of the heart. When the heart is cut with a knife the blood in the heart comes from the cut walls of the chest, and if the heart be not cut there is no blood within it.

"If persons do not read and study books and think by reading mine to have sufficient knowledge, that is not my fault but their own. . . ."

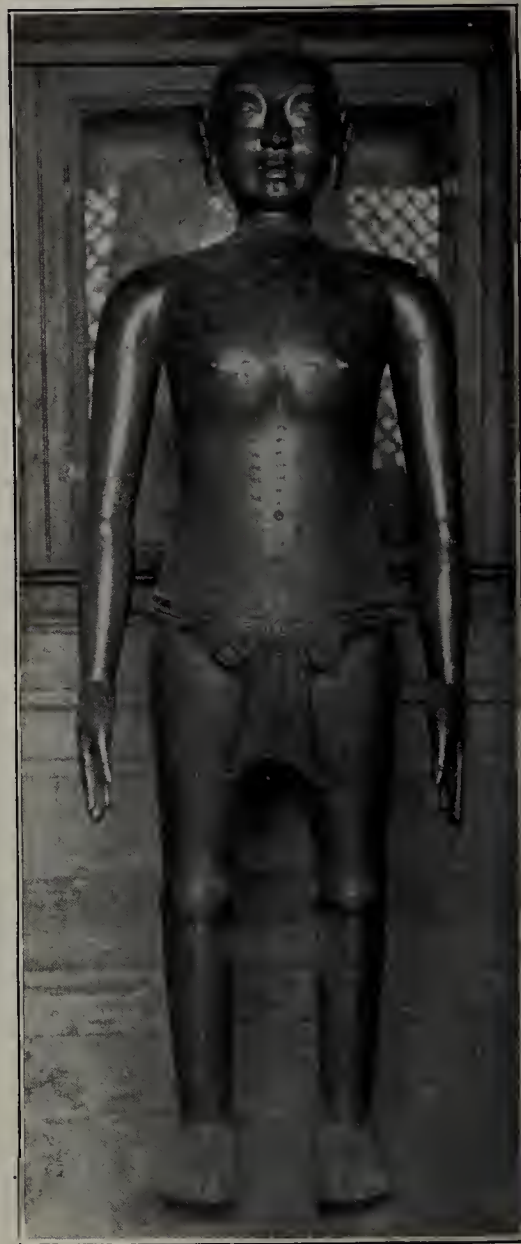


Fig. 3.—A suitable gratuity to one of the attendant coolies results in the speedy removal of all the clothing, the altar and sacrificial vessels so that the acupuncture holes in the statue can be closely examined.

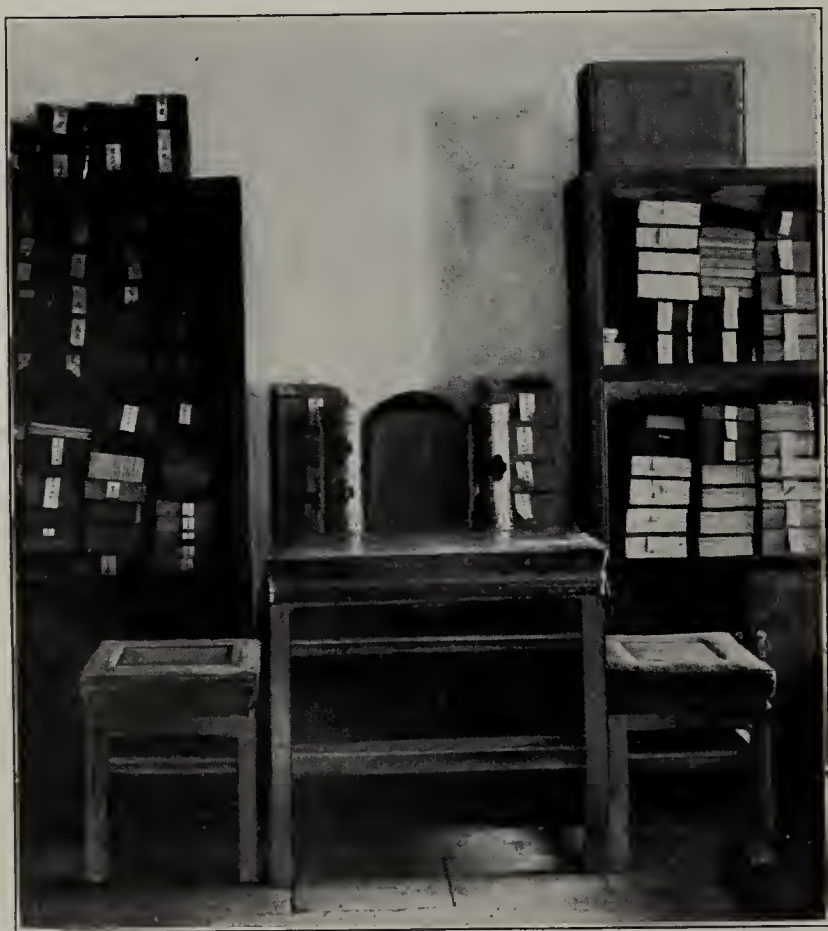


Fig. 2.—The official textbook, called the "Golden Mirror," occupies a place of honor on the central table.

know what the heart governed; they knew that it lay in the chest; they did not know that at the two sides of the larynx and gullet there are two air vessels, which at the front of

2. The ritual is described in detail by de Harlez: *Mém. Acad. roy. d. sc. de Belg.*, 51: 417-426, 1893.

3. Dudgeon, John: *A Modern Chinese Anatomist and Other Discourses*, *Nat. M. J. of China* 5: 50, 1919. (Unfortunately, Dudgeon does not give the original Chinese references.)

The fundamental problem is "the transformation of the mind of China," to use the title of one of Professor Dewey's papers recently published in *Asia*, for the same causes hold back development in many lines. Dissatisfaction with the past and present, and a reaching out of the nation as a whole for improvement, are the first essentials. The Chinese intellect is certainly not inferior to the Japanese. What holds them back is their reluctance to get together and stick together on a national basis in some constructive program which involves a certain measure of idealism coupled with a willingness to forego undue profit. That they are able to do so is shown by the coherence of business guilds and certain industrial enterprises.

The beginning which has been made in the organization of federal and provincial medical schools is worthy of the highest praise; but they are "like houses built upon the sand," with no stability, subject to every passing storm of revolution and political intrigue. Their success and very existence usually depend on the health and strength of their director. They are, in other words, "one man institutions." China has been a monarchy for so long that the people have not learned the efficacy of sharing responsibilities. "A virtuous ruler is like the pole-star, which keeps its place, while all other stars do homage to it."⁴

The consequences are serious: When the director becomes indisposed, or receives some other appointment, the faculty are helpless because they have taken no part in the organization and do not command the respect and confidence of the federal or provincial authorities, so that the whole enterprise is in danger. On the appointment of a new director, a radical change in policy may be expected with failure to abide by

In order to maintain continuity of effort and business-like efficiency, the director must learn to share his responsibility with members of the faculty. This, if he is the right kind of man, he will gladly do. Does not Confucius say, "The distinguished man is anxious to put himself below others." He will be happy in seeing his institution firmly established

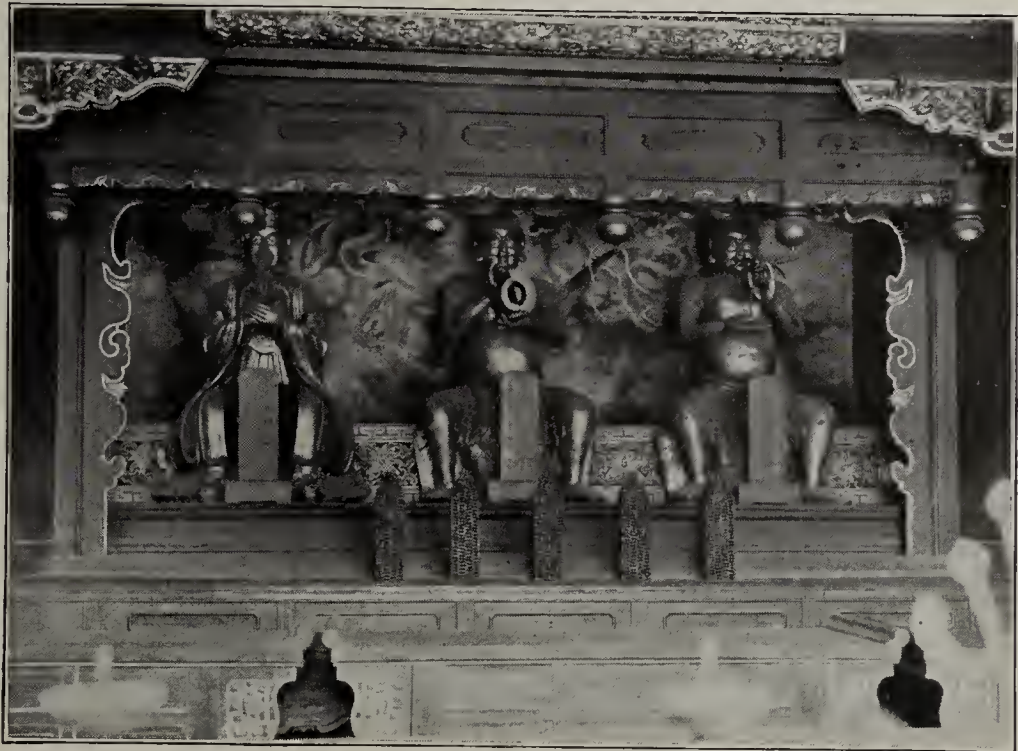


Fig. 5.—Within the temple large gilt images of the Emperors Huangti, Fuhsi and Shennung are worshipped during the spring and autumn festivals.

through careful organization and the deputation of authority to others. With the success of the college at heart, he will find it no hardship to retire a little from the limelight; for it cannot be denied that the outlook of a single individual is narrow compared with that of a small but representative group which is actually doing the work of the college. A single individual is likely either to make hasty decisions, or to procrastinate; to be influenced by personalities, by indigestion and other factors from which a group, being a collection of units, is immune. Group action is more conservative, more broadminded, and more permanent: an interregnum can be more easily bridged over and coherent team-work made possible.

As the members of the faculty gradually come to a realization of their own personal responsibility for the success of the institution as a whole, their interest increases and *esprit de corps* develops. Individual loyalty to the director is overshadowed by devotion to the institution and to the ideals for which it stands. Directors will come and go; but it is hoped that institutions founded by the Chinese will become permanent national assets.

Some Chinese shoulder their responsibility bravely and press on as true pioneers; but how small is the minority and how overwhelming the inertia of China! To strengthen these leaders is the aim of every one who has China's interest at heart.

It will not be an easy task. Real advances in medical education cannot be expected before a sound and just government has been established, responsibility for which rests fairly and squarely on the shoulders of the Chinese people. It is unfair to cast all the blame on the official class because after all the officials are Chinese and continue to hold office through the tolerance of other Chinese. The government of



Fig. 4.—One is led to a large temple at the entrance to which some of the officials consent to group themselves for a photograph.

the spirit and letter of agreements made by the first incumbent. One college has had to close its doors in the absence of its director; in another the members of the faculty are dependent on the personal influence of their director with the government for securing their salary from month to month.

4. Giles, Lionel: *The Sayings of Confucius*. The Wisdom of the East Series, London, John Murray, 1912, p. 39.

any country is just as good, or just as bad, as the people deserve.

Lao Tzu's doctrine of inaction,⁵ "Leave all things to take their natural course and do not interfere," has entered into the very fiber of the nation during centuries of famine, flood and plague, and it has bred a colossal indifference. How opposed it is to the old English motto, "Time and tide wait for no man!" The disciple Tseng Tzu said of Confucius,⁶ "Our master's teaching simply amounts to this: 'loyalty to oneself and charity to one's neighbor.'" Self first and the other fellow next: individualism before nationalism. The leaders of young China would do well to instil the nation generally with some of the strong Roman patriotism, expressed in the words: "Dulce est pro patria mori," at the same time being careful not to create the dangerous Prussian feeling that "the state can do no wrong." This change cannot be accomplished at a wave of the hand; but those who have acquired a slight knowledge of China through two or three years' residence, as well as others born and bred in China, almost without exception, express faith in the ability of the Chinese people to work out their own salvation with foreign encouragement but not foreign control.

In his most recent article (May, 1921) Professor Dewey says: "It is no wonder that wherever a few are gathered together in China, the favorite indoor sport is 'saving China.'" It is to be hoped that the day is not far distant when this "sport" is not only indulged in by foreigners with a sprinkling of Chinese, but can boast of some slight popularity among the masses of the Chinese themselves without foreign influence. There is truth in the saying that "where there is a will there is a way." At present the "will" is lacking in the great masses of population who count for so much.

Medicolegal

Evidence of Performance of Other Abortions

(*State v. Bassett (N. M.), 194 Pac. R. 867*)

The Supreme Court of New Mexico says that the defendant was convicted of murder in the second degree under a statute which provided that every person who should administer to any woman pregnant with a quick child any substance, or use any instrument or other means, with intent thereby to destroy such child, unless it was necessary to preserve the life of the mother, should, in case the death of such child or mother should be thereby produced, be guilty of murder in the second degree. The prosecuting witness testified that at the time the abortion occurred she was pregnant with a quick child, and that the pregnancy had progressed about six months. The defendant admitted that he aborted the woman, but contended that at the time she went to his sanatorium and he made his first examination of her the fetus was dead, and that it was necessary, in order to save her life and in accordance with correct medical practice, to remove the fetus with instruments, which he did. But the woman was allowed to testify, over his objection, that some months later she again visited his sanatorium and that he there performed another abortion on her, when she had been pregnant about two months. The district attorney explained that this testimony was to show the intent with which the defendant committed the first abortion. That brought up the question of when, and when not, in cases of this kind, evidence of other abortions is admissible in the prosecution for the given particular act. The court hesitates to depart from what appears to be the current of authority on the subject, but it cannot but be convinced that there

was an entire lack of relevancy of the proof offered of the second abortion in this case. It did not tend to prove that the woman was aborted on the first occasion unnecessarily and when it amounted to murder of a human being. Wherefore it is held that the evidence of the second abortion was inadmissible, and the judgment of conviction is reversed, with directions to award a new trial. In other words, the court holds that, under the statute, the gist of the offense was the intent to murder a quick child by means of aborting the mother; and, in a prosecution under that statute, proof of other abortions on women wherein the child had not quickened was not relevant, and should be excluded. If there was no quick child in the woman's womb when the abortion was resorted to, there was no crime under the statutes of New Mexico, as they existed at the time of the occurrences in this case. How, then, could it be said that producing an abortion on a woman pregnant, but when the fetus had not yet quickened, would tend in the remotest degree to show that a physician would deliberately commit murder of a quick child still in its mother's womb? The acts in the two cases are entirely distinct and dissimilar. One involves murder; the other involves nothing more than a disregard of the finer feelings of humanity with which the law, in the absence of statutory regulation, is not concerned. If it had been shown that the defendant had aborted other women pregnant at the time with quick child, the evidence would undoubtedly have been admissible. That would have tended to show that the defendant, when he aborted the prosecutrix, intended to commit murder by the use of instruments on the mother, and that he probably did not, as he testified, abort her for the purpose of preserving her health, or possibly her life.

Federal Court Upholds State Law and Board

(*Lindsey v. Allen et al. (U. S.) 269 Fed. R. 656*)

The United States District Court, in Massachusetts, says that this was a bill in equity brought against the attorney general, two district attorneys, and the members of the board of registration of that state. The board was established by an act approved on June 7, 1894. By Section 3 of the act, every person who had been a practitioner of medicine continuously for a period of three years next prior to the passage of the act was entitled to registration and a certificate, on payment of a fee of one dollar; but by Section 8, on and after Jan. 1, 1895, all applicants were to be examined. The bill alleged that the plaintiff had practiced medicine for more than eight years before the passage of the act, calling himself Dr. and M.D., and that he did not know of the statute until January, 1898, and then tendered a dollar to the board and demanded a certificate, which was refused. It also alleged that he continued to practice without molestation until 1914, and had discovered remedies of which it is enough to say that they were alleged to cure tuberculosis, blood clots, fistulas, gallstones and syphilis. Since 1914, he had been convicted several times of practicing medicine without a license, etc., and in one case was discharged on entering into a stipulation "to never again engage in the illegal practice of medicine."

The court considers that the charges of malice and improper motives against the board were immaterial, even if otherwise sufficient, because, whatever may have been the animus of its members, it was its plain duty under the statute to refuse a demand for a certificate without examination, when the demand was not made until 1898. Section 8 limited the operation of Section 3, and even if the time allowed was short, the plaintiff was not entitled to wait three years. As to the prosecutions, it seems that the plaintiff was guilty under the act, and here again the motives for instituting them were immaterial. It was alleged that the board permitted others to practice who had never passed an examination, but nothing appeared to show that the act was administered in an unconstitutional way. The court perceives no valid ground open on the bill for contesting the constitutionality of the act. As to the plaintiff's right to call himself M.D. and to practice medicine, it is enough to say that the law gave him a fair chance to preserve the supposed rights, and that he let it go by. Whether M.D. does not convey

5. Giles, Lionel: The Sayings of Lao Tzu, The Wisdom of the East Series, London, John Murray, 1917, p. 32.

6. Giles, Lionel: The Sayings of Confucius, The Wisdom of the East Series, London, John Murray, 1912, p. 118.

the implication that the person affixing those letters to his name has received a degree from an authorized source and therefore was in this case a fraud in contemplation of law, the court need not consider. The exception from the operation of the statute of some classes of practitioners that many people would regard as swindlers does not go beyond the right of the state to have its own convictions and its own policy and to embody them in law.

In view of what the court has said, it is enough to add that at least there is no such clear infraction of the plaintiff's rights or impediment to his asserting any defense that he may think he has under the constitution of the United States if he is indicted again as to warrant this court's interfering with the regular processes of justice in the state. There is no deterrent. The stipulation above mentioned, even if it was more than an understanding outside the record, which did not appear, would present no obstacle to any defense on a new indictment, probably would be disregarded for all purposes if the statute should be held unconstitutional, and whatever its effects, was the act of the plaintiff, not of the statute. If this bill should be entertained, any criminal might seek an injunction in the courts of the United States to prevent the regular administration of the state laws whenever a question as to their constitutionality could be raised. Here, however, the court sees no ground for even a reasonable doubt that on the question before it the act was within the power of the state. Motion for injunction denied. Bill dismissed with costs.

Diagnosing and Treating Diphtheria as Quinsy

(*Clark v. George (Minn.)*, 180 N. W. R. 1011)

The Supreme Court of Minnesota, in reversing an order that denied a motion for a new trial after a verdict had been directed in favor of the defendant, says that a physician is not ordinarily liable for error of judgment in a doubtful case. He does not insure either correct diagnosis or correct treatment, but he is required to possess the skill and learning which are possessed by the average member of his school of the profession in good standing in his locality, and to apply that skill and learning with reasonable care. If he fails in this, he is negligent and may be held for injury resulting therefrom.

The plaintiff's wife, 34 years old, was taken ill one evening. Her throat was sore and swollen and her temperature somewhat above normal. The defendant diagnosed her case as quinsy, lanced her throat first on one side and then on the other; said probably some pus would come, and that she would be better in the morning. In the morning he asked whether any pus had come and was told by the patient that none had. He lanced her throat again. She could not speak above a whisper, but asked him to look at her husband's throat. He did so and immediately said, "You have diphtheria, and that is what is the matter with her." He then took a culture, went away, and in fifteen or twenty minutes came back and again pronounced the patient's case as diphtheria. He then changed his treatment and administered antitoxin, but the patient died on the following day. He made a death certificate, stating that the cause of death was diphtheria with general edema of the pharynx. In a memorandum, submitted to the health department with the culture on the day before her death, he gave the diagnosis as suppurative tonsillitis. From the statement in the death certificate and all the other testimony in the case, the court thinks that a jury might fairly infer that the patient was suffering from diphtheria from the beginning, and that it was doubtful whether they could infer that there was any other ailment. A physician who was called as a witness testified that it was not good practice to lance a throat infected with diphtheria, as it would spread the infection through the system, and that in his opinion the operation was a contributing cause of death. If the foregoing testimony stood alone, the court thinks there would be no question of its sufficiency to sustain a verdict that the defendant was negligent, both in the manner in which he proceeded to diagnose the case and in the treatment administered. The doubt in the case arose from the fact that a sister of the patient, when asked whether

any pus came out at the time of the first lancing, answered, "A little," while the expert witness mentioned testified that it was always proper to lance a pus abscess, even if diphtheria was present. However, notwithstanding this testimony, the court is of the opinion that the question of the defendant's negligence was for the jury. Under the evidence, the testimony of the sister was not conclusive of the existence of a pus abscess, while the testimony of the expert witness was to the effect that even if there was a pus abscess the lancing of the throat on the second morning was not good practice. A jury could infer that the defendant should have known on the occasion of the second call that his first diagnosis must have been wrong and that to lance again might bring disastrous results.

It was incumbent on the plaintiff to prove that but for the negligence of the defendant death would not have occurred. If the evidence left the cause of death a matter of conjecture, the defendant was entitled to a directed verdict. The plaintiff was, however, not required to prove causal connection by direct evidence. If circumstantial evidence furnished a reasonable basis for the inference that the negligence of the defendant was the cause of death, the case should have been submitted to the jury. In view of the natural tendency of the lancing to spread infection and of the evidence that the patient died of sepsis or infection in so short a time thereafter, the court is of the opinion that the jury might infer that the proximate cause of death was the surgical act.

Two members of the court dissent, saying that when the defendant called at midnight to treat the patient he was informed that she was subject to attacks of quinsy; that there was no evidence that would justify a finding that after he called proper diagnosis and treatment could have saved the woman's life, and that unless medical skill could have prevented death, he should not be held in damages.

Knowledge and Fraud of Medical Examiner

(*Hale v. Sovereign Camp Woodmen of the World (Tenn.)*, 226 S. W. R. 1045)

The Supreme Court of Tennessee, in affirming a decree in favor of the beneficiary where there was a controversy as to whether the insured or the local medical examiner of the defendant had given it incorrect information, says that it has held that the knowledge of the local medical examiner of a fraternal benefit society was imputable to the society in a case in which the true facts concerning the physical condition were stated to the examiner and he inserted false statements in the report of his examination made to the society, it being deemed immaterial that the application recited that the local physician should be treated as the agent of the applicant. While there is some authority to the contrary, this rule as to the knowledge of a local physician being the knowledge of his principal, the assurer, is almost everywhere accepted. Under these authorities, where the applicant for insurance truthfully answers the questions propounded to him by the local physician of an insurance company or a fraternal benefit society issuing insurance, and the physician inserts false statements in the blank furnished him and makes a false report to his principal, and a policy issues, the assurer is held to be estopped from relying on such false report. This is for the reason that the agent of the assurer employed to procure this information was truthfully advised by the assured. Such knowledge having been acquired by the special agent in the execution of the special authority he possessed, this knowledge will be ascribed to the principal. The principal therefore, having knowledge of the truth, will not be permitted to rely on the fraud of its agent for which the assured was in no way responsible. Nor does the court see any difference in the application of the rule of law in a case in which the local agent has been guilty of negligence and in a case in which he has been guilty of actual fraud. The basis of the liability of the assurer in such cases is the knowledge of the special agent acquired within the particular line of his duties with which knowledge the principal is charged. It can make no difference whether the general officers of the assurer are misled inadvertently or intentionally by the local agent.

Society Proceedings

COMING MEETINGS

American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
Colorado Congress of Ophthalmology and Oto-Laryngology, Denver, July 29-30.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Delaware State Medical Society, Rehoboth, Aug. 16.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

AMERICAN PEDIATRIC SOCIETY

Thirty-Third Annual Meeting, held in Swampscott, Mass., June 2-4, 1921
(Concluded from page 227)

Studies of Anaerobic Bacteria in the Infant's Intestine

DR. LANGLEY PORTER, San Francisco: Our work indicates that the anaerobic flora of the infant's stools is relatively simple, probably made up of a few types, the most prominent being *B. welchii*, *B. bifementans*, *B. sporogenes*, and a terminal end-sporulating organism of the tetanus amorphous group. Probably, the first anaerobe to develop in the infantile intestinal tract is *B. bifementans*. One group of infants was fed on breast milk, using three supplements: (1) sterile water; (2) Ringer's solution and (3) saccharin water. Another group was kept on modified cow's milk, also using the three supplements. The stools of the babies fed on breast milk showed the typical aciduric *B. bifidus* flora, while those fed on modified cow's milk showed a flora of more complex nature, approximating a semiputrefactive flora. From clinical observations it has seemed that there might be a relationship between the intestinal flora of the mother and that of the child with special reference to the presence of *B. welchii*. Our observations failed to confirm this belief. While *B. welchii* has been found in all types of stools, normal, putrefactive and saccharolytic, there was a very great difference in the numbers of this organism found in each case, and it is possible that further studies might show these quantitative differences to have some chemical significance. The symbiotic relationships of aerobe to anaerobe is one of interest. It may be that certain symbioses promote the growth of anaerobes whose by-products are harmful.

DISCUSSION

DR. J. H. MASON KNOX, Baltimore: Some years ago Dr. Porter and I made a short investigation of normal children in the attempt to find whether the gas bacillus was present in the intestines of infants. We found that practically all the infants in the maternity ward showed *B. welchii*, not only microscopically but by inoculation in rabbits. It took a week or ten days for young babies to develop this bacillus in the stools. It is widely distributed in nature and takes that time to become general in the infant's intestine.

The Four Hour Nursing and Feeding Interval

DR. THOMAS S. SOUTHWORTH, New York: The four hour nursing interval has proved helpful within limits, but is too sweeping for universal application. It seems to be admirably adapted to the vigorous normal infant at full term, nursing a normal mother with an abundant supply of good breast milk. The longer interval has proved distinctly superior when there is tenderness of the mother's nipples with risk of infection and mammary abscess and in cases of over rich high fat breast milk. It is especially adaptable to cases that depart from the normal, in short, to cases of maladaptation. Adopted too enthusiastically, as a routine, it works injury to other important types of maladaptation. Premature infants require more frequent feeding than those born at term. Of full term infants there is the sluggish, dormant infant with difficulty stimulated to take a sufficient quantity of breast milk in five nursings; there is the baby who is too weak or learns with difficulty to take the nipple and does not empty the breast; the nervous and inexperienced

mother who does not know how to cooperate with the baby and defeats its efforts; there is finally the large and perhaps increasing number of mothers whose breast milk, while scanty and insufficient, is capable of being made abundant enough to establish maternal nursing, wholly or in part, if stimulation is maintained with adequate frequency. For these cases the four hour interval is irrational and injurious. Complementary feedings given at the conclusion of a nursing to make up deficiency in breast milk are always justifiable when occasion demands and should be employed more frequently, but the substitution, ignorantly made, of one or more bottle feedings to take the place of the already too infrequent breast nursings is the most scientific way of drying up breast milk and precipitating unnecessary weaning. In many instances complementary feedings, coupled with a return to shorter intervals, produce the best results.

The Effect of Compressed Yeast in the Food of Infants

DR. MAYNARD LADD, Boston: The food for an infant must contain the fat-soluble A, water-soluble B and C antiscorbutic vitamins, and in sufficient amounts. There is a possibility that the conclusion reached as a result of feeding these vitamins to laboratory animals may be applied too directly to infants. Milk is not a natural food for these experimental animals, except for very limited periods, if at all. In view of the advertisements in some medical journals and the fact that certain commercial firms are taking advantage of the present interest in vitamins to put into the hands of physicians and of the public generally products which, on the basis of animal experiments, were recommended as valuable growth promoters for the human infant, there is danger that the general practitioner will be directed away from the principles of sound and scientific feeding. The ten babies in our series were all difficult feeders, and they were carefully observed for different periods. The weight charts give evidence of satisfactory development, but careful analysis of the rate of weight development during the periods with yeast and without yeast do not show any benefit that can be attributed to the yeast itself. One child developed furunculosis while taking the yeast, obviously from contact with a baby similarly affected, and in that case it had no prophylactic value. Ill effects were observed in one baby that developed a severe fermentative diarrhea soon after the yeast was begun; later, when this was corrected, it took another dose with no bad effects, but still without benefit to its nutrition.

Abdominal Pain and Throat Infection

DR. JOSEPH BRENNEMANN, Chicago: Abdominal pain occurs often to the exclusion of all other subjective symptoms in the course of throat infections in children, including the whole series of upper respiratory tract infections. Inflamed and enlarged mesenteric and retroperitoneal glands, nontuberculous in origin, occur in infections having their primary seat in the throat. The pathogenesis of such enlarged glands is a matter of speculation, as is also the question as to whether they themselves cause the abdominal pain. The true cause of the pain may be, at least in part, a localized enteritis or colitis, rather than lymphadenitis itself, and possibly some specific or selective localization may account for the fairly constant pain in the umbilical region.

Protein Requirements for Children

DR. L. EMMETT HOLT and MISS HELEN FALES, New York: The total protein requirement is, to a large extent, dependent on the character of the protein given. Proteins differ greatly in their amino-acid content. Vegetable proteins are lacking in amino-acids essential for growth, while animal proteins are much richer in these substances and correspond more closely in composition to the proteins of the body. While vegetable proteins may be sufficient for maintenance, animal proteins are needed for growth. The nursing infant receives from 8 to 12 gm. daily up to the ninth month. This is equivalent to about 1.5 gm. per kilogram and is sufficient for growth and maintenance during the most active period of growth. The reason is to be found in the very high grade of the protein of woman's milk, which is especially rich in essential amino-acids. When cow's milk is the food, a much larger amount of protein is required, as the protein of cow's

milk is deficient in some of the important amino-acids, especially cystin. It is therefore necessary to give two or three times as much protein as is contained in woman's milk. Low protein or an insufficient amount of protein is one of the reasons for the failure of condensed milk as a food and also for the want of success which attended the use of such milk formulas as those which were based on the percentage composition of woman's milk. The amount of protein taken by 100 healthy children in their usual diets averaged about 40 gm. daily at 1 year; 60 gm. at 6 years; 80 gm. at 12, and 115 gm. at 16. About two thirds of the protein taken was of animal origin, and one third was vegetable protein.

Rôle of Fat Soluble Vitamin in Rickets

DR. ALFRED F. HESS, New York: Twelve children were fed on summer milk (from cows in pasture) during the winter, and eight children were fed on winter milk in summer. The same percentage of children in both groups developed rickets. Diet apparently did not make any difference. The children treated with the ultraviolet light were cured very quickly, as shown by the calcification of the epiphyses, and this occurred in the winter time. In March and April we tried sunlight, exposing the children gradually to the sunlight, and in a few weeks calcification began. Some of these children were getting dried milk, some protein milk and some condensed milk. They had been on these diets for at least six months. Active rickets reaches its highest incidence in January and its minimum in July. The healing of rickets is lowest in January, and reached its height in August or September. The ultraviolet light treatment was given three times a week for three months, the time of exposure being increased to twenty minutes, at a distance of 125 cm. These observations point to the fact that there is a hygienic factor concerned in the etiology of rickets. It might be said that exercise as well as sunlight plays a rôle in the etiology of rickets, but these children did not exercise more while or after they were subjected to the light treatment than before. The evidence points to the value of sunlight in the prevention of rickets and shows the importance of sunlight in child-caring institutions.

DISCUSSION

DR. ROWLAND G. FREEMAN, New York: It has always seemed to me that all we know about rickets points to the fact that it is a disease produced by darkness. About all the rickets we see occurs in children who have come from a tropical climate. We see it in all the tropical races coming to America.

DR. E. C. FLEISCHNER, San Francisco: I have come to feel that the outside environment is a factor in the etiology of rickets. I think the greater amount of sunlight and the outside environment explains, in part, at least, why there is less rickets in California than in the East. It would be interesting to know whether there is less rickets among the negroes in the South than among those in the North.

DR. L. R. DEBUYS, New Orleans: Rickets is very common among the negroes in the South, more so than among white children. It is just as common in rural districts as in the cities. The diet and living conditions are about the same in the city as in the country.

DR. HENRY HEIMAN, New York: I believe there is an individual and a predisposing factor. Negroes and Italians are predisposed to rickets.

DR. ALFRED F. HESS, New York: I did not wish to take up the subject of predisposition. When on some milk, 25 per cent. of the children will get rickets, while the others under the same conditions will show no sign of the disease. This shows that there is some individual idiosyncrasy. I wish to emphasize the cure of rickets by ultraviolet light and sunlight.

Clinical and Roentgenologic Study of Enlarged Thymus in Infants

DRS. KENNETH D. BLACKFAN and KARL F. LITTLE, Cincinnati: We have made a clinical and roentgenologic examination of the thymus both in normal infants and those who have presented symptoms referable to it. The results indicate that an area of dulness in the region of the thymus with a

corresponding shadow in the roentgenogram occurs in a relatively large number of normal infants. That is due to the thymus is shown by the fact that the shadow becomes smaller after exposure to roentgen rays. A thymus large enough to demonstrate by percussion and to show in the plate does not necessarily show symptoms.

DISCUSSION

DR. ALFRED FRIEDLANDER, Cincinnati: In our earlier studies we had precisely the same experience and theories to explain how the thymus produces the symptoms of thymic asthma. These theories have no support today. It may be that as many as 48 per cent. of children show an enlarged thymus, and a large percentage of them show no symptoms. If the symptoms of thymic asthma are present, even though the roentgen ray does not show the presence of an enlarged thymus, radiation should still be given.

DR. MAYNARD LADD, Boston: A child brought into the hospital with a temperature of 102 F. and convulsions died shortly afterward. There was nothing in the previous history to explain these symptoms and the sudden death. At the necropsy the thymus weighed 62 gm. May it not be possible that the symptoms are due to an internal secretion rather than to pressure?

DR. CHARLES G. KERLEY, New York: A child has been under my observation whose attacks of thymic asthma have been entirely relieved by roentgen-ray treatment.

DR. JOSEPH BRENNEMANN, Chicago: One should be skeptical of single roentgenograms as evidence of thymic enlargement, as the shadow varies with inspiration and expiration. The idea is prevalent that the symptoms of thymic asthma are aggravated for some hours after roentgen-ray treatment. Is that the common experience? If so, it would lead one not to give the roentgen-ray treatment when there is more or less aggravation of symptoms.

DR. FRITZ B. TALBOT, Boston: A short time ago one of the rabbits used for experimental purposes at the Massachusetts General Hospital died suddenly, and at the necropsy an enlarged thymus was found.

DR. LANGLEY PORTER, San Francisco: A mongolian idiot, 4 years old, died of pneumonia. At the necropsy the thymus weighed 55 gm.

DR. HENRY HEIMAN, New York: Thymic asthma, at least clinically, is a very rare disease and must not be confused with stridor, diphtheria infection and deformity of the glottis and epiglottis, or with latent spasmophilia.

DR. ROWLAND G. FREEMAN, New York: A tumor in the upper mediastinum which gets large and small with respiration is the thymus. In one case of severe thymic asthma coming under my observation, roentgen-ray treatment relieved the symptoms, though the thymus has not been reduced in size. Two other cases have been treated without reduction in the size of the thymus. One of these patients was afterward found dead in bed.

A Febrile Exanthem Occurring in Childhood

DRS. BORDEN S. VEEDER and T. C. HEMPELMANN, St. Louis: During the last year we have observed cases in which, after a period of high fever, lasting from three to four days, and terminating by crisis, an extensive macular or maculopapular eruption developed, limited chiefly to the body and coincident with the fall in temperature. The febrile period is characterized by an absence of all symptoms or signs except the fever. There is a leukopenia, which may be marked, and a relative lymphocytosis. Seemingly the infection is not contagious. While occurring chiefly between the ages of 1 and 2 years, the disease has been observed in infants of 6 months and older children up to the eleventh year. The condition has not been described before.

DISCUSSION

DR. THOMAS B. COOLEY, Detroit: We have seen these cases in Detroit where there is an outbreak of paratyphoid B fever. It is extremely difficult to differentiate the two conditions.

DR. HENRY F. HELMHOLZ, Rochester, Minn.: We have had a little epidemic at Rochester. In a group of cases, three in one family, the eruption was of the urticarial type and the

symptoms were rather more severe. The urticaria cleared up only after the repeated administration of epinephrin.

DR. J. CLAXTON GIDDINGS, Philadelphia: These cases have been occurring for years and are probably secondary attacks of rubella.

DR. HENRY HEIMAN, New York: In such cases the clinical diagnosis of intestinal toxemia accompanied by urticaria or erythema is frequently made. It would be interesting to study the milk supply.

DR. J. BORDEN VEEDER, St. Louis: None of these children were receiving any drug. There were no toxic symptoms. The children were mostly from the better classes. They were not getting milk from the same dairy.

Diagnosis of Tuberculosis in Childhood

DR. CHARLES H. SMITH, New York: Tuberculosis is not a universal disease of childhood, in this country at least. The diagnosis of the presence of tuberculous infection rests largely on the skin reaction, which is of value at any age. The activity of the tuberculosis must be judged by the temperature curve and by other signs of toxemia, such as malnutrition and anemia. The bronchial nodes are most commonly involved, yet give but few signs. D'Espine's sign is the best of these. When the D'Espine sign is elicited below the third dorsal vertebra, and especially below the fourth dorsal vertebra, it is very suggestive of tuberculosis.

DISCUSSION

DR. WILLIAM PALMER LUCAS, San Francisco: Another condition which may give rise to D'Espine's sign is a low grade influenza infection.

DR. LANGLEY PORTER, San Francisco: D'Espine's sign is a very valuable and much neglected addition to our clinical methods. I have never found D'Espine's sign below the fifth, and rarely below the fourth dorsal vertebra, when there was not some definite change in the mediastinal contents. The position of the patient is important in determining the site at which the sign is heard. We seat our patients with the back flexed and the head bent forward. There are many other conditions beside tuberculosis that give a definite whispered pectoriloquy as low as the seventh, eighth and ninth vertebrae.

AMERICAN GYNECOLOGICAL SOCIETY

Forty-Sixth Annual Meeting, held at Swampscott, Mass., June 2-4, 1921

The President, DR. WALTER WILLIAM CHIPMAN, Montreal, Canada, in the Chair

Fads and Fancies of Obstetrics

DR. RUDOLPH W. HOLMES, Chicago: In safe and conservative hands, maternal and fetal mortalities have decreased in private practice. The maternal and fetal death rates, in hospitals, have not shown an appreciable decline in 100 years. The fact that the death rate among the emergency cases (i. e., those sent in by medical attendants) is over ten times that of regular applicants in the New York Lying-In Hospital is a reflection on the preliminary medical training of the profession. A properly conducted prenatal clinic, combined with conservative conduct of labor, is a more certain method of routine interference in all parturient women, with intervention. The authorities who have fostered a peculiar method of routine interference in all parturient woman, with their imitators, have retarded the advance in obstetric care, and are part contributors to the high American mortalities incident to childbirth. It is lamentable that properly controlled midwives have less mortality than those who practice a routine intervention. The proponents of operative culs have produced no evidence to show that their systems are more worthy, less risky, and promise a higher conservation of life than carefully watched spontaneous labor. There are no more reasons why all parturient women should be delivered operatively than that all people should be inflicted with routine enemas or catheterization. Indications for obstetric operations demand revision. A wise conservatism in obstetrics will be more productive of ideal results than injudiciously used skill. Obstetric teaching is so deficient in most

colleges that there should be a sharp and early improvement. So long as obstetric teaching is defective, so long will obstetric results be bad in practice. An obstetric curriculum should be devoted to practical instruction on the manikin, in the class room, and in the clinic; obstetric surgery should be a very small part of the coordinated whole. The proper place of the latter is in postgraduate courses intended for those preparing for the specialty.

Radium Therapy in Vulval and Vaginal Cancer

DRS. HAROLD C. BAILEY and HALSEY J. BAGG, New York: By means of radium, the original lesion may be eliminated completely without loss of any considerable amount of normal tissue, without sloughing and with comparatively little pain. There is a minimum opportunity for spreading the disease, especially if the insertion of the tubes is preceded by an application of heavily filtered radium, which tends to devitalize the tumor cells. Whenever possible, the radium tubes surrounding the lesion are inserted through normal tissue. If the tubes are of 5 mc. strength, the elimination of the tumor is associated with extensive sloughing and prolonged and serious discomfort; whereas the smaller dose of about 0.5 mc. accomplishes as much for the removal of the growth, and yet without sloughing and with little pain. Except in the most minute lesion, it is not possible to arrange the placing of the tubes so that all the cancer cells are effectively radiated. Filtered radium, to check further the growth of the injured or partly damaged cells, is necessary as an adjunct to the implantation of bare tubes in vulval and vaginal cancers.

Disposition of Uterus Following Salpingectomy When It Is Desirable to Preserve Menstruation

DR. CAREY CULBERTSON, Chicago: The reduction of the uterus in size by removal of its entire fundus is a ready method of disposing of the organ after salpingectomy when, particularly in young women, it is desirable to preserve menstruation. Defundation becomes a logical procedure not only in operating for the cure of infectious processes, but also for simple sterilization, for ectopic pregnancy, ovarian cystomas and like conditions. Its only contraindication from a technical point of view is that of procidentia uteri.

Dietary Factors in Causation of Sterility in Rats

DRS. EDWARD REYNOLDS and DONALD MACOMBER, Boston: A moderate decrease in the percentage of the fat-soluble vitamin, of the protein, or of the calcium contained in an otherwise excellent diet produces a definite decrease in the fertility of individual rats. A slight decrease in the fertility of both partners will produce a sterile mating. The fertility of the mating may be stated as the product of the fertility of the individuals concerned. If the index so obtained falls below a given point the mating will be sterile, and this result holds true whether the partners are of equal or of widely different fertility. These principles explain the fact that two individuals which are sterile, when mated together, may nevertheless reproduce freely when mated to new partners (of higher fertility).

Unsolved Problems in Gynecology and Obstetrics

DR. W. BLAIR BELL, Liverpool, England: The tendency to minimize the importance of biology and to urge the superior claims of hospital study is unfortunate and probably is to some extent accountable for the present position. Today elementary gynecologic anatomy and physiology are taught by the clinician and not by the anatomist and the physiologist, at any rate in Great Britain. The result is that the anatomist and the physiologist are unaware of the hiatuses in our knowledge. The man who has difficulties to face in practice, will, if properly educated, be the person most likely to overcome them. The necessary improvements in educational methods are radical. The clinician should have the right to define the subject matter of the physiologic and anatomic courses, and physiology should be taught more in coordination with clinical work. With regard to postgraduate work it seems likely that the clinical unit and units for group study will give best results.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Dermatology and Syphilology, Chicago

July, 1921, 4, No. 1

- *Ringworm of Nails. R. S. Hodges, University, Ala.—p. 1.
- *Medical Photography: with Special Reference to Skin Diseases. H. Fox, New York.—p. 27.
- Visceral Syphilis: Syphilis of Lung. U. J. Wile and C. H. Marshall, Ann Arbor, Mich.—p. 37.
- *Case of Probable Paraffin-Oil Tumor. J. H. Stokes and A. J. Scholl, Rochester, Minn.—p. 50.
- *Genesis of Neurosyphilis. J. E. Moore, Baltimore.—p. 54.
- Internal Poisoning from Rhus. J. B. McNair, Washington, D. C.—p. 62.
- *Sachs-Georgi Test for Syphilis. F. Parker and A. V. R. Haigh, New York.—p. 66.
- Comparative Study of Syphilis in Whites and in Negroes. E. L. Zimmermann, Baltimore.—p. 75.

Ringworm of Nails.—Hodges presents a preliminary report of sixteen cases of onychomycosis with a cultural study of twelve of these cases due to trichophytons.

Medical Photography in Skin Diseases.—To obtain a collection of good medical photographs, Fox claims, it is generally necessary for the medical man to learn at least to pose the patient, and to make the exposure himself. Satisfactory medical photographs cannot be made by the average professional photographer, as he is ignorant of the exact anatomic condition which is desired to be reproduced.

Case of Probable Paraffin Oil Tumor.—In view of the probability that a considerable amount of adulterated camphorated oil has been used during the influenza epidemics of the past two years, Stokes and Scholl suggest that as much medical publicity as possible should be given to the camphorated oil tumor, as its deceptive histology and misleading clinical appearance are likely to result in the diagnosis of tuberculosis and of malignant neoplasia.

Genesis of Neurosyphilis.—In fifty-four cases of syphilis in all stages of the disease, but without demonstrable neurologic involvement, an early negative spinal puncture was repeated by Moore with positive results in two. In one of the positive cases, invasion of the central nervous system had apparently taken place by direct extension from a gummatous periostitis of the inner cranial table; in the other, it probably occurred during a second period of generalization of the disease. In the majority of cases of neurosyphilis, Moore says, invasion of the central nervous system takes place during the first few months of the infection; but in some cases it may occur at any time during the course of syphilis by one of the two mechanisms outlined. The appearance of recurrent secondary syphilis or the recurrence of a positive blood Wassermann reaction after a lapse in treatment is the probable outward manifestation of a fresh generalization of the disease, and should be made the occasion for reexamination of the cerebrospinal fluid.

Sachs-Georgi Test for Syphilis.—The Sachs-Georgi reaction as observed by Parker and Haigh agreed with the Wassermann reaction in 93.07 per cent. of 520 parallel cases.

Archives of Surgery, Chicago

July, 1921, 3, No. 1

- *Anatomy and Surgery of Trigon. H. H. Young and M. B. Wesson, Baltimore.—p. 1.
- *Diverticula of Urinary Bladder. W. E. Lower, Cleveland.—p. 38.
- *Tumors of Bony Chest Wall. C. A. Hedblom, Rochester, Minn.—p. 56.
- *Resection of Pylorus for Gastric Ulcer. K. W. Doege, Marshfield, Wis.—p. 86.
- *Traumatic Spondylolisthesis; Report of Two Cases. S. Kleinberg, New York.—p. 102.
- *Studies in Exhaustion: II. Exertion. G. W. Crile, Cleveland.—p. 117.
- *Course of Recovery Following Trauma of Spinal Cord. S. Cobb, Boston, and C. C. Coleman, Richmond, Va.—p. 132.
- *Fracture of Skull. W. P. Eagleton, Newark, N. J.—p. 140.
- Cholecystitis. R. R. Graham, Toronto.—p. 154.
- Clinical Value of Certain Bacteriostatic Triphenylmethane Derivatives. C. C. Berwick, San Francisco.—p. 168.
- Fifteenth Report of Progress in Orthopedic Surgery. R. B. Osgood, R. Soutter, H. C. Low, M. S. Danforth, C. H. Bucholz, L. T. Brown and P. D. Wilson, Boston.—p. 181.

Anatomy and Surgery of Trigon.—The review made by Young and Wesson shows that the trigonal muscle is a definite entity, continuous with the longitudinal muscle fibers of the ureters, and is superimposed on the muscles of the bladder wall. The opening of the vesical orifice during urination is not an inhibitory action, but is primarily the result of the contraction of the powerful trigonal muscle which passes in the form of an arc through the weaker arcuate muscles at the vesical orifice (the vesical "sphincter"), and pulls them open mechanically on contraction. When the trigon is removed, micturition is difficult and incomplete; with removal of one half of the trigon, the remaining half functions and the bladder can be entirely be emptied. The same is true when the trigon is split. A split trigon is not functionally so perfect as one with Mercier's bar intact. According to pharmacologic tests, nerve ganglions and true sympathetic fibers are present in the trigonal muscle, while the bladder wall has sympathetic and parasympathetic fibers. The trigon is distorted in cases of renal tuberculosis, the shortened tuberculous ureter drawing the ureteral ridge outward on the bladder wall. It may cause invagination of the ureteral margin and elevation of the trigon on that side, the bladder wall being depressed about it. If adhesions are present between the diaphragm and kidney, the shortened tuberculous ureter with respiration causes the trigonal ridge to play back and forth like a piston rod in the invaginated ureteral orifice. There is a compensatory hypertrophy of the trigon in cases of obstruction at the vesical orifice, due to overexercise of the trigonal muscle in opening the vesical orifice. A corresponding atrophy follows the removal of the obstruction. The force from the contraction of the trigonal muscle dissected partly free from the bladder wall, irrespective of the amount of hypertrophy, is not properly applied to help in the opening of the vesical orifice. The contraction of a hypertrophied trigon, dissected free from the bladder wall, tends to form a damlike ledge dividing the bladder into two parts. A diverticulum may form beneath the undermined trigon. The obstruction due to a hypertrophied trigon can be removed: (1) intra-urethrally by means of a punch or a trigonotome; (2) perineally, by means of a scalpel or trigonotome; (3) suprapubically, by the use of scalpel and scissors.

Diverticula of Urinary Bladder.—Lower agrees with Watson that there is a congenital predisposition to bladder diverticula, but that "their clinical recognition during adult life is hastened and their dimensions greatly increased by any of the factors that would bring about increased vesical distention or increased activity of the bladder musculature." The fact that diverticula usually occur in patients past middle age and almost invariably in the male, with the concomitant presence of obstruction, seems to confirm such a theory. With the congenital weakness of the bladder wall aggravated by pressure, due to obstruction of the urinary outlet, it is evident that diverticula may readily form; as also in cases in which an overdistended condition of the bladder is due to failure to empty it at regular intervals. Two rather striking examples of diverticula, apparently due to the latter condition, have come under Lower's observation. Both patients were mail carriers, and each stated that he attributed his difficulty to the fact that on the mail route it was not always convenient to empty the bladder and that, therefore, he had held his urine much longer than under ordinary conditions. An analogous pathologic condition, due to a congenital defect, is diverticulum of the esophagus.

Tumors of Bony Chest Wall.—Tumors of the bony chest wall are relatively rare. Hedblom analyzes 213 cases (61.4 per cent. sarcoma and 18.7 per cent. chondroma). The ribs were primarily involved in 78.7 per cent., and the sternum in 21.3 per cent. Trauma seems to be etiologic in some cases, both with regard to incidence and to malignant degeneration of the benign forms. Pain is the most characteristic symptom and may be present in the case of a benign as well as of a malignant tumor. Pain may be present before the tumor is recognized. Early differential diagnosis of neoplasm and cold abscess, exostosis, aneurysm, and dermoid cyst may be difficult. Preoperative differentiation of a benign or a malignant neoplasm may be impossible. Early radical extirpation offers the best prospect of prolonging life and of cure. Late radical

or palliative extirpation, even in the presence of extensive involvement, may result in a relatively long period of freedom from recurrence. Early thoracotomy is indicated in any doubtful case. Differential pressure anesthesia, while not essential to the successful removal of tumors involving wide opening of the pleural cavity, obviates the risk incident to sudden open pneumothorax, and by preventing a closed pneumothorax may lessen materially the occurrence of postoperative shock, pneumonia, and empyema. Intratracheal or intrapharyngeal insufflation anesthesia affords an effective means of preventing operative pneumothorax. Shock, pneumonia, and empyema are the common causes of postoperative deaths. Recurrence has been the rule in most cases of malignant tumor; but there may be freedom from recurrence for many years and life may be further prolonged by repeated extirpation of the growth.

Resection of Pylorus for Gastric Ulcer.—In nine cases reported by Doege the operations performed were: seven Billroth II, one sleeve resection of the pyloric antrum and one Polya operation. All patients were completely satisfied with the result of their operations and had good health. Doege feels that the cure of chronic gastric ulcer by gastro-enterostomy alone is doubtful. Gastro-enterostomy gives the best results in ulcers near the pylorus accompanied by pyloric stenosis. Only temporary benefit can be hoped for after gastro-enterostomy in ulcers which are distant from the pylorus. Pylorotomy with posterior gastro-enterostomy fulfills the principle requirement for the cure of gastric ulcer, i. e., removal of acidity, better than any other operation.

Two Cases of Traumatic Spondylolisthesis.—In one of Kleinberg's cases the cause was a beam striking the patient on the back of the neck and throwing him to the ground, resulting in rupture of the lumbosacral ligaments and forward subluxation of the fifth lumbar vertebra. In the second case, the patient, while carrying a weight on his right shoulder, had another weight thrown onto his shoulder when he did not expect it. This caused him suddenly to "cave in." He felt a severe pain in the back at the time; but did not fall to the ground. He caught himself just as he got to the ground and straightened up. The pain in the back continued to annoy him; but he was able to work until the end of the day, which was two hours after his injury. This patient became aware of the hollow in the lower part of the back soon after the injury.

Studies in Exhaustion.—Crile investigated combined exertion and fear in red foxes, combined exertion and anger in dogs, combined exertion and anger in cats, prolonged exertion in rats and salmon, and the discharge of electric mechanism in electric fish (*narceine brasiliensis*). It was evident that extreme physical exertion in various land animals and in fish causes demonstrable histologic lesions in the central nervous system, the liver and the suprarenals, these changes being least marked in the liver. These histologic changes are identical in character with those described as due to prolonged insomnia. Chemical studies made after animals had been subjected to extreme exertion show an increased iodine content of the thyroid, and slightly increased glycogen content in the liver; a diminished glycogen content in the muscles; greatly diminished epinephrin content and a diminished epinephrin activity. The hydrogen-ion concentration of the blood and of the urine is increased by extreme exertion. The clinical effects of exertion as immediately manifested in increased temperature, pulse and respiration, and later in acute or chronic exhaustion are self-evident.

Recovery Following Trauma of Spinal Cord.—The histories of twenty patients with spinal cord injury from bullet and shrapnel wounds were analyzed by Cobb and Coleman. One of the most important questions raised by this study is whether or not the late results would be better if early operation were performed. This study shows that it is often impossible to classify spinal cord injuries clinically with reference to the extent of the cord destruction, and many cases which at first are regarded as hopeless may require regrouping later, because of the appearance of signs indicating a resumption of cord function. Recovery of function in such cases may progress to an almost complete restoration. In view of the difficulty of determining early which

cases have a complete anatomic transection and which have edema, hemorrhage, and compression superimposed on an incomplete lesion, it does not seem justifiable to delay operation in all cases in which there appears to be a complete physiologic interruption. If an operation is withheld until some signs of recovery of cord function appear, additional damage to the cord may result. The residuals, then, could be attributed in part to the failure to offset the pressure effects by early decompression. Thus it seems to Cobb and Coleman that the conservatism advocated by some in the treatment of severe cord injuries should be modified. If the patient's general condition justifies an operation, an effort should be made to reduce or prevent the later disabilities by prompt exploration of the injured cord provided a reasonable doubt exists as to whether or not the cord is completely divided.

Fracture of Skull.—The importance of the early diagnosis and operative treatment of fracture of the skull is dwelt on by Eagleton, and he shows a chart of clinical classification and treatment, and guide for detailed neurologic examination.

Boston Medical and Surgical Journal

June 30, 1921, 184, No. 26

- Mechanical Explanation of Suffering Which is Associated with Prolapse of Uterus. G. M. Garland, Boston.—p. 689.
- Sargent Body-Test. G. V. N. Dearborn, Cambridge, Mass.—p. 691.
- Goiter. J. Stanton, Boston.—p. 693.
- The A B C of Radium. E. M. Deland, Boston.—p. 696.

July 7, 1921, 185, No. 1

- *Diagnostic Pitfalls. Late Effects of Gassing vs. Tuberculosis. J. B. Hawes, Boston.—p. 1.
- Postoperative Treatment of Urinary Lithiasis. E. L. Young, Boston.—p. 4.
- Cancer Question: R. S. V. P. S. W. Little, Rochester, N. Y.—p. 9.
- *Symptoms and Treatment of Acute Cardiac Failure. Report of Case. T. J. O'Brien, Boston.—p. 15.
- Vesico-Intestinal Fistula: Report of Case: End-Results. F. F. Doggett, Boston.—p. 22.
- Prolapse of Uterus During Pregnancy. G. M. Garland, Boston.—p. 25.
- Weight Prediction by Formulas of Bornhardt, Von Pirquet and Dréyer. H. Gray and H. F. Root, Boston.—p. 28.

Gassing and Tuberculosis.—The points to be remembered in differentiating pulmonary tuberculosis from the effects of gassing Hawes says are: Do not take it for granted that a given process is tuberculous, even with a suggestive roentgenogram. Do not do the reverse. A general appearance of robust health, with marked symptoms, is against tuberculosis. The lung complications resulting from gas are usually basal and not apical processes, and the usual signs found are those of a thickened pleura and often a localized bronchitis. Further, following gassing, there is apt to be a marked increase in nervous symptoms of every kind. Do not take it for granted that these men who have been gassed are not sick and do not need treatment, even if you decide that they do not have tuberculosis or, indeed, not much wrong with their lungs in any way. Treat the man who has been gassed and not his lungs.

Treatment of Cardiac Failure.—In cases of acute heart failure, when the patient must be helped within from three to five minutes, O'Brien says strophanthin, in maximum dose, is indicated, given intravenously. In cases not so acute, digitalis leaf, in maximum dose, by mouth, is indicated, with exceptions, and with care to have a dependable digitalis.

Colorado Medicine, Denver

June, 1921, 18, No. 6

- Evolution of Steinach's Theory of Sex Determination and Rejuvenation. Z. von Dvorzak, Denver.—p. 122.
- Best Papers for Scientific Meeting. E. Jackson, Denver.—p. 126.
- Certain Aspects of Gastro-Intestinal Dyspepsia Suggested by More Recent Methods of Study. T. R. Love and W. S. Dennis, Denver.—p. 128.
- Complement Fixation in Tuberculosis. H. Gauss and O. B. Rensch, Denver.—p. 132.

Illinois Medical Journal, Oak Park

June, 1921, 39, No. 6

- Pneumococcus Peritonitis. V. F. Marshall, Appleton, Wis.—p. 481.
- Abscess of Lung. C. Molz, Murphysboro.—p. 484.
- Cancer of Pancreas: Postmortem Report. J. D. Hayward, St. Louis.—p. 484.
- Local Anesthesia in Abdominal Surgery. C. A. Stevens, Chicago.—p. 486.

- Basal Metabolism and General Practitioner. J. H. Hutton, Chicago. p. 489.
- Is Progress Being Made in Controlling Venereal Disease? C. C. Pierce, Washington, D. C.—p. 492.
- Intravenous Chemotherapy. M. W. Harrison, Collinsville.—p. 498.
- Comitment and Care of Insane. H. J. Gahagan, Chicago.—p. 500.
- Saunders and Rosenow Theories of Acute Poliomyelitis. J. Zahorsky, St. Louis.—p. 506.
- Outlook for Fourth Era Surgery. R. T. Morris, New York.—p. 508.
- Surgical Treatment of Intracranial Infections. E. Sachs, St. Louis.—p. 510.
- Industrial Ophthalmology. M. B. Wilson, Chicago.—p. 513.
- Treatment of Chronic Arthritis with Special Reference to End Results. W. L. Bierring, Des Moines, Ia.—p. 517.
- Clinical Study of One Thousand Cases of Scopolamin-Morphin Anesthesia. M. Thorek, Chicago.—p. 520.
- Diagnosis of Nasal Accessory Sinus Disease. H. C. Ballenger, Chicago.—p. 525.
- Treatment of Paranasal Sinus Diseases in Relation to Secondary Infections from This Source. C. J. Swan, Evanston.—p. 527.
- Tonsils as Foci for Systemic Infection. G. E. Shambaugh, Chicago.—p. 531.
- Relations of Endocrine Stimulation and Sympathetic Stimulation. A. E. Lund, Chicago.—p. 535.
- Foci in Oral Cavity. H. A. Potts, Chicago.—p. 542.
- Earache in Its Clinical Significance. M. F. Arbuckle, St. Louis.—p. 547.
- Ear as Source of Focal Infection. G. W. Boot, Chicago.—p. 549.
- Study in Contract Practice in Chicago. T. P. Foley, Chicago.—p. 550.

Journal of Infectious Diseases, Chicago

July, 1921, 29, No. 1

- Ionization Constants of Glycerophosphoric Acid and Their Use As Buffers, Especially in Culture Mediums. R. R. Mellon, S. F. Acree, P. M. Avery and E. A. Slagle, Rochester, N. Y.—p. 1.
- Stable Single Buffer Solution: PH1 to PH12. S. F. Acree, R. R. Mellon, P. M. Avery and E. A. Slagle, Rochester, N. Y.—p. 7.
- Gonococcus Types. J. Hermanies, Cincinnati.—p. 11.
- Change in Hydrogen-Ion Concentration of Various Mediums During Heating in Soft and Pyrex Glass Tubes. J. R. Esty and P. H. Cathcart, Washington, D. C.—p. 29.
- *Changes in Alkali Reserve, Sugar Concentration, of Blood and Leukocytes in Experimental Infections. E. F. Hirsch, Chicago.—p. 40.
- *Bacteriologic Studies of Upper Respiratory Passages: I. Hemolytic Streptococci of Adenoids. I. Pilot and S. J. Pearlman, Chicago.—p. 47.
- *Id. II. Pneumococci and Nonhemolytic Streptococci of Adenoids and Tonsils. I. Pilot and S. J. Pearlman, Chicago.—p. 51.
- *Id. III. Influenza Bacilli (Pfeiffer) of Adenoids and Tonsils. I. Pilot and S. J. Pearlman, Chicago.—p. 55.
- *Id. IV. Incidence of Pneumococci, Hemolytic Streptococci and Influenza Bacilli (Pfeiffer) in Nasopharynx of Tonsillectomized and Non-tonsillectomized Children. J. Meyer, I. Pilot and S. J. Pearlman, Chicago.—p. 59.
- *Id. V. Diphtheria Bacilli and Diphtheroids of Adenoids and Tonsils. I. Pilot, Chicago.—p. 62.
- Trehalose Fermentation in Differentiation of Paratyphoid-Enteritidis Group. S. A. Koser, Washington, D. C.—p. 67.
- Production of Hydrocyanic Acid by Bacillus Pyocyaneus. F. A. Patty, Lawrence, Kan.—p. 73.
- Microscopic Method for Anaerobic Cultivation. A. Itano and J. Neill, Amherst, Mass.—p. 78.
- Production of Carbon Dioxid by Typhoid Bacillus and Mechanism of Russell Double Sugar Tube. H. J. Nichols, Washington, D. C.—p. 82.
- Effects of Filtration of Potencies of Antitoxins. W. N. Berg, Washington, D. C.—p. 86.
- *Spread and Persistence of Hemolytic Streptococci Peculiar to Scarlet Fever. R. Tunnicliff, Chicago.—p. 91.
- *Recovery from Rabies; Cases of Treatment Paralysis and Recovery of Animals Apparently Rabid. J. M. Phillips, F. Berry and J. H. Snook, Columbus, Ohio.—p. 97.

Alkali Reserve, Sugar Concentration, and Leukocytes of Blood in Experimental Infections.—Hirsch states that depression of the alkali reserve of the blood in rabbits by intravenous injections of pathogenic bacteria is accompanied by a transient hyperglycemia, the degree of hyperglycemia apparently depending on the extent of alkali reserve diminution. Subcutaneous administration of carbonate or bicarbonate solutions does not prevent the acidosis produced by these injections of bacteria. Injections of acid potassium phosphate solutions depress the alkali reserve of the blood, this lowered alkalinity being associated with a hyperglycemia and by changes in the number of leukocytes similar to those following injections of bacteria. The concentration of sugar in the blood seems to be independent of the changes in the number of leukocytes.

Hemolytic Streptococci of Adenoids.—Cultures were made by Pilot and Pearlman from the adenoids of 103 children who presented adenoids and tonsils of varying degrees of hyperplasia with no evidence of any recent acute inflammation, fever or subjective symptoms of sore throat. From nasopharyngeal swabs and the surface of the adenoids,

hemolytic streptococci were recovered in 55 per cent.; from the depths between the folds and of the cryptlike depressions of the adenoids of the same persons, in 61 per cent. in larger numbers. The excised tonsils of the same patients revealed hemolytic streptococci in still larger numbers in 95 per cent. These streptococci agree in their morphology, cultural characteristics, fermentation reactions and pathogenicity, and are practically identical with hemolytic streptococci from various human sources. The authors emphasize that the adenoids, like the tonsils, are to be considered as common foci harboring hemolytic streptococci.

Pneumococci and Nonhemolytic Streptococci of Adenoids and Tonsils.—To ascertain more accurately the incidence of pneumococci in the throat and nasopharynx, cultures were made by Pilot and Pearlman from extirpated adenoids and tonsils. In a series of 103 adenoids, pneumococcus occurred in 65 per cent., 2 per cent. of which were Type II, 13 per cent. Type III and 85 per cent. Type IV. In the nasopharyngeal swabs of 21 persons the pneumococcus was recovered in 71.4 per cent.; from the tonsils of the same persons in 66.6 per cent., and the adenoids in 71.4 per cent. It was observed that in the depths of the folds and the crypt-like depressions of the nasopharyngeal vegetations and from the tonsillar crypts the pneumococci were decidedly more numerous than the swabs. In four instances the pneumococci occurred practically in pure cultures from the adenoids. *Streptococcus viridans* was found in 89 per cent. of the adenoids and 81 per cent. of the tonsils. *Streptococcus mucosus* was encountered in 3 per cent. of the adenoids, and indifferent streptococci in 12 per cent. The Mathers coccus was noted in 17 per cent. of the adenoids, once in pure culture. The adenoids and tonsils are foci in which pneumococci and nonhemolytic streptococci commonly flourish.

Influenza Bacilli of Adenoids and Tonsils.—Gram-negative, pleomorphic, hemoglobinophilic bacilli, showing a preference for heated blood agar and revealing the characteristic property of symbiosis, were isolated by Pilot and Pearlman and identified in 40.9 per cent. of extirpated adenoids and in 53.9 per cent. of the excised tonsils from 115 persons. In the nasopharynx they were present in 40 per cent. of 25 persons and in fewer numbers. The tonsils and adenoids therefore are foci in which influenza bacilli (Pfeiffer) commonly flourish.

Pneumococci, Hemolytic Streptococci and Influenza Bacilli in Nasopharynx.—Pneumococci, hemolytic streptococci and *B. influenzae* were often found in the nasopharynx of normal children, but the incidence and numbers of hemolytic streptococci and influenza bacilli in the nasopharynx is decidedly less in the children whose adenoids and tonsils had been removed. In case of the pneumococcus, the numbers are less in the same children than in those whose tonsils were present. The removal of tonsils and adenoids reduces the number of certain bacteria in the oropharynx and nasopharynx, but does not cause their disappearance.

Diphtheria Bacilli and Diphtheroids of Adenoids and Tonsil.—Cultures made by Pilot of the excised adenoids of 100 children revealed *B. diphtheriae* in 12. The crypts of the extirpated faucial tonsils of the same persons harbored the bacilli in 12. When present in the tonsils the bacilli also occurred in the adenoids of the same person. In the tonsillar crypts the diphtheria bacilli were usually more numerous than in the adenoids. Two of the twelve strains were virulent; one showed attenuated virulence; three were pathogenic in large doses of the first culture while subsequent cultures were without virulence; remainder were totally avirulent. Diphtheroids occurred in thirty of the adenoids and in seventeen of the tonsils; when present in both they were decidedly more numerous in the nasopharyngeal vegetations than in the tonsillar crypts.

Spread of Hemolytic Streptococci in Scarlet Fever.—Tunnicliff states that hemolytic streptococci may be isolated from the floor and walls of rooms occupied by patients with scarlet fever and diphtheria, and from the fingernails, face masks and shoes of the attending nurses and from the eating utensils used by patients harboring hemolytic streptococci. Only five of twenty strains thus isolated were opsonified and agglutinated by the serum of a sheep immunized with

a hemolytic streptococcus from scarlet fever and hence to be considered as specific for scarlet fever. Four of these strains were isolated from the eating utensils of scarlet fever patients and one from the face mask of the nurse in attendance. These results indicate the value of face masks and the necessity of disinfection of eating utensils used by patients with infectious diseases. It would appear also that persons associated with scarlet fever patients may develop tonsillitis without an exanthem and harbor hemolytic streptococci which belong to the same biologic group as those isolated from typical cases of scarlet fever. Agglutination of hemolytic streptococci from suspected cases of scarlet fever, by immune sheep serum specific for streptococci from scarlet fever, has proved helpful in diagnosis. These results suggest, further, that while patients with scarlet fever generally rid themselves of hemolytic streptococci specific for scarlet fever in from three to four weeks, patients with discharges may retain them much longer, and that the streptococcus specific for scarlet fever disappears at the time when the patient becomes noninfectious, according to clinical experience.

Spontaneous Recovery from Rabies.—The cases seen by Phillips, Berry and Snook show that spontaneous recovery from rabies naturally acquired, while rare, does occur. The saliva of an animal which recovers from rabies may have been extremely virulent during the course of the disease. As early as thirty-eight days after recovery from rabies in a dog, the infectivity of the brain may disappear and Negri bodies be absent. Therapeutic measures to control the symptoms in developed rabies in man should not be so heroic as to themselves endanger the life of the patient, for there is a possibility of recovery.

Journal of Medical Research Boston

March-May, 1921, **41**, No. 3

- *Investigation of Virus of Measles. A. W. Sellards and G. H. Bigelow, Boston.—p. 241.
- *Nature of Action of Nonspecific Protein in Disease Processes: II. Horse Serum and Soluble Toxin. D. M. Cowie and R. M. Greenthal, Ann Arbor, Mich.—p. 261.
- Precipitins in Bloodserum of Arthropods. L. Loeb, St. Louis.—p. 269.
- Specific Adaptation Between Body Fluids and Blood Cells in Invertebrates. L. Loeb, St. Louis.—p. 277.
- Pigmentation of Heart Muscle. D. H. Dolley and F. V. Guthrie, Columbia, Mo.—p. 289.

Virus of Measles.—A small pleomorphic Gram-staining bacillus was recovered by Sellards and Bigelow in blood culture from measles patients. It was found in twenty-five of thirty-one cases using methods for the inhibition of phagocytosis in the cultures. It was sometimes found in considerable numbers, growth occurring in one instance from the inoculation of 0.01 c.c. of blood. Similar cultures in twenty-four control individuals resulted in growth in five cases. In their morphology and staining reactions, these control cultures resembled closely the strains from measles cases. Fermentation tests showed that at least three of the cultures from control cases were definitely different from the majority of the measles strains. The majority of the measles strains fermented glucose, dextrin, and in some instances saccharose. Three of the five cultures from control cases failed even to ferment glucose. A few of the strains from measles cases failed to ferment glucose and are therefore regarded as distinct from the majority of the measles strains. Three monkeys were inoculated with strains from measles cases. In two the symptoms were vague, consisting only of a diffuse erythema and isolated papules. In one, however, a suggestive cluster of macules and papules developed, some of which became petechial. Histologically, these lesions conformed to the description of the human lesions. This animal was tested by a reinoculation of the same organism and no symptoms developed.

Nonspecific Protein in Horse Serum and Soluble Toxin.—Cowie and Greenthal found that 1 c.c. of normal horse serum when injected subcutaneously or intravenously into guinea-pigs simultaneously with diphtheria toxin will always protect against a fatal dose and may protect against as high as eight fatal doses of the toxin. Larger doses of normal horse serum protect against larger doses of diphtheria toxin but the effect is necessarily proportional. The highest pro-

tection that is recorded in the present investigation is against 15 M. L. D. with 3 c.c. of horse serum. The protecting power of normal horse serum resides in the protein portion and not in the alcoholic soluble portion. The protein portion of 1 c.c. of horse serum always protects against a fatal dose of toxin. There seems to be evidence that the protecting power of the horse serum used was not entirely due to the presence of diphtheria antitoxin in the serum.

Medical Record, New York

July 2, 1921, **100**, No. 1

- Biologic Cause of Metabolism and Metabolic Diseases. F. B. Turck, New York.—p. 1.
- Some Mouth and Jaw Conditions Responsible for Defects in Speech. J. S. Greene, New York.—p. 8.
- Sea Bathing and the Ear. A. Rovinsky, New York.—p. 12.
- Food Combination. T. J. Allen, Eureka Springs, Ark.—p. 14.
- *Automatic Gravity Anesthetizer. A. L. Soresi, New York.—p. 16.
- Large Doses of Bacterial Vaccine in Gonorrheal Arthritis. H. W. Lyding, New York.—p. 18.

Automatic Gravity Anesthetizer.—Soresi's automatic gravity anesthetizer is said to deliver the anesthetic to the mask by gravity in any amount and combination desired, that can vary from a continuous abundant stream, to one or more drops per minute. The amount can be increased or decreased at will, or can be kept stationary for any length of time or stopped completely by simply turning a small knob. The apparatus will functionate with perfect satisfaction under all circumstances; climate, temperature, altitude position of the patient, will not hamper the perfect work of the apparatus, because its construction is so simple that there is nothing to get out of order. It can be clamped to any table or bed, put at any height, and—by means of a ball-and-socket arrangement of its support—bent to any angle; so that the anesthetic is carried to the mask by the force of gravity which, naturally, is absolutely constant under all circumstances. The apparatus consists of a metal cylinder lined with glass of about 250 c.c. capacity containing the anesthetic; a little chamber through which the anesthetic drops; a tube that carries the anesthetic to the mask; the whole apparatus is attached to the operating table or bed by a support which can be raised or lowered and bent to any desired angle.

July 9, 1921, **100**, No. 2

- Treatment of Some Fractures of Long Bones, Including Some Fractures of Pelvis. E. H. Smith, San Francisco.—p. 47.
- Acute Septic Peritonitis. J. A. MacLeod, Buffalo.—p. 52.
- Laryngopulmonary Tuberculosis. J. Dworetzky, Liberty, N. Y.—p. 57.
- Prostatic Obstruction. P. E. Truesdale, Fall River, Mass.—p. 63.
- Relationship of Pelvic Disorders to Those of Adjacent Viscera. J. W. Nixon, Jr., San Antonio, Tex.—p. 65.
- Case of Epidemic Meningitis Treatment by Combined Serum and Vaccine Therapy. C. E. Nammack, New York.—p. 67.

Neurological Bulletin, New York

May, 1921, **3**, No. 5

- Anatomical and Clinical Syndromes of Corpus Striatum. J. Lhermitte.—p. 163.
- *Clinical Phenomena of Decerebrate Rigidity. O. S. Strong, New York.—p. 183.

Clinical Phenomena of Decerebrate Rigidity.—Strong reports a case exhibiting some of the symptoms of the conditions as described by Wilson as well as certain peculiarities of associated movements.

New York State Journal of Medicine, New York

June, 1921, **21**, No. 6

- Future of Medicine in America. L. F. Barker, Baltimore.—p. 189.

Ohio State Medical Journal, Columbus

June 1, 1921, **17**, No. 6

- Special Field of Neurological Surgery after Another Interval. H. Cushing, Boston.—p. 373.
- Conjunctivitis Blennorhoica. F. A. Grafe, Cincinnati.—p. 380.
- Nasal Deformities of Developmental Type. M. Metzenbaum, Cleveland.—p. 382.
- Correction of Nasal Deformities with Autogenous Transplants. J. Stotter and A. L. Stotter, Cleveland.—p. 384.
- Future of Industrial Medicine in Labor Policy. O. P. Geier, Cincinnati.—p. 386.
- Primary and Secondary Nitrous Oxid Saturation for Relaxation and As Test of Patient's Capacity for Operation. E. I. McKesson, Toledo.—p. 390.

Ovarian Dermoid Cysts. B. R. McClellan, Xenia.—p. 397.
Thrombophlebitis During Puerperium Following Influenza: Report of Cases. L. M. Smead, Toledo.—p. 401.
Sarcoma of Kidney; Report of Case. M. A. Tate, Cincinnati.—p. 405.

Oklahoma State Medical Ass'n Journal, Muskogee

June, 1921, 14, No. 6

Present Status of Oklahoma Physician. G. A. Boyle, Enid.—p. 130.
Service and Efficiency. L. M. Westfall, Oklahoma City.—p. 133.
Diagnosis and Treatment of Essential Vascular Hypertension. R. M. Balyeat, Oklahoma City.—p. 134.
Importance of Treatment of Injuries and Other Minor Surgical Conditions. P. P. Nesbitt, Muskogee.—p. 137.
Care of Newborn. W. M. Taylor, Oklahoma City.—p. 138.

Pennsylvania Medical Journal, Harrisburg

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Heredity as an Element in Bacterial Diseases. R. A. Keilty, Danville.—p. 609.
Bone Necrosis with Special Reference to Tubercular Lesion. M. W. Reed, Bellefonte.—p. 614.
Use of Thomas Splint in Fractures of Femur. D. A. Webb, Scranton.—p. 617.
Traumatic Paralysis of Left Superior Oblique Muscle, Relieved by Tenotomy of Right Inferior Rectus. E. A. Shumway, Philadelphia.—p. 623.
Muscular Advancement Operation. W. C. Posey, Philadelphia.—p. 627.
Antiscorbutic Vitamin. M. H. Givens, Pittsburgh.—p. 629.
Pyloric Stenosis; Report of Fifty Cases. H. C. Deaver, Philadelphia.—p. 632.
Mechanical Influences in Sciatica. E. W. Fiske, Pittsburgh.—p. 638.

Public Health Journal, Toronto

May, 1921, 12, No. 5

Ontario Municipal Health Efforts. R. Wodehouse.—p. 193.
Public Aspect of Tuberculosis. F. Royer.—p. 213.
Membership Enrolment Campaign of Canadian Red Cross Society; Crusade for Good Health. A. H. Abbott.—p. 225.

South Carolina Medical Ass'n Journal, Greenville

May, 1921, 17, No. 5

Nohyperplastic Toxic Goiter. A. E. Baker, Charleston.—p. 108.
Abscess of Posterior Mediastinum; Case Report. J. R. Young, Anderson.—p. 111.
Treatment of Eclampsogenic Toxemia of Pregnancy; Surgical Aspects. L. Peters, Columbia.—p. 116.

Surgery, Gynecology and Obstetrics, Chicago

July, 1921, 23, No. 1

Habitual or Recurrent Dislocation of Shoulder. M. S. Henderson, Rochester, Minn.—p. 1.
Arthroplasty of Jaw. J. M. Neff, Chicago.—p. 8.
Focal Infection and Elective Localization of Bacteria in Appendicitis, Ulcer of Stomach, Cholecystitis and Pancreatitis. E. C. Rosenow, Rochester, Minn.—p. 19.
Value of Local Anaesthesia in Surgery of Today. W. Bartlett, St. Louis.—p. 27.
Acute Partial Enterocoele. C. F. Sawyer, Chicago.—p. 38.
Comparative Study of End-Results of Cholecystostomy and Cholecystectomy. F. D. Moore, Chicago.—p. 41.
Results in Open Treatment of Fractures. J. F. Smith, Wausau, Wis.—p. 45.
Primary Scleroma of Larynx in a Negro Born in Maryland. S. S. Watkins, Louisville, Ky.—p. 47.
Supports of Uterus. A. J. Nyulasy, Perth, Australia.—p. 53.
Adenomyoma of Fallopian Tube. A. E. Mahle, Rochester, Minn.—p. 57.
Successful End-to-End Suture of Common Carotid Artery in Man. H. G. Sloan, Cleveland.—p. 62.
Abdominal Pregnancy with Living Child. E. C. Moore, Los Angeles.—p. 65.
Weak Spot in American Surgery. T. S. Cullen, Baltimore.—p. 67.
Brain Abscess Following Frontal Sinusitis. W. O. Ott, Rochester, Minn.—p. 72.
Nitrous-Oxid-Oxygen Analgesia in Major Operations. G. W. Crile, Cleveland.—p. 74.
Tuberculous Ulcer of Anterior Vaginal Wall with Resection of Ulcer. E. K. Cullen, Detroit.—p. 76.
Method of Cranioplasty. M. Ballin, Detroit.—p. 79.

Operation for Dislocation of Shoulder.—Capsulorrhaphy to strengthen the shoulder gave 50 per cent. cures in the sixteen cases of habitual or recurrent dislocation of the shoulder reported on by Henderson. Five of the patients (31.25 per cent.) are so decidedly improved that they are more than satisfied with the operation. This percentage of improvement and the percentage of cures give good results in 81.25 per cent. Henderson thinks it is probable that muscle pull or possible relaxation of the shoulder capsule above has not been sufficiently considered in the treatment. He suggests therefore, that the pectoralis major, teres major, and latissimus

simus dorsi be lengthened, and, if thought necessary, the region of the capsule where the supraspinatus and infraspinatus are inserted and the anterior and inferior portion of the capsule be reefed.

Focal Infection and Appendicitis, Etc.—The demonstration that the foci of infection in tonsils and teeth, so commonly noted in patients with ulcer of the stomach, cholecystitis, pancreatitis, or appendicitis, contain bacteria which reproduce these respective diseases in animals, Rosenow says, suggests strongly that such foci must be important factors in the production of these conditions in man. In fact he believes that the conclusion that streptococci are the chief cause of ulcer of the stomach, cholecystitis, and appendicitis, and, probably, pancreatitis, seems to be justified.

Acute Partial Enterocoele.—Sawyer's patient had been operated on for acute suppurative appendicitis. The wound healed after prolonged drainage, leaving a protrusion at the site of the scar. This bulging varied in size when straining, etc., and was never tender or painful. Five years after the operation, he was seized with sudden severe pains referred to epigastrium. Pain was excruciating and there was general abdominal tenderness with localization in a protruding mass in the old scar. He presented the typical picture of strangulation of a very severe character and was sent at once to the operating room. A good sized sac was opened containing dark bloody fluid and a mass of omentum adherent in places to the sac wall. At the neck of the sac, at the side of the small base of this omental mass, there protruded a very dark, plum-colored bud of intestine. When released this was found to be ileum and the constriction had involved about one-half of its circumference. The bowel was not resected, but was placed in the abdomen beneath the incision, with a cigaret drain beside it. The patient made a very good recovery.

Primary Scleroma of Larynx.—Only two cases of primary scleroma of larynx have been encountered in one and a half million patients treated in the wards and outpatient department of the Johns Hopkins Hospital during the past thirty years; one was an immigrant who had been treated in Berlin before coming to America; the other, recorded in this paper, is the first case observed in a native of the United States. The patient was a negro, born in Baltimore, who had not been out of this country, except to the West Indies and Central American countries, where he went as a fireman on a ship that plied between Baltimore and southern ports.

Adenomyoma of Fallopian Tube.—Twenty-three cases of adenomyoma of the fallopian tube reported by Mahle were seen in the Mayo Clinic between January, 1910, and July, 1920. During this time 4, 189 fibromyomatous uteri were removed, of which 332 (7.9 per cent.) contained adenomyomas. In fourteen (60.8 per cent.) of the twenty-three they were able to trace a direct origin from mature tubal epithelium. In six cases, adenomyomas and tuberculous granulation tissue in the tube lumen could be traced in to the tube wall surrounding the adenomatous structures. In three cases no direct continuation from the tubal mucosa could be demonstrated, but serial sections through the entire tube on the uterine side showed the absence of any gland structure. From this it is concluded that the origin is most probably from the tubal mucosa.

Suture of Carotid Artery.—During an operation on the neck for recurrence of a carcinoma of the lip the common carotid was nicked. Before the bleeding was controlled by finger compression above and below the bleeding, the vessel wall was badly damaged by hemostats for about three-fourths of a centimeter, the damaged portion encroaching on about half of its circumference. The damaged area of the vessel was excised and an end-to-end anastomosis made. During the operation the circulation was cut off from the right side of the brain for thirty minutes; but on completion of the operation, pulsation was felt in the temporal artery on the side of the sutured carotid. The second day after the operation the pulsation in the right temporal artery was of about half the volume of that of the opposite side. However, on the third day, the pulsation on the two sides was of equal volume, and has so continued ever since.

Abdominal Pregnancy with Living Child.—Moore reports the case of a woman who six weeks after becoming pregnant began to have severe cramplike pains in the lower abdomen. These pains came and went for about two weeks, when she was seized with excruciating pains in the lower abdomen, pronounced on the right side. She felt very faint and had to vomit. Her attending physician advised an operation at this time. She remained in bed for ten days, occasionally having a great deal of pain, which gradually became less severe. Quite frequently between the second and third months there was a slight bloody vaginal discharge. During the sixth month of pregnancy she had very little pain, but from that time on she vomited a great deal and the fetal movements caused much pain. At about the end of the eighth month Moore operated. He found the omentum and small intestine adherent to the anterior abdominal wall, which, after separating showed a large mass covered by small intestine and with lymph. The mass had the appearance of a twisted pedicle cyst. The cyst was about the size of a three months' pregnancy and was pushed to the left by this mass. The mass was attached to the posterior surface of the right broad ligament and to the lateral pelvic wall and also extended up toward the liver, being attached to the omentum in this region. The colon was free from any attachment. The cord from the placenta extended to the left up under the spleen where the child was found free among the intestines, not surrounded by any sac. The entire broad ligament with placenta was removed en masse. The child weighed 5 pounds and 9 ounces and had no deformities. Both mother and baby are alive.

Cranioplasty.—Ballin uses as a graft one-half the thickness of the body part of a rib.

Texas State Journal of Medicine, Fort Worth

June, 1921, 17, No. 2

Manhood of Medicine. I. C. Chase, Fort Worth.—p. 60.
Citizen and Public Health. M. M. Carrick, Austin.—p. 65.

West Virginia Medical Journal, Huntington

May, 1921, 15, No. 11

How Make the County Medical Society Helpful. J. C. Irons, Dartmoor.—p. 406.
Internal Secretions. J. E. Thomas, Morgantown.—p. 409.
Acute Abdomen. A. P. Butt, Elkins.—p. 417.
Diagnosis and Operability of Exophthalmic Goiter. W. R. Laird, Montgomery.—p. 421.
Heredit and Environment. W. W. Brown, Shenandoah Junction.—p. 425.
Hodgkin's Disease. C. J. Broeman, Cincinnati.—p. 427.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

April, 1921, 44, Part 1

Innervation of Striped Muscle Fibers and Langley's Receptive Substance. J. Boeke.—p. 1.
Relation of Hindbrain to Micturition. F. J. F. Barrington.—p. 23.
*Lesions of Posterior Tibial Nerve. C. Worster-Drought.—p. 54.
Tabes: Its Early Recognition and Treatment. E. F. Buzzard.—p. 68.
Effects Produced by Obscuring the Vision of Pigeons Previously Deprived of the Otic Labyrinth. S. Scott.—p. 71.

Lesions of Posterior Tibial Nerve.—Drought is of the opinion that injuries to the posterior tibial nerve are frequently overlooked, no doubt because they cause no striking paralysis, all movements at the ankle joint being normal. More especially do they escape recognition when the lesion lies below the point of origin of the branches supplying flexor longus hallucis and flexor longus digitorum muscles, as in such instances power of flexing the toes is retained. In all wounds involving the calf where there is a complaint of pain or weakness in the foot, a systematic examination must be made of sensation in the plantar area and of the functions of the intrinsic muscles of the foot. When sensory disturbances of long standing are the predominant feature, exploration of the nerve should be considered. If the nerve shows complete interruption, the end-bulb of the upper segment should be removed or the fibrous cicatrix excised and end-to-end suture

performed. In incomplete lesions exhibiting neuralgic symptoms the freeing of an adherent nerve will usually result in considerable relief.

Dublin Journal of Medical Science

June, 1921, No. 16

*Acute Intussusception in Children. C. J. MacAuley.—p. 241.
Action of Oxidizing Ferments. W. G. Smith.—p. 247.
Heart in Pregnancy and Labor. R. J. Rowlette.—p. 260.
Method of Inducing Labor. G. Fitzgibbon.—p. 267.

Acute Intussusception in Children.—MacAuley analyzes twenty-three consecutive cases, twenty of the patients being under 1 year. Four patients died, a mortality of 17.3 per cent. Excluding one gangrenous case, the mortality was 14 per cent. Three children died of shock within twenty-four hours after operation, and one child died of bronchopneumonia. In one of the shock cases there had been anesthetic collapse during the operation, requiring prolonged artificial respiration; another was practically moribund (gangrenous case) at time of operation. Type of intussusception: enterocolic, twenty cases (ileocecal and ileo-ileocecal); colic, one case; enteric, one case; unknown, one case.

Edinburgh Medical Journal

June, 1921, 26, No. 6

"Cardiospasm," Congenital Narrowing of Esophagus and Esophagectasia. D. M. Greig.—p. 342.
Roentgen Ray and Radium Therapy. R. Knox.—p. 348.
Postoperative Morbidity in Relation to General Anesthesia. H. T. Thomson.—p. 356.
Case of Double Congenital Hydronephrosis. R. W. Johnstone and F. J. Brown.—p. 369.
Statistical Survey of Tuberculosis of Skin. F. Gardiner.—p. 374.

Glasgow Medical Journal

June, 1921, 95, No. 6

Ophthalmology in Modern Medical Practice. A. F. Fergus.—p. 385.
Wound of Thoracic Duct in Removal of Tuberculous Cervical Glands. G. H. Edington.—p. 398.
Examination of Blood in Cases of Cancer of Breast in Regard to Operation and Prognosis. E. D. Anderson.—p. 402.

Journal of Laryngology, Rhinology, and Otology, London

June, 1921, 36, No. 6

Some Discarded Theories and Methods. P. McBride.—p. 269.
Injuries to the Ear in Modern Warfare. T. J. Faulder.—p. 277.
Injuries to the Ear in Modern Warfare. L. Colledge.—p. 283.

Journal of State Medicine, London

June, 1921, 29, No. 6

Effects of Chronic Lead Poisoning; Arteriosclerosis. G. B. Page.—p. 161.
Infant Welfare Center as Factor in Social Evolution. W. J. Cox.—p. 169.
Venereal Disease Problem from Legislative Point of View. J. Stoddart.—p. 180.
Legislation in Australia Relating to Venereal Disease. G. R. Hamilton.—p. 189.

Journal of Tropical Medicine and Hygiene, London

June 1, 1921, 24, No. 11

*Certain Forms of Bronchitis Clinically Resembling Tuberculosis: Bronchohemisporosis, Bronchomoniliasis, Broncho-anaeromycosis. A. Castellani, M. Douglas and T. Thomson.—p. 150.
Differential Diagnosis in Tropical Fevers. W. M. McDonald.—p. 153.
*Improvised Antiseptic Adhesive Dressing. J. A. Taylor.—p. 155.

Bronchitis Clinically Resembling Tuberculosis.—Of bronchial and broncho-alveolar affections simulating tuberculosis which, however, are not due to the tubercle bacillus, the authors discuss bronchohemisporosis, bronchomoniliasis, and broncho-anaeromycosis. The fungi they have found in cases of bronchohemisporosis have been *Hemispora rugosa*, Cast., 1910, and *H. pararugosa*, Castellani, Douglas and Thomson, 1921. The fungi most frequently found in bronchomoniliasis are those of the type *Monilia tropicalis*, Cast., *M. pinoyi*, Cast., *M. metalondinensis*, Cast., and *M. krusei*, Cast. The term broncho-anaeromycosis is used to denote a broncho-alveolar condition, often simulating tuberculosis, in which a strictly anaerobic bacillary fungus, showing transition characters between a bacterium of the genus *mycobacterium*, Lehmann and Neumann (*B. diphtheriac*, diphtheroid bacilli) and fungi

of the genus *Nocardia toni* and *trevisan* (*Actinomyces* Harz, *Discomyces* Rivolta, *Streptothrix* Rossi Doria, *Oospora* Sauvageau and Radais, *Cohnistreptothrix* Pinoy, *pro parte*) has been found; *Anaeromyces bronchitica*, Castellani, Douglas and Thomson. This obligate anaerobic bacillary fungus morphologically resembles a diphtheroid bacillus, but in special medium presents more distinct branching. It is nonmotile, gram-positive, not acid fast, and does not produce actinomitic granules in the affected tissues. Whether this fungus is the specific causative organism cannot yet be stated with certainty, but it apparently plays a certain rôle in the etiology of the condition as the administration of anaeromyces vaccine often causes the disappearance of all the symptoms, and has a specially rapid beneficial action in hemorrhagic cases.

Improvised Antiseptic Adhesive Dressing.—Eucalyptus oil and guttapercha tissue are used by Taylor as a dressing, and if applied with care can be made almost as adherent as ordinary adhesive plaster and in many respects has advantages over the latter. Strips or pieces of any size or shape can be cut from the large sheets in which the tissue is supplied. If desired only the part actually in contact with the skin need be made adhesive. The oil is antiseptic and sometimes does away with the necessity for any other dressing. By use of more or less oil the amount of adhesion can be regulated. When removal is required this can be effected by use of more solvent without difficulty or discomfort, which is more than can be said of ordinary adhesive plaster.

June 15, 1921, 24, No. 12

Mechanism of Immunization, with Special Reference to Lipase. J. A. Shaw-Mackenzie.—p. 161.

Case of Spontaneous Rupture of Spleen in a West African. A. Ingram.—p. 164.

Lancet, London

June 18, 1921, 1, No. 5103

*Relation of Heart Disease and Pregnancy. J. Mackenzie.—p. 1281.

*Surgery of Lung and Pleura. III. Present Position of Surgery with Reference to Diseases of Thorax. G. E. Gask.—p. 1286.

*Operation of Ventrifixation. J. E. Gemmell and A. L. Robinson.—p. 1291.

Treatment of Urinary Incontinence by Electrical Methods. F. Herniman-Johnson.—p. 1295.

Squint: Question of Early Operation. W. B. I. Pollock.—p. 1296.

*Treatment of Cases of Syphilis with a Persistent Positive Wassermann Reaction. C. F. Marshall and A. G. Shera.—p. 1299.

Open Safety Brooch in Esophagus for Nine Months. C. H. Carroll.—p. 1300.

Case of Locked Twins. D. V. Murphy.—p. 1300.

Case of Aluminum Poisoning. J. Spofforth.—p. 1301.

Case of Recklinghausen's Disease. F. McG. Loughnane.—p. 1301.

Relation of Heart Disease and Pregnancy.—The idea that a perfectly sound heart may show a murmur is so surprising to many doctors, Mackenzie says, that they cannot accept it. Their view seems to be that if murmurs are not organic they are functional and imply debility or some other condition of weakness. That a murmur may be as physiologic as a pure sound is altogether outside the limits of this faith. The detection of an innocent murmur has often supplied a reason for forbidding pregnancy or even marriage. To make any progress at all it is necessary to understand wherein lies the danger associated with murmurs. Most murmurs seem to arise at the valve orifices of the heart. It has been demonstrated that certain damaged valves give rise to abnormal sounds, and it is evident from the appearance of the valves postmortem that the flow of blood must have been hindered on passing through the orifice or that the valves, being incompetent, have allowed blood to escape backwards. In this way the work of the heart muscles has been hampered. An additional burden being thus thrown on his heart, a man leading his usual life puts a greater strain on this organ than it is fit to bear. Thus it is only a matter of time until the muscle becomes exhausted and heart failure sets in. But there are murmurs which do not indicate damaged valves, or valves damaged to such a degree as to cause embarrassment to the heart, and it is necessary to distinguish between these murmurs and those which indicate valve damage which embarrasses the heart. In this paper Mackenzie discusses in detail physiologic and functional murmurs; systolic murmurs and heart failure; differentiation of functional from organic murmurs; significance of systolic and organic murmurs; mitral

regurgitation, nature of the valve changes and character of the murmur; mitral regurgitation and failure of heart muscle; mitral regurgitation with auricular fibrillation; mitral regurgitation and pregnancy; mitral stenosis; origin and progress of the cicatrizing of the mitral valves; accompanying changes in the heart muscle; cause of heart failure; presystolic and systolic murmur in mitral stenosis; appearance of auricular fibrillation; heart failure in mitral stenosis, and in mitral stenosis with pregnancy; estimation of the significance of mitral stenosis in pregnancy, aortic disease: aortic stenosis and aortic regurgitation; heart failure and aortic regurgitation; aortic regurgitation and pregnancy.

Surgery of Thorax.—During the past 600 years, Gask says, surgery of the chest has at times receded and at times advanced, and at no period has such progress been made as occurred during the last war. During that time surgeons overcame their dread of opening the closed thorax and learned to repair a wounded lung and restore it to its normal function. It has also been demonstrated that in civil practice it is possible with safety to the patient and without expensive apparatus to open the chest widely and to deal with discarded processes which previously were unrelieved. The evidence that has been brought forward is intended as proof that the operation of thoracotomy is a sound and reasonable one. Gask submits that more and more operations on the chest should be undertaken, and that with a wider experience the operation of thoracotomy will become as useful and ordinary as that of laparotomy.

Ventrifixation.—The after-results of 220 cases are analyzed by Gemmell and Robinson. They consider that ventrifixation is a simple and useful operation for certain types of uterine displacement. Postoperative intestinal complications do not occur and subsequent gestation and parturition are not interfered with if suitable technic is employed. The frequency of abortion is diminished and fertility increased. The percentage of patients subjectively cured is satisfactory, and the occurrence of symptoms after operation is largely due to factors beyond the control of the surgeon, namely: (a) labor; (b) overexertion; (c) recurrence of infection. (d) the menopause, and (e) neurosis.

Treatment of Syphilis with Persistent Wassermann Reaction.—Marshall and Shera are of the opinion that the possibility of the Wassermann reaction remaining positive in the absence of active spirochetosis has not yet been disproved. But, as it is equally impossible to disprove the contrary hypothesis, it is best in actual practice to regard a patient with a persistent positive reaction as one who is not definitely cured and as a subject for further observation and possibly further treatment. The authors consider that a persistent positive reaction is not, by itself, sufficient evidence to decide the question of further treatment, and that they should be guided equally by the clinical progress of the case, the nature of the former symptoms, and the intensity and duration of previous treatment. If clinical symptoms have been present comparatively recently (say, during the last twelve months), they hold that further treatment is advisable; but if symptoms have been absent for more than a year, that the advisability or not of further treatment should depend chiefly upon the clinical course of the case. If further treatment is decided on, this should differ materially from that given previously. They suggest that sulphur should form part of this treatment without venturing on any hypothesis to explain its possible action.

June 25, 1921, 1, No. 5104

Unsolved Problems in Gynecology and Obstetrics. W. B. Bell.—p. 1339.

*Heart Disease and Pregnancy. IV. Irregular Heart Action. J. Mackenzie.—p. 1342.

Epidemiology of Measles in a Rural and Residential Area. R. M. F. Picken.—p. 1349.

Necessity of Notification of Measles. R. Dudfield.—p. 1353.

Sanatorium Controls. E. Ward.—p. 1354.

*Delayed Tetanus Treated with Large Doses of Anti-Tetanic Serum. S. E. Denyer.—p. 1356.

Diverticulitis with Metastatic Suppuration. W. E. Foggie.—p. 1357.

Irregular Heart Action.—This is the last of Mackenzie's four lectures on this subject. Summarizing his remarks he says: As the danger of attending pregnancy in women with heart disease is the occurrence of heart failure, the physician must keep clearly before him the symptoms by which this can

be recognized. The absence of a clear conception of the nature of these symptoms has too often led to a misunderstanding of their significance. No sign manifested by the heart itself gives information as to the functional efficiency of the organ, and consequently the signs of heart failure must be looked for in other directions and more especially in those structures whose blood supply is likely to be reduced by the weakening of the circulation. Extreme heart failure is shown by such signs as dropsy, enlargement of the liver, edema of the bases of the lungs, or cyanosis. Early heart failure may be revealed by no sign when the body is at rest, and may only be discovered by distress evoked when some effort is made which the patient was wont formerly to perform in comfort. The signs of distress, so far as women in the childbearing period are concerned, are breathlessness and palpitation. Pain on effort may be present in certain cases of mitral stenosis and aortic disease; but, as a rule, the pain of grave heart failure is a sign which occurs much later in life. From this it follows that no single sign shown by the heart itself, however abnormal it may seem, should be a bar to pregnancy.

Antitetanic Serum Treatment of Delayed Tetanus.—A man, aged 24, entered the hospital with inability to open his mouth. He had been wounded five months before and had sustained a gunshot wound of the face, right arm, and right leg. His right eye had been excised and antitetanic serum was stated to have been administered on the same day, and again a few days later. On admission he was able to walk into the ward. There was marked trismus, he being unable to open his mouth more than one-eighth inch; back rigid, neck stiff, and any endeavor to sit up brought on a severe spasm of the jaw. No headache, temperature normal, pulse rate 100; he complained of a cough and some pain over insertion of diaphragm. Slept well; no mental symptoms, tremors, or Kernig's sign, but marked increase of the reflexes. No local pain in the wounds which were healed, but a local increase of reflex excitability in the muscles of the face. No sore throat or difficulty in swallowing. There was considerable general muscular rigidity. Intrathecal, intramuscular, and subcutaneous injections of antitetanic serum were given, 236,500 units in all, over a period of about three weeks. This case illustrates the value of large doses of serum in the treatment of tetanus.

Medical Journal of Australia, Sidney

May 7, 1921, 1, No. 19

- Focal Infection and Its Limitations. S. Pern.—p. 377.
*Case of Twin Tubal Pregnancy. J. I. Hunter.—p. 380.
Case of Malaria Infected in The Riverina, New South Wales. H. J. Clayton and L. Utz.—p. 382.

Case of Twin Tubal Pregnancy.—The specimen described by Hunter was removed at operation, the note accompanying the specimen stating that it was "a six weeks' abdominal pregnancy which had ruptured through the fallopian tube 1.8 cm. from the right cornu of the uterus." On further inquiry, it was ascertained that, clinically, the case was one of ectopic pregnancy with no unusual features. On examination of the mass removed at operation, it was found to consist of a uterine tube and two distinct chorionic vesicles of unequal size.

May 14, 1921, 1, No 20

- Treatment of Acute Anterior Poliomyelitis. W. Vickers.—p. 396.
*New Test of Renal Efficiency. R. J. Silverton.—p. 397.
Cases of Ductless Glands Therapy in Insane. J. Bentley.—p. 399.

New Test of Renal Efficiency.—A preliminary report is made by Silverton on the results of application of the urea concentration test (MacLean) to cases of urinary surgery. On applying the test to healthy people he found that the reading usually rose to the neighborhood of 3 per cent. during the second hour after the ingestion of the urea. In disease the reading was lowered in proportion to the extent of renal damage. The lowest reading obtained was 0.65 per cent. This was in the case of a man whose kidneys proved at necropsy to be destroyed very extensively. The cause was back pressure due to enlarged prostate. In applying the test certain precautions are absolutely necessary. The reading may be seriously influenced by the composition of neighboring meals and even more seriously should the patient ingest any fluids

or solids before or during the test. In all the cases tested a fixed routine was adopted in order to keep the method as uniformly accurate as possible. A breakfast of 230 c.c. (8 ounces) of tea and one round of buttered toast was given at 8 a. m. At 10 a. m. the 15 gm. of urea dissolved in 100 c.c. water were taken. Except this nothing was eaten or drunk from breakfast until 12 noon, that is until after the collection of the second hour's urine had been made. In this manner all disturbing influences are avoided. Forty-four cases of various types of prostatic obstruction were submitted to the test, as well as four cases of renal tuberculosis, one case of calculous pyonephrosis and two cases of urethral stricture.

Practitioner, London

June, 1921, 106, No. 6

- Hyperthyroidism and Hypothyroidism. J. Barr.—p. 381.
Medical Aspects of Flat-Foot. R. Hutchison.—p. 400.
Retropharyngeal Abscess: Five Cases. F. C. Pybus.—p. 403.
Cause and Treatment of Adenoids. J. Kynaston.—p. 407.
Abortive Treatment of Gonorrhea in Male. H. W. Bayly.—p. 411.
Red Hair and Tuberculosis. W. C. Rivers.—p. 419.
History of Tuberculosis. H. E. Symes-Thompson.—p. 426.
Theory of Origin of Bacteria. D. Mulloy.—p. 435.

South African Medical Record, Cape Town

May 28, 1921, 19, No. 10

- Etiology of Scurvy. A. J. Ortnstein.—p. 183.
Clinical Side of Scurvy in Mine Native Laborer. S. Donaldson.—p. 187.

Tubercle, London

June, 1921, 2, No. 9

- Climate and Weight of Tuberculous Patients in South India. C. Frimodt-Møller.—p. 385.
Lung Collapse Therapy in Connection with Pleural Adhesions. J. Gravesen.—p. 395.
Bronchopulmonary Spirochetosis: Report of Two Cases. C. J. C. Faill.—p. 401.

Archives de Médecine des Enfants, Paris

February, 1921, 24, No. 2

- An American Colony of War Orphans. Bouquier.—p. 103.
Apparently Cleft Tongue from Overshort Frenulum. V. Veau and C. Rupp.—p. 113.

March, 1921, 24, No. 3

- *Amyotrophy or Myatonia? Leenhardt and Sentis.—p. 137.
*Meningococcus Meningitis. P. Woringer.—p. 159.
Hemicraniosis. A. Léri.—p. 169.
Duodenal Stenosis. J. Comby.—p. 175.

Amyotrophy or Myatonia?—Leenhardt and Sentis report that two infants, 3 and 9 months old, had developed flaccid paralysis with amyotrophy, hypotony and loss of reflexes, sparing the face, diaphragm and smooth muscles. Necropsy disclosed diffuse atrophy, without inflammatory reaction or vascular sclerosis, in the motor cells of the anterior cornua, of the anterior roots, in the motor nerve fibers and muscle fibers. The lesions seem to be identical in both, suggesting both Oppenheim's congenital myatonia and Werding-Hoffmann's spinal amyotrophy although the latter is of a familial type and begins in early infancy, is accompanied by atrophy of muscle and the reaction of degeneration, and runs a progressive course. The Oppenheim myatonia is not familial but congenital, and is not accompanied by true amyotrophy and the muscles feel soft and flabby, and progressive improvement is the rule. The findings and course in these infants show that these two affections are akin as a chronic form of diffuse poliomyelitis in young children. The literature on the subject is compared with these cases.

Ventricular Form of Meningococcus Meningitis.—Woringer calls attention to the insidious onset of the meningitis in the two cases he describes in infants, and the complete absence of meningococci from the spinal fluid all through the disease. The meningococci were found swarming in the ventricles at necropsy in one case, and were cultivated from the puncture fluid from the ventricle in the other. The primary meningococcus ventriculitis had been walled off in both cases, and it proved fatal in both. Direct injection of the antiserum into the ventricle generally comes too late in such cases in infants, but recovery is known in nine of forty-seven cases in children and adults.

Bulletin de l'Académie de Médecine, Paris

May 24, 1921, **85**, No. 21

Dangers of Radium. C. Regaud.—p. 608.

*Rehabilitation of the Wounded. Dijonneau, Gourdon and Thibaudeau.—p. 612.

Rehabilitation of the Wounded.—Six years have passed since vocational training of the war wounded was begun in France. This communication from the Bordeaux training school states that of the 2,000 more or less crippled soldiers that have there been given training, all but 33 are doing remunerative work. Of the total, 1,231 were able to resume their former occupation and 736 were trained for a new one. The work done by the rehabilitated, as a whole, averages from 60 to 75 per cent. of the normal output. The gravity of the anatomic lesion or functional impotence does not necessarily entail a corresponding occupational handicap.

May 31, 1921, **85**, No. 22

*Dangers of Radium. T. Tuffier.—p. 617.

*Congenital Epidemic Encephalitis. R. Mercier, Andrieux and Bonnaud.—p. 625.

*Operative Treatment of Arthritis Deformans. Lejars.—p. 627.

*Tuberculosis After Industrial Accidents. A. Broca.—p. 629.

*Congenital Helminthiasis. Neveu-Lemaire.—p. 632.

*Microscopy of Uterus After Radium Treatment. T. Tuffier.—p. 635.

Dangers of Radium.—Tuffier here publishes the replies he has received from America in response to his questions as to injury from handling radium. His replies from Cushing, Halstead, Brower and the Mayo brothers confirm from their extensive experience that danger can be warded off by proper precautions.

Congenital Epidemic Encephalitis.—Mentioned in Paris Letter on p. 135.

Operative Treatment of Arthritis Deformans.—Lejars has added three new ones to his list of cases of pain and crippling from this cause in which the pain was abolished and partial use of the limb restored by opening up the joint and resecting or otherwise correcting conditions so far as possible. These patients were two women and one heavy man in the fifties. The benefit is durable; one woman in his early series has not suffered from the knee operated on during the eighteen years since.

Bone and Joint Tuberculosis from Standpoint of Workmen's Compensation.—Broca recalls that there is a history of visceral or glandular tuberculosis in practically every case of tuberculous lesions in bones or joints. On the other hand, tubercle bacilli are very rarely found in the blood in the chronic tuberculous. Still another argument against the traumatic origin of bone and joint tuberculosis is his discovery that none of 500 children whom he has treated for contusions, sprains or other trauma before 1913 has developed a tuberculous process since in the region of the injury. The industrial accident which every one is so prone to hold responsible for the tuberculous lesion in reality probably merely revealed its unsuspected presence. He argues further that the movement which reveals the pathologic condition may not be greater or more vigorous than the ordinary movements, although claimed as trauma by the subject. Two important practical conclusions are evident from his data. One is that every accident involving a bone or joint should be radiographed immediately; this would do away with the necessity for much litigation. The other conclusion is that any history of a tuberculous bone or joint affection should exempt from military service with its right to a pension for any affection declared or aggravated later than sixty days after being enrolled.

Congenital Helminthiasis.—Only one instance in man is cited, but the suggestion is made that routine examination of infants' stools, in warm countries at least, might frequently reveal the ova of helminths. When found before the close of the fourth week, the infestation was probably congenital.

Findings in Uterus After Radium Exposures.—The fibromatous uterus had to be removed two months after two applications of radium with a month's interval. Letulle gives four photomicrograms of the findings. They show that the destructive lesions induced by the radium expose the uterine mucous membrane to danger of secondary bacterial invasion for a time. The vessels gape without tendency to become

thrombosed, and hemorrhage is thus liable as the eschar drops off.

June 7, 1921, **85**, No. 23

*Dangers of Radium. Broca.—p. 651.

Poisoning from Arsenic Used in Vineyards. P. Cazencuve.—p. 660.

Small Doses of Digitalis Preparation in Treatment of Asystolia. A. Manquat.—p. 671.

Traumatic Origin of Chronic Hygromas. Rochard.—p. 685.

*The Oculocardiac Reflex. J. Roubinovitch and J. A. Chavany.—p. 687.

Dangers of Radium.—Broca presents the report of the committee appointed to study this subject. It states "The dangers are real, but they are easily avoidable, with proper precautions, for all except the manipulators of the emanation and during radioscopy. But society has to have these regardless of the danger, just as physicians have to expose themselves daily to contagious diseases. The probability of injury is about the same in both these fields, but the dangers are faced by men who accept them in view of the importance of the task, and who know the precautions to be taken." . . . "If some of them suffer in consequence of their devotion, notwithstanding the known precautions, the instances will be rare, and they will be accompanied by our respect and our gratitude."

The Oculocardiac Reflex in Epileptics.—Roubinovitch and Chavany use a mechanical device with which the pressure on the eyeball can be graduated. They report that in fifty of eighty epileptics tested, the bradycardia induced by the compression persisted for some time after cessation of the pressure. In 62.5 per cent., however, the bradycardia from the compression was followed by tachycardia for a minute or two. This residual tachycardia, as they call it, offers a new means for differential diagnosis of the tendency to epilepsy in dubious cases, and may serve also as a guide in estimating the effect of therapeutic procedures.

Bulletin Médical, Paris

May 14, 1921, **35**, No. 20

Digestive Disturbances of Endocrine and Sympathetic Origin. G. Lyon.—p. 395. Conc'n in No. 21.

Useful Drugs in Dermatology. Veyrières and Ferreyrolles.—p. 398. Conc'n.

May 28, 1921, **35**, No. 22

Wounds of the Eyeball. F. Terrien.—p. 439.

Treatment of Traumatic Cataract. A. Cantonnet.—p. 444.

Ocular Manifestations of Syphilis. C. Coutela.—p. 446.

The Principal Hemorrhagic Syndromes of the Retina. R. Oufroy.—p. 450.

June 4, 1921, **35**, No. 23

*Early Diagnosis of Meningococcus Meningitis. P. Sainton and E. Schulmann.—p. 465.

*Arthritis Deformans of Syphilitic Origin. C. Finck.—p. 466.

Early Diagnosis of Epidemic Meningitis.—Sainton and Schulmann have found that when the lumbar puncture fluid is clear in cases suspected of meningococcus meningitis, injection of 5 or 10 c.c. of antimeningococcus serum is liable to transform the clear fluid into the usual purulent fluid of epidemic meningitis. This occurs in a few hours. The antiserum induces an afflux of leukocytes and with them appear meningococci, the antiserum evidently aiding in the mobilization of the latter. Four typical cases are described in which this simple, practical and rapid method of differential diagnosis cleared up the case at once. It is especially useful in these days when atypical epidemic encephalitis may simulate the symptoms of epidemic meningitis. This response to the antiserum does not occur with ordinary meningitis nor in tetanus. In four cases described, the meningitic symptoms were extremely grave although the puncture fluid was limpid. The meningococci cluster in some focus apart, and this injection of the antiscrum drives them out into the open.

Arthritis Deformans.—In Finck's case, syphilis had damaged the thyroid and parathyroids, and these in turn had induced the clinical picture of chronic deforming rheumatism in the woman of 46.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 27, 1921, **45**, No. 18

Mitral Insufficiency in Inherited Syphilis. L. Babonneix and Denoyelle.—p. 774.

*To Ward Off Reaction to Arspenamin, etc. Sicard, Paraf and Forestier.—p. 775.

Crossed Infantile Paralysis. L. Babonneix and Pollet.—p. 778.

Malta Fever. Darguin and Plazy.—p. 781 and p. 784

*Necropsy in Case of Epidemic Hiccup. Pierre-Kahn, Barbier and Bertrand.—p. 787.

Arthritis with Micrococcus Arthriticus. S. Costa.—p. 790.

*Dangers of Lumbar Puncture in Pott's Disease. G. Guillaïn and G. Laroche.—p. 794.

Acute Arterial Hypertension in Course of Typhoid. A. Lemierre and R. Piédelièvre.—p. 797.

Neuralgia of the Face After Therapeutic Pneumothorax. A. Ricaldoni.—p. 802.

*Traumatic Hematomyelia. L. Rimbaud and G. Giraud.—p. 807.

To Ward Off Reaction to Arsphenamin, etc.—Sicard and his co-workers have been making a special study of means to ward off the shock from anaphylaxis or digestion hemoclasis. They found that one of the most reliable is a preliminary intravenous injection of sodium carbonate before the injection of horse serum or an arsenical. Another even more reliable means is to limit the shock reaction to one limb by applying a constricting band to the root of the limb in which the antiserum or arsenical is injected. The hemoclasis occurs, but it is restricted to this limb and is harmless, while it protects the rest of the organism against further shock when the tourniquet is slowly removed five or six minutes afterward. In two patients presenting constantly a severe *crise nitroïde* after every injection of neo-arsphenamin, this simple measure tided the patients past this danger point, and the course of treatment could be continued without further apprehension. They coined the term *topophylaxis* for this procedure, "arsenical anticlasis by topophylaxis." There was never any sign of local flocculation or precipitation in their cases. In one patient, a preliminary injection of 0.15 gm. for the topophylaxis allowed the rest of the dose to be given directly into the general circulation a few minutes later without harm. Louste added his testimony that by this topophylaxis he was able to continue the course of treatment in three patients otherwise responding with an alarming reaction to each injection of the arsenical.

Necropsy in Epidemic Hiccup.—This is said to be the third case of necropsy in epidemic hiccup published in Europe. The woman of 52 had had paresis of the right arm for a week when dyspnea and difficulty in swallowing developed, with hiccup, the mere sight of a glass of water aggravating the hiccup. The woman died next day, and necropsy revealed the lesions of epidemic encephalitis, only more extensive and including the upper spinal cord.

Dangers of Lumbar Puncture in Pott's Disease.—Such severe symptoms developed after lumbar puncture in several cases of vertebral caries that Guillaïn and Laroche feel compelled to warn against this method in the diagnosis of Pott's disease. Paralysis of the legs followed in some of the patients. They ascribe the disturbances to seeping of the fluid into the epidural space through the needle-hole. The resulting change in the tension aspirates and scatters pathologic products.

Traumatic Hematomyelia.—In the woman of 40 the injury from an automobile accident entailed the Brown-Séquard syndrome with dissociation of sensibility suggesting syringomyelia, fatal the ninetieth day.

Paris Médical

June 4, 1921, 11, No. 23

*Infectious Diseases in 1921. C. Dopter.—p. 437.

*Serotherapy in Pneumonia. E. Sacquépée.—p. 443.

*Infection with Morgan's Bacillus in Adults. A. Besson and De Lavergne.—p. 449.

*Epidemic Encephalitis in the Pregnant. R. Jorge (Lisbon).—p. 454.

Contagiousness of Epidemic Encephalitis. C. Dopter.—p. 458.

Infectious Diseases in 1921.—In this survey, Dopter cites among the more interesting recent works on infectious diseases the report of Levaditi and Harvier on experimental epidemic encephalitis, induced in rabbits by inoculation with brain, spinal cord or optic nerve tissue from clinical cases of the disease. The filtrable virus seems to be absent from the blood, bone marrow, lungs, kidneys, spleen and liver, and rabbits bore without harm inoculation in the peritoneum, veins and trachea and also in the intact nose. When the nasal mucosa was scarified, inoculation was successful, as also in the brain, eye, testicle or peripheral nerves. The virus retains its virulence after desiccation in a vacuum, even in contact with sulphuric acid or potassium hydroxid. Suc-

cessive passages through rabbits render the virus pathogenic for monkeys, guinea-pigs and mice. Their research has disproved any specific relations between the virus of this encephalitis and of poliomyelitis. Dopter's paragraph devoted to yellow fever summarizes Noguchi's communications in *THE JOURNAL*.

Serotherapy in Pneumonia.—The mortality was 5.4 per cent. in the thirty-seven cases of pneumonia in soldiers given serotherapy. In three cases the wrong strain was used; in some other cases coincident purulent pleurisy seemed to annul the action of the antiserum.

Infection with Morgan's Bacillus.—Besson and De Lavergne cultivated Morgan's bacillus from some cases of simple diarrhea in soldiers, and they found it also in pure culture in a case of fatal cholericiform enteritis.

Epidemic Encephalitis in the Pregnant.—Jorge has compiled an obstetric series of twenty-seven cases, including Schultze's case in *THE JOURNAL* in 1920. The pregnancy seems to render the prognosis graver, but the evidence does not show any promise of improvement from emptying the uterus. In some cases the absence of pain at labor was commented on. In one case reported from Coimbra the child was in deep cyanosis when born and exhibited abdominal myoclonus of the same type and localization as the mother, and other signs of epidemic encephalitis. The mother died but the child rapidly threw off the disease. Santi has published a similar case of congenital epidemic encephalitis only that the disease was mild in the mother and she promptly recovered, while the infant died in a few days; necropsy revealed the typical lesions of the disease. These two cases demonstrate that the virus must circulate in the blood as otherwise it could not pass through the placenta.

Presse Médicale, Paris

June 11, 1921, 29, No. 47

Myoclonic Uremia. H. Roger and A. Chaux.—p. 461.

*The Bacteriophagum. F. d'Herelle.—p. 463.

*Neuromuscular Electric Excitability. A. Strohl.—p. 464.

Treatment of Acne. A. Survey. L. Cheinisse.—p. 466.

Bacteriophagum Conferring Immunity.—D'Herelle reports the result of further research on the bacteriophagum. His preceding work was described recently in the editorial on page 126. He now announces that not only clinical improvement coincides with the appearance in the feces of a strong bacteriophagic action but that it is possible to immunize against the disease by injection of the bacteriophagum active against the causal bacterium. As convalescence develops, a bacteriophagum appears in the stools active against the pathogenic bacteria involved, and this bacteriophagum can be cultivated indefinitely in vitro at the expense of the pathogenic bacteria. When it is injected into other subjects, the pathogenic bacteria are unable to proliferate, and it is thus possible to confer immunity. He has been experimenting mainly with avian typhoid and hemorrhagic septicemia in cattle and plague in rats. Avian typhoid is an extremely contagious disease in domestic fowls. He experimented in twenty-five poultry farms with a total of 2,100 fowls. Each had lost during the preceding two weeks from 20 to 50 per cent. of the fowls from the disease. Then 600 fowls were given by ingestion 1 c.c. of a culture of the bacteriophagum active against *B. gallinarum*, and 1,500 were given a subcutaneous injection of 0.5 c.c. of the same culture. Not one of these fowls in these twenty-five poultry farms died thereafter, while the epizootic continued to decimate the other poultry farms in the vicinity. Even more convincing results were obtained with hemorrhagic septicemia in 100 buffaloes or young bulls in Indo-China. This disease kills inevitably in twenty-four hours, but injection of 0.25 c.c. of the "bacteriophagum anti" conferred immunity to such an extent that the animal could bear without harm test inoculation with a culture of the pathogenic bacterium a thousand times the positively lethal dose. Rabbits can also be rendered refractory to dysentery toxin in the same way, and in seven cases of grave dysentery in man, injection of 1 c.c. of an antidysentery bacteriophagum was followed in from twenty-four to thirty-six hours by the disappearance of blood and bacilli from the stools.

Measurement of Neuromuscular Excitability.—Strohl gives an illustrated description of the egersimeter he has devised for this purpose.

June 15, 1921, 29, No. 48

*The Hemoclastic Reaction in the Pregnant. Didier and Philippe.—p. 473.
*Topography of Small Intestine. A. C. Guillaume.—p. 474.

The Liver in Pregnancy.—Didier and Philippe report the findings with the latest methods of testing the functioning of the liver in twenty-six apparently healthy pregnant women. Impairment of the proteopexic function of the liver was evident in only 35 per cent. after test ingestion, fasting, of 200 gm. of milk. Glucose and lactose were found constantly in the urine of twenty-two women at or close to term, and the hemoclastic reaction showed that the liver was responsible in 60 per cent. of these cases.

Topography of Small Intestine.—The location of the loops was recorded in forty cadavers and in 270 hernia cases, and compared with the roentgen-ray findings. The topography seems to be remarkably regular; certain loops are almost invariably to be found in certain locations in both the living and the dead. One of the instructive measures applied was the driving deep into the cadaver long fine needles at certain definite points.

Progrès Médical, Paris

June 4, 1921, 36, No. 23

*Hour-Glass Stomach. F. Ramond, C. Jacquelin and Borrien.—p. 265.
Surface Tension and Viscosity of the Blood During Anti-Anaphylaxis. F. Arloing and P. Vauthey.—p. 267.
Metrorrhagia in Young Girls. Dalché.—p. 269.
Pepsin and Gastric Organotherapy. G. Faroy.—p. 270.

Hour-Glass Stomach.—Ramond and his co-workers say that during the preceding month they found three cases of biloculation of the stomach at necropsies of adults, but they accept this as a cadaveric phenomenon. In one of their clinical cases, a woman of 43 had had symptoms suggesting a gastric ulcer twenty years before, but these became attenuated and symptoms indicating merely hour-glass stomach followed. The operation after twenty years of these revealed functional constriction. The primary ulcer had healed completely, but the functional disturbance it had entailed had persisted indefinitely. Spasmodic contraction may occur as a ring or as a niche, projecting inward, an invagination from reflex action, either from an ulcer opposite or cholecystitis, duodenal ulcer, appendicitis or painful salpingitis. It had persisted in one of their cases for four years to the death of the patient. This narrow deep invagination in the wall of the greater curvature from reflex action with a cancer, gradually broadens as the walls lose their elasticity until the gap in the outline of the stomach shadow becomes rounding and is mistaken for the cancer itself. This is the reason why radiologists locate the cancer as a rule in the greater curvature when in fact the cancer is on the wall opposite. If biloculation from organic cause requires treatment, it has to be surgical. They describe the various clinical pictures encountered and means to remedy conditions.

Revue de Médecine, Paris

February, 1921, 38, No. 2

*Idiopathic Dilatation of the Esophagus. E. Bensaude and G. Guénaux.—p. 65.
*Nitrogen and Cholesterin in the Blood in Migraine. Rémond and Rouzaud.—p. 97.
Paroxysmal Congenital Cyanosis in Infant. M. Péhu and L. Langeron.—p. 113.

Diffuse Dilatation of the Esophagus.—Bensaude and Guénaux give the details of six cases of idiopathic enlargement of the esophagus and of one with atony, which demonstrates the analogy between atony and dilatation of the esophagus in such cases. Cardiospasm is by no means a constant finding with idiopathic dilatation, and there is much to sustain the assumption that the tendency to dilatation is due to some derangement of the innervation of the esophagus and cardia, modifying the peristalsis of the former and the contraction of the latter. Spasm of the pylorus has frequently coincided with spasm of the cardia in their experience. The diffuse enlargement of the esophagus invites malignant disease; cancer developed in two of their six cases.

The diagnosis is not always easy, even with roentgenoscopy, as they show with typical roentgenograms. In one young man an ulcer at the cardia was responsible for the dilatation; fatal perforation followed too vigorous attempts to open a passage through the cardia. Persons with this idiopathic dilatation get accustomed to it and seldom consult a physician until all solid food is arrested; in two of the cases reported the discovery of the dilatation was a surprise during roentgenoscopy for some other reason. There may be a sensation as of a ball or an insect in the throat, which diverts attention, being accepted as an indication of hysteria. Some of their patients were obliged to sleep semiseated to prevent vomiting on reclining. In one case abortion had been induced, as the uncontrollable vomiting had been ascribed to the pregnancy; relief was finally obtained by gastrostomy and retrograde dilatation of the cardia. In another case the supposed dilated esophagus proved to be the congenitally intrathoracic stomach.

The Nitrogen and Cholesterin Content of the Blood in Migraine.—Rémond and Rouzaud have been applying tests of liver and kidney functioning in forty-six cases of migraine between attacks. Their findings show that far from being "perfectly well between attacks," as some textbooks say, azotemia and cholesterinemia and low blood pressure indicate that liver, kidneys and heart are temporarily or permanently below par. A tendency to sagging kidney is also common with migraine. Treatment of migraine should be much the same as for gout, dietetic, exercise in the open air, etc. Drugs to stimulate the liver add another poison to those already in evidence, but sodium sulphate or sodium citrate in small, repeated doses may render good service, and liver and bile organotherapy even more. A vigorous course of alkaline mineral waters is one of the most useful weapons in our arsenal. A sagging kidney should be fastened in place; this alone may suffice to ward off further attacks. A connection with thyroid or ovarian insufficiency is evident in some cases, and these benefit from the proper organotherapy.

Schweizerische medizinische Wochenschrift, Basel

May 26, 1921, 51, No. 21

*Osmotic Hemolysis. E. Reicher.—p. 481.
Local Anesthesia in Treatment of Fractures. E. Hagenbach.—p. 488.
Paraplegia in a Syphilitic. L. Monfrini.—p. 490.
Greasing the Sole to Obtain Outline for Flat-Foot Inlay. H. Debrunner.—p. 493.

Toxic Injury of Blood Corpuscles.—Reicher tested the resisting power of the erythrocytes to various hypotonic salt solutions in various diseases, and tabulates the findings. She emphasizes that the blood corpuscles are easily accessible "surviving organs" which allow a glimpse into the actual condition of the body cells at the moment. Her tables confirm that the toxic substances generated in infectious diseases injure the cells of the body, as evidenced in the prompt laking of the blood, and that this occurs likewise in conditions of undernourishment. The fluctuations in osmotic hemolysis parallel the corresponding injury of the tissues, and hence these readings throw light on the biologic process and on the prognosis. Reicher is assistant in Sahli's medical clinic, and the tests were applied to nearly 100 subjects, including nine over 60. In the normal, hemolysis begins at the 0.46 or 0.44 per cent. solution of sodium chlorid. Total hemolysis occurs at 0.36 to 0.30 per cent. In the aged, hemolysis began between 0.52 and 0.60 per cent. and was complete at 0.32 to 0.40 per cent. saline. Each of the set of test tubes contains 20 mm. of blood and 3.5 c.c. of physiologic sodium chlorid solution, differing in concentration by 0.02 per cent. The reading occurs in ten minutes and again at the second and twenty-fourth hours at room temperature. The blood is allowed to lie along the walls of the tube for a few seconds, to oxygenate it, before the saline is gently added.

Riforma Medica, Naples

May 28, 1921, 37, No. 22

Hemorrhagic Leukemic Infiltration in Thigh Muscles. Taddei.—p. 505.
Apparatus for Determination of Tension of Alveolar Gases. A. Barlocco.—p. 507.
*Action of Thermic Stimulation of Skin on Mucosa of Trachea and Bronchi. A. Azzi.—p. 509.
Fracture of Base of Skull. C. Righetti.—p. 511.

Therapeutic Anaphylaxis. E. Pesci.—p. 514.
*Cancer of Rectum. E. Aievoli.—p. 517.

Variations of Temperature of Mucosa of Air Passages to Correspond to Thermic Stimulation of Certain Areas of the Skin.—Azzi adds five clinical experiments and a further series on animals to his previous series which have all been concordant in demonstrating that the expired air (and hence the lining of trachea and bronchi) has its temperature reduced by from 0.4 to 0.6 of a centigrade degree when certain regions of the skin are chilled. This occurs although the general temperature may show no decline. The drop in temperature is transient but it testifies to the parallel vasomotor phenomena in the skin and in the mucous membrane of the entire respiratory tract, vasodilation in one being accompanied by vasodilation in the other, and the same holds good for vasoconstriction. The respiratory mucous membrane can therefore be regarded as forming part of the peripheral circulation. These phenomena explain pneumonia after chilling, for example, and the peculiar liability to secondary infection after tracheotomy. One practical conclusion from this research is the advantage of applying ice to the skin to arrest hemoptysis. Empiric revulsion to the skin, inducing local hyperemia, starts the same process of hyperemia in the air passages. Azzi's previous report on this subject was summarized, June 11, 1921, p. 1713.

Cancer of the Rectum.—Aievoli compares some recent works on the technic for operative treatment of malignant disease of the rectum, especially by the combined abdominal and perineal route.

Brazil Medico, Rio de Janeiro

May 7, 1921, 35, No. 19

*Carcinoma in Nail Matrix of Big Toe. C. Pinheiro Chagas.—p. 233.
Milk and Infant Mortality. Mariano Cursino.—p. 235.
Plans for Child Welfare Exposition. Moncorvo Filho.—p. 236.

Cancer in Nail Matrix.—Pinheiro comments on the rarity of malignant disease originating in the nail. The textbooks scarcely mention it, and Heller could compile in 1,900 only three cases for his work on disease of the nails; one was on the hand. In the case here illustrated, in a laboring man of 60, the toe had been injured in an accident eighteen years before the epithelioma developed in the nail matrix of the big toe.

Gaceta Médica de Caracas

March 15, 1921, 28, No. 5

Indirect Campaign Against Venereal Disease. Medina Jiménez.—p. 55.
*Bilharziasis and Its Treatment. J. Quintini M.—p. 56.
*Serotherapy of Mumps. J. de D. Villegas Ruiz.—p. 60.
Delbet's Vaccine Therapy. Razetti.—p. 61. Idem. Villegas Ruiz.—p. 64.
Splenomegalia. F. A. Riquez.—p. 65.

Bilharziasis.—Quintini has been giving tartar emetic to nine patients with bilharziasis, beginning with injection of 2 cg. to a total of 108 cg. in the course of one or two months. The cases were of the pseudodysentery, febrile, or liver types, and great improvement was the rule, no ova being found in the stools thereafter, three specimens examined on alternate days. The debility was extreme in one man with hookworm and ascarids in addition to *Schistosoma mansoni*, and he died in two days after the course was begun. Seven other patients failed to complete the course. In some of the patients the injection caused nausea, cough or chilliness, but this was easily prevented by giving a little codein an hour beforehand.

Diphtheria Antitoxin in Treatment of Mumps.—Villegas quotes some French and Italian clinicians who treated mumps in young men with injections of diphtheria antitoxin, hoping in this way to ward off complicating orchitis. One reported a series of twenty-six cases without orchitis; another a series of seven cases, and another only 5 per cent., in sixty cases. These figures encourage further trials when compared with ordinary statistics which show orchitis on an average in 20 per cent. of the cases of mumps, with resulting atrophy of the testicles in 50 per cent. of those involved.

Revista de la Asoc. Médica Argentina, Buenos Aires

January to April, 1921, 34, No. 195-198

Consequences of Vagotomy in Guinea-Pigs. L. Giusti and B. A. Houssay.—p. 7.

*Fatty Degeneration in Fetus. P. I. Elizalde and J. J. Puente.—p. 10.
Experimental Destruction of Suprarenals. L. Giusti.—p. 15.
*Pituitary Extract and Motor Function of the Stomach. J. C. Galán.—p. 20.
*Contradictory Action of Pituitary Extracts. B. A. Houssay.—p. 23.
Suprarenals Do Not Modify Action of Pituitary Extracts. Id.—p. 26.
*Nervous Factor in Water Diuresis. O. M. Pico and J. J. Murtagh.—p. 28.
Ammonia Gas Poisoning. M. R. Castex, Romano and Galán.—p. 33.
Tuberculoma in Cerebellum. I. Allende and T. Martini.—p. 48.
Work of Austrian Red Cross in Fighting Epidemics. S. Mazza.—p. 71.
*Sarcoma of Conjunctiva. A. Oyenard.—p. 87.
*Hydatid Cyst in Vertex of Orbit. A. Tiscornia.—p. 92.
*Flat Sarcoma of the Choroid. R. Argañaraz.—p. 101.

Acute Fatty Degeneration in Fetus at Term.—Elizalde and Puente found signs of acute fatty degeneration in the parenchymatous organs of a child delivered by cesarean section after two days of ineffectual labor. They ascribe this acute degeneration to the effect of the ether given the mother, and the injury from the protracted labor. Deficient oxygenation in itself has a tendency to induce fatty degeneration.

Effect of Pituitary Treatment on the Stomach.—Galán's tests of the action of pituitary extract on the surviving stomach of the frog, cat, dog, rabbit, guinea-pig and white rat confirmed that it stimulated motor functioning of this organ, as also in the natural stomach of the dog when injected by the vein.

Pituitary Extracts.—Houssay explains how these extracts may differ in their action according to mode of preparation and deterioration with age, as well as with the dose, the species of animal, and the modification of the effect by anesthetics.

The Nervous Factor in Diuresis from Water.—The output of water after ingestion of a given amount was found to differ considerably in normal dogs and dogs that had had the nerves innervating the kidneys severed.

Melanosarcoma of the Conjunctiva.—The case described in the man of 50 is the only one encountered in the ophthalmologic service at Buenos Aires in the last fifteen years, out of a total of 100,000 applicants.

Hydatid Cyst of Orbit.—The location of the cyst in the apex of the orbit rendered the differential diagnosis puzzling, and required a Krönlein operation to reach it.

Flat Sarcoma of the Choroid.—Argañaraz states that thirty-two cases of sarcoma of the uveal tract have been encountered at the eye clinic at Buenos Aires during the thirty-five years of its existence up to 1915, but no instance of diffuse "surface" sarcoma. Since then two cases of the latter have required enucleation. Fuchs has compiled only four of the kind in European literature. In Argañaraz' cases one patient was a man of 30; in both cases the melanotic sarcoma lay like a shell around the choroid, encircling more than half of its circumference. Vision is completely lost before glaucoma develops; one of the patients was blind for a year before any other symptom attracted attention. The loss of vision is usually rather abrupt.

Revista Médica del Uruguay, Montevideo

May, 1921, 24, No. 5

Ectromelia of Legs in New-Born Infant. M. Armand Ugon.—p. 201.
*Endocarditis Consecutive to Abortion. C. P. Colistro and M. Silva Ferrer.—p. 203.
*Serotherapy in Pregnancy Toxicoses. F. Cortabarría.—p. 210.
Intestinal Hemorrhage in Young Infant. C. Pelfort.—p. 218.

Septic Endocarditis Secondary to an Abortion.—The clinical history of the case reported, supplemented by the necropsy findings, showed that the woman had borne her old mitral stenosis for many years with perfect compensation through two childbirths. Then came a septic abortion, with embolism, the embolus lodging in the mitral valve, with septic endocarditis and further embolism, the embolus this time lodging in the brain. Evidences of a latent tuberculous process in the lungs were found likewise, confirming that mitral stenosis plus tuberculosis does not interfere with normal pregnancy and childbirth so long as secondary infections can be warded off.

Serotherapy in Pregnancy Toxicoses.—Cortabarría states that no benefit followed injection of serum from a healthy pregnant woman in the first of the two cases of pregnancy

intoxication he reports. This was the tenth pregnancy of the woman of 30, and she had had jaundice and pruritus at each with other signs of insufficiency of the liver. Under calcium chlorid and epinephrin the pruritus subsided somewhat. The second patient had uncontrollable vomiting, and this too proved refractory to injection of serum from a healthy woman at the fifth month of a pregnancy. He accepts jaundice in cases of uncontrollable vomiting as warning to empty the uterus at once.

Semana Médica, Buenos Aires

April 28, 1921, 28, No. 17

- *Hydatid Cyst in Uterine Wall. A. Chueco.—p. 481.
- *Induced Pain as Sign of Kidney Calculus. J. R. Goyena.—p. 487.
- *Epithelioma of Male Urethra. S. Barabino Amadeo.—p. 488.
- *Protein Therapy of Hypopyon. Almeida Huerta.—p. 502.

Cyst in Posterior Wall of Uterus.—Chueco comments on the difference between the precautions required at a laparotomy opening up a focus of infection in the adnexa, for example, and opening up a focus through the vagina. With the latter route, if the focus should be ruptured and infectious material scattered, it would do no harm in comparison to the consequences of such a rupture scattering infectious material over the peritoneum. This reasoning guided him in the case of the large, intramural hydatid cyst here described, in a virgin of 15. The exploratory laparotomy revealed the huge cyst, but Chueco then closed the abdomen and attacked the cyst through the vagina.

Differential Pain with Calculus in Kidney.—Goyena recalls the diagnostic importance of the pain induced in the kidney by percussion of the lumbar region. Percussing from the eighth dorsal vertebra, when the kidney region is reached, the patient exclaims with the sharp sudden pain induced. If there has already been an attack of pain suggesting kidney colic, this sign differentiates the cause. With any abdominal affection, percussion of the lumbar region will usually elicit more or less painful sensations, but nothing like the severe, deep visceral pain experienced with nephrolithiasis.

Epithelioma of Male Urethra.—Barabino reports a case with photomicrograms and necropsy findings. It was inoperable when first seen in the man of 53. He discusses the early symptoms in such cases, emphasizing their vague character and the necessity for routine endoscopy and microscopic examination of an excised scrap as the only means for detection in time to arrest the malignant disease.

Protein Therapy of Hypopyon.—In the case described, in a man of 35, the hypopyon had developed after contusion of the eye. It retrogressed after five intramuscular injections of 10 c.c. of milk, but traumatic cataract developed later.

Archiv für Gynaekologie, Berlin

1920, 114, No. 1

- *Duration of Pregnancy from Medicolegal Standpoint. C. Ruge.—p. 1.
- *Genital Tuberculosis in Women. R. Kundrat.—p. 51.
- *Endogenous Infection in Gynecology. R. Salomon.—p. 105.
- *Operative Treatment of Retroversioflexio Uteri. A. Scitz.—p. 141.
- *Volume of the Blood During Pregnancy. A. Mahnert.—p. 168.
- *Theory as to Origin of Vesicular Mole. Hinselmann.—p. 197.

Duration of Pregnancy.—Ruge declares that it is impossible to calculate exactly the duration of pregnancy even when the date of reception of the sperm is known, as several days may elapse before actual conception. The development of the child, furthermore, is no criterion. A period of less than 230 days is out of the question when the child shows the more important signs of maturity. He presents an array of data to sustain the view that the period preceding 302 days before birth might be accepted as the period of conception. The legally accepted limit for the period of conception in paternity litigation in Germany is now from the one hundred and eightieth to the three hundred and second day before birth.

Genital Tuberculosis in Women.—Kundrat analyzes the pathologic findings in sixty-six operative cases of tuberculosis of the female internal genital organs, and compares them with the literature.

Spontaneous Infection in Gynecology.—Salomon presents evidence of the occurrence of spontaneous endogenous infection in gynecologic cases. In some he here discusses in detail this was manifest in 11.1 per cent. Bacteria living in the

vagina or cervix in a previously latent state, suddenly acquire virulence as the immunity balance is upset from any cause, and the defensive forces are no longer able to hold them in check. He adds that before any gynecologic operation which will be liable to upset the immunity balance, the vagina should be examined for virulent micro-organisms, the blood for their toxins, and the antibody titer determined. The physician must aim to exclude endogenous infection by rendering the bacteria in the vagina harmless, and artificially enhancing the immunity forces by an autovaccine made from the vaginal bacteria, and he must be the one to decide when the patient is ready for the operation.

Archiv für Kinderheilkunde, Stuttgart

May 21, 1921, 69, No. 5

- *Fate of Children with Congenital Syphilis. C. Husten.—p. 319.
- *Rare Malformation of Heart. A. Gödel.—p. 337.
- *Prognosis of Acute Poliomyelitis. F. Wahler.—p. 343.
- *Febrile Reaction to Vaccination. F. Weil.—p. 351.
- *Rachitic Dwarf Growth. P. Gerstl.—p. 357.
- *Enlarged Heart as Child Body Grows. F. M. Groedel.—p. 365.
- *Abdominal Pains in Children. A. Peiper.—p. 378. Cont'd.

Fate of Children with Congenital Syphilis.—Husten emphasizes the necessity for enforcing compulsory treatment of children with congenital syphilis. In his experience at Freiburg with thirty-nine cases in the five years ending 1918, half the children soon died from intercurrent disease, and only sixteen are known to be living now. A third died of those given partial treatment, but only one of those given thorough courses. Of the fourteen still living and reexamined personally, 50 per cent. are imbeciles or idiots. Most of these children with congenital syphilis had been brought to the clinic on account of some casual infection, and it proved impossible to convince the parents of the necessity for persevering treatment of the syphilis. He endorses the bill now pending in the legislature which makes notification compulsory for all children born with congenital syphilis, and also makes treatment of venereal diseases compulsory and gratis. This would of course include infants with congenital syphilis as well as adults.

Prognosis of Acute Poliomyelitis.—Wahler says that unless a tendency to improvement is evident by the time the child is dismissed from the hospital, there is not much hope of improvement later. No benefit was apparent in such cases even after months of orthopedic and surgical measures, and no improvement has been found in those examined from two to six years later. On the other hand, those that displayed the slightest change for the better at the close of the acute stage have gone on improving since. The dispensary and orthopedic treatment applied for months may have contributed to this, or have been the decisive factor.

Rachitic Dwarf Growth.—The prematurely born child died when a year old, weighing only 2,780 gm. and measuring 49 cm. The stunting of the growth was probably traceable to the rachitis, supplemented by digestive disturbances and splenomegaly of the Gaucher type, the latter running an acute course.

The Heart in the Growing Body.—Groedel has found what he calls the heart quotient—the ratio between the width of the heart and the width of the lungs at the base—very instructive in clinical cases. The width of the lungs at the base is usually proportional to all those factors which might have a physiologic influence on the diameter of the heart. This quotient is usually 1:1.9 in both children and adults. He discusses here what happens as the child grows when its heart is primarily hypertrophied. The heart quotient may gradually approximate normal, as the child becomes a youth, or the pathologic proportions may be maintained. He cites an example of each type.

Beiträge zur klinischen Chirurgie, Tübingen

1921, 121, No. 3

- *Suppuration in the Knee. A. Lāwen.—p. 479.
- *Wounds of the Brain. F. Demmer.—p. 491.
- *Physiology of Concussion of the Brain. Breslauer-Schück.—p. 590.
- *The Mechanism of Concussion of the Brain. H. Rahni.—p. 593.
- *Mechanism of Bursting of the Intestine. W. Schönleber.—p. 597.
- *Operative Treatment of Diverticulum of the Esophagus. H. Lüpke.—p. 612.
- *Actinomycosis of the Salivary Glands. E. Schwarz.—p. 629.

- *Results of Operations for Cancer. E. Brattström.—p. 636.
 *Mammary Cancer. W. Boss.—p. 642.
 Luxation of the Clavicle. W. Boss.—p. 679.
 Fracture of the Patella. F. von der Hütten.—p. 687.
 Traumatic Destructive Focus in the Scaphoid Bone. F. von der Hütten.—p. 704.
 Histology of Plastic Induration in the Penis. O. Wiedhopf.—p. 712.

Suppuration in the Knee.—Läwen describes five cases showing the fine results that can be obtained with severe suppuration in the knee, rebellious to ordinary measures, when the joint is opened by an incision from the side with horizontal resection of the posterior condyle of the femur. The article is illustrated.

Wounds of the Brain.—Demmer reports from Hochenegg's service the ultimate outcome in 255 cases of injuries of the skull 1910-1914 and of fifty-two gunshot wounds of the skull, in addition to a large number of war cases and of concussion of the brain. All this material confirms the great importance of lumbar puncture as an aid in diagnosis and in relief of pressure on the brain, particularly with concussion of the brain. With an actual wound of the brain, the results have been far better since the practice has been adopted of enlarging the opening in the skull to have the diameter of the cavity the same at all depths. This cavity is then packed with a moist, incompressible tampon of the Mikulicz type. This is covered with a firm bandage and the brain is drained by repeated lumbar puncture. The article is illustrated and the fine results emphasized. The present condition in fourteen of these thirty-four tampon cases three years later shows that all have had their earning capacity restored and their symptoms have subsided completely or very nearly so. No attempt at a plastic operation has been made yet and the defect has completely healed. Some wear a protecting pad and except for occasional slight headache, dizziness and tinnitus all seem to be in good condition; three have slight impairment of the memory and one in concentrating his attention. Some other patients have not been heard from but the results in all from whom reports have been received are most gratifying, and confirm the value of this tampon-lumbar puncture treatment.

Results of Operations for Cancer.—Brattström gives the ultimate outcome in 210 cases of mammary cancer given operative treatment between 1905 and 1915; sixty-three have been cured. In five cases a primary tumor was found in other organs at the time or soon after. For the last two years roentgen exposures have been systematically given after the operation.

Prognosis of Mammary Cancer.—Boss obtained the best results with operative measures in the cancers of the scirrhus type, while the medullary cancers proved more malignant. Only two have been free from recurrence of the eight medullary cancers given systematic roentgen exposures after mastectomy.

Deutsche medizinische Wochenschrift, Berlin

May 26, 1921, 47, No. 21

- Appendicitis. H. Kümmel.—p. 581. Cont'd.
 Transplants to Bridge Nerve Defects. Cassirer and Unger.—p. 586.
 *Skin Tube to Close Artificial Anus. E. Unger and E. Schwabe.—p. 587.
 *Treatment of Perforating Ulcer of Foot. L. Kleinschmidt.—p. 588.
 Idem. E. Nordmann.—p. 588.
 Phagedenic Suppuration of Lymph Glands in Groin. G. Wolff.—p. 589.
 Prostheses for Short and Pathologic Stumps of the Leg. M. Böhm.—p. 589.
 Recording of Angiospasm. Hinselmann and Haupt.—p. 590.
 Cadaver Position of the Vocal Cords. J. Fein.—p. 591.
 Parasyphilis. L. Arzt and W. Kerl.—p. 592.
 Abortive Treatment of Syphilis. Blanck.—p. 592.
 Quaker Food Distribution and Rohrer's Index. Bokofzer.—p. 593.
 Studies on Infantile Gonorrhea. I. E. Valentin.—p. 594.
 Eye Injuries Resulting from Skiing. J. Strebel.—p. 595.
 Modern Cancer Treatment. O. Strauss.—p. 597.
 Vomiting and Obstipation in Children. L. Langstein.—p. 599.

Skin Tube to Shut Off Artificial Anus.—Unger and Schwabe applied the technic that has been devised for cinematization of amputation stumps, making a tube out of a bridge of skin rolled up and sutured to form the tube, the ends still attached. The middle of the tube was drawn through under the colon and out through the skin, and sutured to the opening in the skin beyond the colon. The outer wall at this elbow was cut across, and a rod was inserted in each leg of the skin tube. A pad was worn which pressed the colon against these rods, thus closing the lumen of the intestine. They have applied

variations of this method in three cases and it seems feasible, they say. Two illustrations show the technic.

Treatment of Trophoneurotic Ulcer of the Foot.—Kleinschmidt reports surprising success with roentgen-ray treatment in two cases of rebellious perforating ulcer of the foot in syphilitics, one with tabes. The lesions healed completely after a single full dose in one and in the other after two full doses. E. Nordmann reports an operative case of recurring trophoneurotic ulceration of the foot after a war wound of the sciatic nerve with paralysis of the leg. He exposed the saphenous nerve and the saphenous vein down to the ball of the big toe, where they were divided and shifted to a tunnel made for them in the soft parts median from the ulcer. In three months the ulcer had healed completely, and the skin of the foot now looks more natural. O. Nordmann had previously reported a case of rebellious perforating ulcer of the foot, after injury of the tibial nerve, in which complete cure followed the shifting of the external popliteal nerve.

Münchener medizinische Wochenschrift, Munich

May 20, 1921, 68, No. 20

- Steinach's Rejuvenation Hypothesis. B. Romeis.—p. 600.
 Lymph Gland Ferments and the Wassermann Reaction. W. Gennerich.—p. 603.
 Concentration of Roentgen Rays. Taeckel and Sippel.—p. 604.
 Active Immunization Against Syphilis. R. Hilgermann and W. Krantz.—p. 605.
 Meniscus Injuries. W. Schaedel.—p. 607.
 Operation in Contracted Bladder. H. Flörcken.—p. 611.
 Clinical Aspects of Spinal Tumors. E. W. Taschenberg.—p. 612.
 Typical Pathologic Condition of the Second Metatarsophalangeal Joint. Unger.—p. 614.
 Isolated Laceration of Iliac Artery from Contusion. J. Dubs.—p. 614.
 Table for Roentgenologic Services. O. Hahn.—p. 615.
 Treatment of Puerperal Mastitis. A. Krecke.—p. 617.

Wiener klinische Wochenschrift, Vienna

May 19, 1921, 34, No. 20

- D'Herelle's Bacteriophagum Intestinale Considered from the Standpoint of Typhus. O. Bail.—p. 237.
 Pseudoleukemia. N. Jagic.—p. 238.
 Pathology of Electric Current "Burns." S. Jellinek.—p. 239.
 Invagination of Meckel Diverticulum. F. Depisch.—p. 240.
 *Phototherapy in Rachitis. P. Erlacher.—p. 241.
 Arteriosclerosis. F. Weinfurter.—p. 242.

Phototherapy in Rachitis.—Erlacher reports the results of the Hanau method of quartz lamp treatment in forty-six cases of rachitis. The patients ranged from 1 to 7 years of age. Every month comparative roentgenograms of the epiphyses of the right forearm were made. In all cases that could be thus controlled there was an undoubted improvement in the clinical picture; in most cases a complete cure was effected. At first the treatment was applied every second day but of late he has given daily treatments. He begins with five minutes each to the abdomen and back at one sitting. The time is lengthened by two minutes at each sitting until fifteen minutes each is reached. No ill effects of the treatment were noted. No changes in diet were ordered and no medication was employed. The number of sittings was usually from forty to sixty. The roentgenograms established the fact that the bones were becoming harder and firmer. The initial softness of the bones should, of course, be taken advantage of to straighten curvatures and correct deformities, while irradiation is continued, so that when the bones become firm they may be in the corrected position.

Zeitschrift für klinische Medizin, Berlin

1920, 89, No. 5-6

- *Peptone Test of Gallbladder Function. W. Stepp.—p. 313.
 *Derangement of Heart Impulse. Refisch.—p. 345.
 *Bone Disease of Central Nervous Origin. S. Robinski.—p. 361.
 Effect of Military Service on Blood of Indoor Workers. A. Rothacker.—p. 387.
 Typhoid and Five-Day Fever in Army Corps. H. Dembowski.—p. 410.

Peptone Test of Gallbladder Functioning.—Stepp confirms that the contents of the duodenum during periods of fasting contain little if any bile from the resting gallbladder. He starts up the flow of bile by injecting through the duodenal tube 30 c.c. of a 5 or 10 per cent. solution of peptone. The gallbladder is stimulated by this, and bile always poured into the duodenum in his experiments on fasting healthy

people. The dark colored bile was free from leukocytes. With disease of the gallbladder there is no reaction of this kind to the peptone, or if it occurs the bile thus derived contains more or less other pathologic elements. With mechanical obstruction, no bile can be obtained in this way. In three patients whose gallbladder had been removed, this test brought a partial response, confirming that the bile ducts may enlarge to serve as reservoirs for bile.

Derangement in Conduction of Heart Impulse.—Rehfishch discusses the mechanism for certain changes in the electrocardiogram and their significance. In a case described with bradycardia from partial heart block, a peculiar arrhythmia developed, a *doppelsinn des intervalls*.

Bone and Joint Disease in Disease of Central Nervous System.—Robinski analyzes the bone and joint processes liable to develop in tabes and syringomyelia, commenting on the resemblance between the processes in the two. However, tabetic disturbances occur more frequently in legs than in arms, while with syringomyelia the arms are usually involved, and the patients are almost exclusively men, and the process is generally restricted to a single side. His findings confirm that fractures do not occur spontaneously in long bones unless the bone is already pathologic. In estimating fractures in connection with industrial accidents, he warns that the physician's task is to record his objective judgment. He is not to plead the cause of the injured. The study of bone and joint affections and of spontaneous fractures in internal disease is extremely important for our estimation of industrial or other accidents, as he explains in detail, with seventy bibliographic title references.

Zeitschrift für Tuberkulose, Berlin

May, 1921, 34, No. 3-4

- *Organized Campaign Against Tuberculosis. F. Helm.—p. 161.
- *Pathologic Anatomy of Pulmonary Tuberculosis. S. Gräff.—p. 174.
- *The Leukocytes in Pulmonary Tuberculosis. E. Romberg.—p. 191.
- Droplets in Spread of Tuberculosis. C. Flügge.—p. 212.
- Increase in Tuberculosis During War. M. Kirchner.—p. 228.
- Tuberculosis in Bavaria. K. E. Ranke.—p. 272.
- *China-Workers and Tuberculosis. Thiele.—p. 303.
- *Immunity to Tuberculosis. F. Neufeld.—p. 312.
- *Conservative Treatment of Surgical Tuberculosis. A. Bier.—p. 329.
- *Surgery in Pulmonary Tuberculosis. F. Sauerbruch and A. Brunner.—p. 335.
- Destruction of Tubercle Bacilli in Sputum. P. Uhlenhuth and E. Hailer.—p. 340.

Silver Anniversary of Organized Campaign Against Tuberculosis.—This number of 184 pages is a special issue in honor of the twenty-fifth anniversary of the organization of the German Zentralkomitee zur Bekämpfung der Tuberkulose. Helm reviews the work accomplished in this quarter century: By 1914 Germany had 158 sanatoriums for adults and thirty-two for children with tuberculosis; 120 institutions for children threatened with tuberculosis; twenty-three for children with bone and joint tuberculosis, and 135 daytime sanatoriums and 18 schools in the woods. The death rate from tuberculosis declined during the twenty-five years from 24.9 per ten thousand to 13.87.

The Roentgen Rays and Pulmonary Tuberculosis.—Gräff took roentgenograms not long before death and made sections of the cadaver in the frontal plane, and compared the findings with the roentgenograms. This research covering four years and on 100 cadavers enabled the cause of every slightest shadow in the roentgenogram to be located and explained, as also the roentgen findings accompanying different lesions. Among the practical conclusions from the work is that localization of lesions by lobes is misleading, as the lobes vary in outline and overlap to such an extent. The clinical and roentgen findings distinguish between the processes with exudation and those with proliferation of tissue, the outlines of the latter being much more distinct. With blood-borne, disseminated tuberculosis and also inhalation tuberculosis the foci grow smaller peripherad. He never found an exception to this rule. The bronchogenous processes spread in the same way, but more along the front and side walls of the chest. This is particularly evident with the exudative type of process. This identity of the location of the air-borne and of the blood-borne infection shows that the mode of infection does not decide the local-

ization of the process. This is determined by functional conditions.

Clinical Signs with Various Types of Pulmonary Tuberculosis.—Romberg classifies chronic pulmonary tuberculosis as the exudative, the proliferative and the cirrhotic types. The exudative includes the bronchopneumonic and the pneumonic forms, and this requires different treatment from the other types and has a different prognosis, and can be clinically distinguished from them. He discusses the local and general reaction and the differential leukocyte count with each type, saying that by this means we can trace the evolution of the disease. His charts of the leukocyte reaction show high leukocytosis in the second, third and early fourth stages, as also displacement to the left, but no lymphocytosis, and no eosinophilia after the first two stages.

Immunity to Tuberculosis.—Neufeld reviews the history of conceptions in regard to this, especially Römer's success in passive transmission of immunity. This confirms that the immunity is due to specific reaction products, and not to the presence of a tuberculous focus, as some assert. Römer's work was done on sheep, and there seems to be much to sustain the view that the immunity is due to sessile antibodies, only a small proportion being found in the blood. Neufeld urges further research in this line with homologous serum on animals that we know acquire immunity with relative facility.

Conservative Treatment of So-Called Surgical Tuberculosis.—Bier relates that he has found heliotherapy by far the most potent means at our command for treatment of tuberculous processes in bones, joints, glands, tendons and skin, and, possibly, of kidneys and testicles, but it must be applied properly to be effectual. He remarks, "The apparently simple things—to which category sunlight treatment undoubtedly belongs—are the very ones that are usually done wrong." He agrees with Finsen that the therapeutic effect is connected with an inflammatory reaction in the disease focus. Rollier, on the other hand, ascribes the efficacy to the pigmentation transforming the short light waves into long waves. Bier accepts that the action of the rays on the tissues destroys protein, and the action from the protein products is what induces the focal and the general reaction. "The sunlight rouses the appetite, promotes assimilation, induces sound sleep, in short, the effect is like that from transfusion of blood, which we know is exclusively a protein body action. We must be on our guard not to allow too strong a reaction in either case." He adds that he has remained true to stasis hyperemia as a valuable adjuvant in treatment of tuberculous processes. A third important measure is internal administration of iodine. He gives adults 3.25 gm. of sodium iodid daily. "Conservative treatment has proved its efficacy even for the aged. Deep cold abscesses subside spontaneously; the superficial are punctured and emptied, repeating if necessary but never injecting iodoform or other chemical. Large tuberculous sequesters do not call for operative intervention as they are regularly resorbed; only rarely are they expelled. Extracapsular foci in the bone near a joint heal under conservative measures without danger for the joint. The iodine and the stasis hyperemia aid in the resorption of the sequester, which can be followed with the roentgen rays. Operative measures should of course be considered in cases rebellious to the conservative; but it is not always the most advanced and extensive cases that prove refractory. The rebellious cases are usually fungous growths in the capsule, hard glands, and nodular lupus."

One great argument against surgical treatment is that the focus we have in view is not always the only focus, while heliotherapy acts on all at once. Bier adds in conclusion that the idea that a tuberculous bone or joint process must be immobilized, for it to heal, seems almost ineradicable in medical circles. In reality, all that is necessary is to relieve it of weight bearing, and keep this up for three months after complete healing. Laryngeal tuberculosis may also prove amenable to heliotherapy plus stasis hyperemia and iodine internally. Complicating pulmonary tuberculosis heals with the rest, but the primary is more refractory, possibly, he adds, because the technic has not yet been perfected. (The sanatorium, Hohenlychen, where he has accomplished results

that compare favorably with Rollier's in the Swiss mountains, is near Berlin. It has only 250 beds, but an arrangement has been made recently for a day-time sanatorium nearer Berlin, with places for 400, the patients going home at night.)

Surgical Treatment of Pulmonary Tuberculosis.—Sauerbruch and Brunner regard as one of the main advantages of this that persons who are sowing tubercle bacilli broadcast, can be rendered harmless for others by surgical measures. When this cannot be accomplished with an artificial pneumothorax, they resect from the first to the eleventh rib, close to the spine, cutting out under the periosteum—from 4 to 8 cm. of the ribs at two or more sittings. They report 26 per cent. with no further expectoration or manifest tubercle bacilli among their fifty-seven patients given this treatment in the last nearly three years; 42 per cent. were merely improved. No benefit was realized in 25 per cent. These figures approximate those in a previous series of 381 cases published, with 35 per cent. cured and 40 per cent. improved. They declare that no patient should be allowed to go year after year scattering bacilli from a rebellious unilateral process when he can be readily transferred to the closed category by this means. A climatic course of aftertreatment is advisable, it being distinctly emphasized that this operative measure does not cure, but merely provides better conditions for a spontaneous cure.

Zentralblatt für Chirurgie, Leipzig

May 21, 1921, 48, No. 20

- Treatment of Osteomyelitic Bone Cavities by the Payr Method. A. Hedri.—p. 698.
Is Ethyl Chlorid Anesthesia Entirely Innocuous? Hartleib.—p. 702.
Stab Injury of Left Pulmonary Vein. A. Hofmann.—p. 704.
*Treatment of Prolapse of Rectum in Children. Plenz.—p. 706.
Contrast Mediums for Pyelography. E. Joseph.—p. 707.
Enucleation of a Fist-Sized Perithelioma from the Head of the Pancreas. E. Pólya.—p. 708.
Technic of Albee Operation in Tuberculous Spondylitis. J. Hass.—p. 709.

Treatment of Prolapse of Rectum in Children.—Plenz opposes the opinion advanced by many physicians that in children prolapse of the rectum should be given ample chance to heal spontaneously. Children with prolapse of the rectum look forward with dread to every evacuation of the intestine, for which reason they endeavor to postpone a movement, and the metabolism and the general condition of the whole organism are very much disturbed by this enforced constipation. These facts alone furnish sufficient grounds for operative intervention, but when one sees how the children suffer during defecation he thinks that operation becomes imperative in order to relieve them of their suffering. He does not approve of Thiersch's wire ring as it nearly always induces suppuration and causes considerable trouble during defecation. Other operations are of too radical a nature, and adhesive plaster strapping is unsanitary and often requires treatment extending over many weeks. He therefore approves the use of a fascia ring to encircle the anus. The advantages of the method are that elastic, autogenous material is employed which fits the requirements; the operation is short and not at all dangerous, and convalescence extends over ten days at the most. Plenz has operated now on thirteen children and with durable success in all. He takes a strip of fascia from the thigh, from 12 to 15 cm. long by 1.5 cm. wide, and passes it around the anus in a subcutaneous tunnel burrowed for it. The ends are fastened by passing one end through a slit in the other end, and then spreading the ends out and suturing the edges to the edge of the strip. He makes the two incisions on the raphe in boys, and to the side of the anus in girls. This answers all the purposes of the wire ring without its drawbacks.

Zentralblatt für Gynäkologie, Leipzig

May 21, 1921, 45, No. 20

- The Fourth Maneuver (Leopold's Classification) in Obstetric Examination. H. Fuchs.—p. 694.
Caesarean Section on Account of Fever. W. Koerting.—p. 697.
*Agnesia of Both Kidneys in Fetus. O. Hürzeler.—p. 702.
Congenital Aplasia of the Cutis. E. Graff.—p. 705.
Congenital Atresia of the Ileum. E. Levy.—p. 707.
Methods of Skin Suture. E. Opitz.—p. 709.

Agnesia of Both Kidneys in Fetus, with Absence of Amniotic Fluid.—Hürzeler reports the case of a child who died twenty minutes after birth, in whom both kidneys were lacking but in place of which bilaterally a formation the size of a hemp-seed was found, resembling a lymph gland. As the amniotic fluid was also lacking, the case raises the question whether the fetal kidneys play a part in connection with the origin of the amniotic fluid, as is believed by some.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 7, 1921, 1, No. 19

- *Shortening of Leg with Hip-Joint Disease. H. Timmer.—p. 2507.
*Inherited Diabetes Insipidus. E. Janzen and J. Broekman.—p. 2519.
Nonmalignant Stenosis of Small Intestine. A. E. Sitsen.—p. 2532.
Shooting at Smugglers. L. Janknecht.—p. 2533.
History of Medical Service in Dutch East India Company. J. Haver Droeze.—p. 2535.
*Medical Subjects in Art. J. B. F. van Gils.—p. 2561.
A Seventeenth Century Medical Journal. E. D. Baumann.—p. 2563.
Tuberculosis Death Rate Before and Since the War. B. H. Sajet.—p. 2606.

Shortening with Hip-Joint Disease.—Timmer discusses the estimation of the shortening from the standpoint of the orthopedic surgeon. He measures the limb reclining, and as the subject stands, with books placed under the foot, to bring the pelvis level. The measurements differ in abduction and adduction, and the kind and degree of shortening aid in the differential diagnosis.

Hereditary Diabetes Insipidus.—Janzen and Broekman describe a case and family in which fourteen cases were known in this or preceding generations. Their case confirms the peculiar intensity of this hereditary form, its regular persistence from birth till death, and the fact that the general health does not seem to suffer. In the present case the disease appeared in four of five generations, apparently skipping the second. In one generation only one of twelve children had it, but in another, half of the children. In all there were four males and ten females affected, but in the seven other families that have been published there were fifty-seven males to twenty-two females. In one family, diabetes insipidus alternated with diabetes mellitus.

Medical Subjects in Art.—Jan Steen's works are discussed, and the significance of the chafing dish, with flame, always occupying a prominent position in his pictures of physicians' visits (A. D. 1590).

Hygiea, Stockholm

May 16, 1921, 83, No. 9

- *Factors Predisposing to Tuberculosis. H. Lundborg.—p. 289.
Care of Mental Disease at Stockholm. V. Wigert.—p. 301.

Factors Predisposing to Tuberculosis.—Among these factors Lundborg ranks admixture of races, universal asthenia, substandard constitution, and unusual height, the latter especially in mixed races. The average height of 1,000 tuberculous men examined in Sweden was 175 cm. while the corresponding figure in the nontuberculous was 170 cm.

Ugeskrift for Læger, Copenhagen

June 2, 1921, 83, No. 22

- *Results of Pneumothorax Treatment. S. M. Saxtorph.—p. 711.
*Registration of Syphilitics. O. Jersild.—p. 718.

Results of Pneumothorax Treatment.—This communication from a sanatorium receiving women and almost exclusively those of the wage-earning classes, analyzes the outcome in 200 cases of pulmonary tuberculosis in which attempts were made to induce therapeutic pneumothorax in the ten years ending with 1919. Only 48 of the total are still living. An effectual pneumothorax was realized in 108 cases, and two years later 47 of these were still living. Of the total number, 33 per cent. are living in good health from two to six years afterward with full earning capacity restored. These experiences are regarded as very encouraging to continue the pneumothorax treatment in suitable cases. Only 3 are still living of the 34 in whom only partial compression of the lung could be induced. The outlook is more favorable in the afebrile cases.

Registration of Syphilitics.—Summarized in the news columns, July 23.

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THE SECTION ON DISEASES OF CHILDREN *

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Each year sees an increase in attendance at this section, demonstrating a rapidly growing interest in pediatrics. At the general registration any member of the American Medical Association may show his preference for this section by so indicating on the registration card. This is simple and democratic. It is desirable to have pediatrics brought to the notice of the profession at large, and to draw to our meetings all those who are interested in studying health and disease of children. The present plan of registration answers well for the above-mentioned purpose, but it could go farther for those who are devoting themselves to the specialty and who wish to have a more clearly defined active membership and a closer identification with this section. As a first step in carrying out this idea it would seem that the value of section membership would be greatly increased if there were available during the session and throughout the year a list of members, who in fact as well as in name belong to the section. In the course of a few years, this would grow into a complete roster of those active in pediatrics throughout the United States, as well as of those who are interested but not strictly engaged in the specialty.

The advantages of such a roster are obvious; more general information could be disseminated regarding the work of the section; the field of the organization in carrying out nation-wide plans would be widened; a more satisfactory acquaintance with our members throughout the United States would be possible; more members of the section would be interested in the *Transactions*, and an active membership could be made to include a regular subscription for this publication. Reprints of all papers read would be sent to all registrants of the section. Other benefits would undoubtedly accrue. As not all the papers read before the section may appear in *THE JOURNAL*, it would seem wise to make the necessary arrangements for printing in the *Transactions* all the papers approved for publication, and to provide so that authors who wish reprints can secure them.

INTEREST IN THE PROGRAMS OF THE SECTION

The secretary and the chairman are authorized to select the essayists and the best material for presentation. The choosing of the few for whom there is

room on our program has become a difficult matter. The officers should have the time and means for becoming acquainted with all the meritorious work that is being done throughout the country. Some provision should be made for ascertaining the progress and needs which are peculiar to the various sections of the country and for their presentation before this section. Perhaps sufficient variety is not always obtained in subject and personnel from year to year. In planning the programs, the subject in previous years should not be repeated unless definite progress is represented. There should be rules as to how often a member may present a paper, so as to give an opportunity to all who have something of interest to offer. Valuable data regarding programs and section work should be kept in a secretary's book, the property of the section, and handed down from one administration to the next.

The officers this year found more good material than it would ever be possible to present in three half-day sessions. It seems to the chairman that the papers offered for the section should be sent to the secretary three months before the annual session, to be selected and approved by the executive committee. This would permit a selection which would carry out the purpose of the program for the current year; those which are deemed not suitable for reading before this organization would be released; and there could be retained for presentation in succeeding years those acceptable papers in excess of the twenty-one allowed by the Association. This would make much easier the planning of the program, and would avoid the embarrassment now felt in the occasional rejection of certain papers after they have been read to the section.

We will find a stimulus and interest in the presence of foreign guests at our sessions. The visit of Dr. Armande de Lille at the Chicago session was much appreciated by those in attendance and added to the fraternal spirit for our colleagues in France. In the course of a few years we will add to our better acquaintanceship those representatives who come from the countries across the seas as well as from Canada, Mexico and South America.

Many interesting subjects could be handled in the time and place now developing in the scientific exhibit, which should be announced in our program and should be included in our bound *Transactions*. Pediatric departments of universities, and public and private clinics have been doing work, the methods and results of which can be demonstrated in this exhibit and made of equal interest to that of the section papers.

DEVELOPMENT OF PEDIATRIC RESEARCH

It is true of the younger men in medicine and of many who are teaching that their incomes sometimes prevent them from obtaining sufficient time or resources

* Chairman's address, read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

for following special study which would be richly productive. A monetary contribution could be made from a fund which would be devoted to this as well as to other purposes needful to our section. Such a fund could well be named the "Abraham Jacobi Pediatric Fund." The secretary of the section will need an appropriation to cover the ever increasing expense of his office. There are occasions when our section might considerably offer to bear at least a portion of the traveling expenses of a guest, or that of a presentation of pediatric work in the scientific assembly.

CREATION OF A PEDIATRIC FUND

Subscriptions to this fund should be voluntary, and the individual amount could be placed at five or ten dollars per year until such time as more or less is needed. The executive committee or a special committee including the section secretary as a member should act as custodians of the fund. Dispersals should be made by the cooperation of the executive and special committees.

SUMMARY

It is suggested that the following changes be made in our organization:

1. *Membership*.—(a) Active: Those pediatricians who have signed a special application furnished by the secretary of the section are to be registered in an active roster kept by the section, and will be contributors to and beneficiaries of a fund for the special purposes of the active organization.

(b) Attending: Those who have indicated in the general registration that they wish to attend and take part in the section meeting.

2. *Preparation of Programs*.—(a) All papers offered for presentation to be in the hands of the secretary three months before the date of the annual session, those desirable to be selected by the officers and the executive committee.

(b) Programs to be planned by elimination of subjects which have been exhaustively presented in former years; a general policy to be outlined for the current year as well as a tentative outline for three years in advance so as to cover the field of pediatrics.

(c) Invitation of guests to take part in discussions.

3. *Creation of a Fund*.—(a) Establishment of a contributing fund known as the "Abraham Jacobi Pediatric Fund" for use by the section in furthering scientific research, in meeting expenses occasioned by the assembling of scientific pediatric exhibits of work, in aiding worthy individual efforts during the year, and for use by the secretary's office for printing, mailing of reprints and subscription to the annual *Transactions*.

(b) A special committee to be created or the executive committee to be authorized to act as custodians and disbursers of this fund, and the secretary's duties to be enlarged to meet the increased functions devolving upon him.

Your chairman offers these suggestions for your consideration. If you think them practical he will gladly assist as a member of the executive committee in working out the details, in conformity with the rules and in consultation with the general officers of the American Medical Association.

Development of Science.—In the development of all sciences there is a general tendency to substitute for vague generalizations definite and specific inquiry in special fields.—Paton.

PHYSIOLOGY OF THE BLOOD IN INFANCY AND CHILDHOOD*

WILLIAM PALMER LUCAS, M.D.

SAN FRANCISCO

During the last ten years there have been few subjects in medicine which have received more careful consideration than has the study of the blood. Previous to this period most of the studies were confined to a purely morphologic description of the various types of cells, and our original conceptions of most blood conditions were based on these studies. Modern methods of biochemistry and physiology have introduced an entirely new conception of the value of blood studies, not only in the understanding of anemias, either primary or secondary, but also in the study of many other diseases. A true value of the function of the kidneys can be better appreciated through a study of the blood than by a study of the urine. In the same way some of the newer methods of analyzing the blood throw light on diseased conditions in other organs, such as the liver and lungs, and on the complicated problems connected with digestion.

Barcroft has pointed out that any disturbance which interferes with the oxygen-carrying ability of the red cells must have far reaching results. These results, as the loss or diminution of hemoglobin or the interference with its function in any way, are usually grouped among the anemias; but it is not to be assumed that anemias are not also due to interference in the production of red blood cells. The carrying of oxygen by the cells depends on a number of different factors, the age of the cells, and the condition in which they are extruded from the blood-forming organs. These and probably other factors, such as the rate of circulation, undoubtedly play a part in the amount of oxygen which the cells are capable of carrying.

Means has lately pointed out that the cells also have to do with the transport of carbon dioxide and, though in anemias the ratio of cells to plasma is disturbed, the cells still are the main carriers of carbon dioxide, the plasma content of carbon dioxide remaining constant.

Hemoglobin may be present in quantitatively sufficient amounts and yet the oxygen be unable to be carried or given off in sufficient amounts to satisfy the needs of the tissue cells throughout the body. An example of the inability of the red blood cells to give off oxygen, even though hemoglobin is present in normal amounts, is shown in the condition produced by simple cold. Another example is the presence of abnormal salt concentrations of the plasma. Exactly how these two factors of temperature and general salt contents of the plasma affect affinity of hemoglobin for oxygen is not well known. That the amount of oxygen that can be taken up and the rapidity with which oxygen can be given off varies with the temperature of the body is an important factor in temperature regulation in early infancy. All of us who have watched new-born infants with disturbed temperature regulation have noted the cyanosis which occurs in these infants with a low body temperature.

The fact that hemoglobin is a colloid and the knowledge we have of the interrelation of electrolytes and colloids make it evident that the salt contents of the blood must affect and regulate to a certain extent the

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

transfer of oxygen. It has been shown that potassium salts are capable of causing hemoglobin to absorb oxygen to some degree. Many studies have demonstrated the fact that the loss of water with the resulting concentration of salts affects the oxidation of the body. The buffer quality of these salts undoubtedly affects the oxygen transfer from the hemoglobin to the cells of the body. This is, as we know, intimately connected with another factor, the hydrogen ion concentration of the blood. It is well known that increasing the acidity of the blood lessens its active concentration of oxygen. An increased acidity of only one part in each 100,000,000 affects immeasurably the concentration of free carbon dioxide and in this way affects directly the ability of hemoglobin to unite with oxygen. The importance, therefore, of studying the relation of hemoglobin to these three factors, temperature, electrolytes and hydrogen ion concentration, is indicated in the study of almost all blood diseases.

DESTRUCTION OF RED BLOOD CELLS

The morphologic study of blood furnishes very valuable data as to the condition of the blood-forming organs. Normally the blood level is kept up by daily destruction and replacement of cells. It has been estimated that from one tenth to one fifteenth of all red blood cells are daily destroyed, as estimated by the daily excretion of this amount of hemoglobin derived pigment. However, Ashby has recently determined, by estimating the disappearance of cells transfused by the differential agglutination test, that the normal life of the red blood cell is about thirty days. Destruction is continually carried on by the following processes:

First, by phagocytosis. The endothelial cells in the spleen, liver and other organs take part in the process.

Second, by fragmentation. This is shown by the occurrence of microcytes and poikilocytes. Fragmentation is produced in the circulation and not in the bone marrow. Normally there are a few such cells always present in the circulation, but under pathologic conditions, when young cells are thrown out in large numbers, these young cells cannot stand the functional strain put on them and become easily fragmented. Under pathologic conditions, not only fragmenting cells but also cells with vacuoles may be found. These finally become hemoglobin dust. They are removed from the circulation and appear in the spleen. Such hemoglobin dust is found in normal spleen, but it is found in much larger quantities in anemic conditions.

Third, by hemolysis. Under normal conditions this probably plays very little part, as hemolysis is normally an intracellular process; but in pathologic conditions it may play a big part. Under such conditions hemoglobinuria occurs, often accompanied by fever and chills.

Fourth, the increased fragility of the red blood cells. This is especially found in certain pathologic conditions, such as congenital hemolytic icterus, in which there is pronounced blood destruction.

REGENERATION

Processes of regeneration are also continually going on. Normally, the bone marrow produces only enough red blood cells to maintain the daily loss of red blood cells in the normal wear and tear of life. Bone-mar-

row activity is limited only by its functional capacity. This may be hyperstimulated under certain conditions, as by a diminished oxygen supply such as that found in high altitudes, or where there is difficulty in the absorption of oxygen through the lungs, as in congenital cardiac conditions. Whether this changes the blood reaction toward the acid side, which in turn stimulates the bone marrow is not clear, and whether the products of red blood cell destruction, that is hemoglobin, stimulates the bone marrow, is not certain. With the destruction of the red blood cells there is an increase in the lipoid constituents, or it may be an increase in the complement-like substances; but what part these play in the stimulation has not been decided.

Bone-marrow activity is normally a balanced process between blood destruction and blood regeneration. Certain tests can be carried out to determine how this balance stands out at a given time. First, urobilin estimations in the urine and stools can be used to estimate the presence or the extent of blood destruction. Second, by means of vital staining, such cells as the Howell-Jolly bodies, Cabot's ring, and stippling can be made out. These may give some idea of the effort which the bone marrow is making in the production of blood and in its effort to maintain the optimum level. Third, such an estimate of the effort which the blood-forming organs are making may better be done perhaps by estimating the number of (1) reticulated cells, (2) platelets, and (3) mitochondria, all of which can be determined by special staining methods. These are signs of bone-marrow stimulation. Normally reticulation exists in from 0.5 to 2 per cent. of the red blood cells. With marked bone marrow activity this percentage is increased. In simple anemia it usually does not go higher than 4 or 5 per cent. In hemorrhagic jaundice one finds reticulated cells as high as from 15 to 20 per cent., and after hemorrhage this may be even higher, from 20 to 30 per cent. The percentage of reticulation is therefore of great diagnostic value, taken in conjunction with the general condition of the patient. As the reticulated cells diminish after hemorrhage, it can be considered as a good prognostic point. The estimation of platelets also gives us an idea of the activity of the bone marrow. They are increased where there is marked activity and decreased where there is a defective regeneration. In diseased conditions where they have been reduced, their return to normal may be a favorable sign.

Mitochondria are small lipoid bodies found within the cell protoplasm, which can be demonstrated by some of the newer stains. They are not found in adult or fully formed red blood cells, but are found in nucleated red or immature red blood cells; therefore their presence and estimation give us some idea of the number of the immature cells in circulation.

It has been shown that oxygen consumption may be proportional to the percentage of reticulated cells. Normally, human red cells consume very little oxygen. In anemia the consumption of oxygen by the red blood cells may be marked; and this depends on the presence of young cells, not that of the full grown erythroblasts. The demonstration of an increased oxygen absorption by accurate methods may prove a more quantitative index of functional variations in bone-marrow activity than the microscopic evidence taken alone.

It has been pointed out that there is a certain diurnal change in the amount of hemoglobin in circulation

which normally is about 10 per cent., but under pathologic conditions may be as high as 30 per cent. The highest hemoglobin estimations are between 9 and 10 in the morning, and the lowest between 6 and 7 in the evening. These variations must be considered in connection with the change that is taking place in the blood and circulation, in the pulse rate, and rate and volume of absorption, and possibly with the fluid absorption or kidney excretion.

In any study of the regeneration of hemoglobin and red blood cells it is important that the determination of hemoglobin percentage be as accurate as possible. Various investigations with the ordinary methods of testing hemoglobin have shown that they give an error of from 5 to 20 per cent. The newer methods of estimating hemoglobin are based on the oxygen capacity of the red blood cells. Various methods for estimating the oxygen capacity have been worked out by van Slyke and Hoppe-Seyler, and lately Palmer has published a method which is the most accurate one we have for determining hemoglobin percentage and oxygen capacity of the hemoglobin. Robschait has modified this somewhat and determines the hemoglobin in the form of acid hematin. Some such method as that of Palmer or Robschait should be adopted for all clinical purposes for the determination of the hemoglobin, as accurate estimates are much to be desired in the study of blood regeneration and destruction.

PIGMENT METABOLISM

The study of hemoglobin pigment metabolism is also important. The liver has not only an eliminative function in forming bile pigment from the freed hemoglobin of broken down red blood cells but, as shown by Whipple, it has a constructive function also. The bile pigment is excreted into the intestines; reduced to urobilin or stercobilin; some of this is reabsorbed to be again thrown out or destroyed, or it may escape into the circulation and appear in the urine. Whipple has shown that the liver can construct bile pigment probably from its endothelial-cell activity, and under certain conditions there may be extrahepatic bile pigment production. Furthermore, these experiments have demonstrated that diet definitely affects the amount of pigment function or output, being increased on a carbohydrate diet and decreased on a meat diet. In other words, the liver endothelial cells can build up pigment, and the urobilin complex, postulated by Addis in the bile circulation theory, may not be the only way that hemoglobin is built up. The liver has some constructive function in hemoglobin regeneration, and it can be modified by diet as can bile pigment regeneration. The liver can construct hemoglobin out of other material than broken down red blood cells. Undoubtedly, the pyrrol complex is a peculiar feature of the hemoglobin molecule. The production rate of hemoglobin can be affected by diet. Not only elements of protein catabolism but also certain factors in the diet contribute to the steady construction of hemoglobin regeneration. Liver-cell activity has to do with hemoglobin or blood-pigment metabolism. On the functional activity and integrity of the liver cells not only depends the level of bile pigment and hemoglobin production in the body, but it has to do with the maintenance of a normal level of plasma and serum proteins. Liver function in this respect is influenced not only by tissue catabolism but also by diet. As has been stated, the rate of hemoglobin destruction may be estimated by estimating the urobilin

in the stools and urine. In the urine it may be increased when there is no marked destruction of hemoglobin or red blood cells, but it may indicate a poorly functioning liver where the urobilin is not removed from the blood and appears in the urine. This may be tested by some of the newer methods of estimating the urobilin in the blood serum. It gives an estimate of liver function.

In the diagnosis of various types of liver disturbance either before urobilin appears in the urine or before there is icterus, it must be present for some time in the blood serum, and in amounts that are often below the level of kidney appearance or icterus. For the reason that urobilin may occur in the urine in conditions other than those associated with excessive blood destruction, stool and urine and blood serum determination of urobilin must be made. The hepatic origin of urobilin under certain conditions must be borne in mind. In any case the figures for urobilin in urine and stool should be compared with the normal standard.

Lately another method for estimating blood destruction has been suggested by the injection of sterile hemoglobin solution. The tolerance or lack of tolerance is shown by the appearance of hemoglobinuria in cases showing evidence of blood destruction. The test may be of quantitative value, as the amount of hemoglobin needed to induce hemoglobinuria is directly proportional to the degree of blood destruction, and the tolerance of hemoglobin may be shown to be low in conditions which are usually accompanied by increased elimination of urobilin.

FUNCTION OF THE SPLEEN

The function of the spleen in regard to regeneration and destruction of blood has been under much discussion. The facts regarding the position of the spleen in regeneration are as follows: It is known that during fetal life the spleen has the function of forming red blood cells and that under pathologic conditions the spleen may take on this function especially in the production of myeloid cells. There has been much discussion as to whether the removal of the spleen in certain blood conditions is of value because it affects blood destruction or because it affects the formation of blood. Usually there is an anemia following splenectomy. This may be due to a diminished activity of the blood-forming organs. This is borne out by the fact that after splenectomy there is less rapid blood regeneration in the splenectomized animal. The spleen probably affects the activity of the bone marrow, normally exerting a stimulating effect. It has been shown that after splenectomy the bone marrow increases to take over the function of storing and elaborating the iron of the old blood pigment. There are certain facts, however, which point to the spleen as taking part in blood destruction. After splenectomy, red blood cells show increased resistance to various lytic agents, hypotonic salt solution, and the mechanical effects of shaking. The spleen probably has to do with the normal destruction of worn-out red blood cells. However, it must be remembered that the removal of a normal and of a pathologic spleen may differ in what they demonstrate. In a pathologic spleen the removal may cause hemolysis and depress bone-marrow function, whereas splenectomy of a normal spleen causes anemia by taking away the normal stimulus to blood formation. Furthermore, it must be remembered that the spleen is only one organ among many which have to do with blood formation,

and also that these organs, the liver, lymph nodes, bone marrow and spleen, all have interrelations which are important.

DESTRUCTION OF LEUKOCYTES AND LYMPHOCYTES

Degenerative processes of the leukocytes are much harder to determine: what becomes of them is not yet clear. If one follows cases in which there has been marked leukocytosis, often signs of nuclear changes, granulation, vacuolation, fragmentation and fragility, and changes in the protoplasm, will be seen. A result of leukocytic breakdown is found in an increased uric acid content of the urine, as can be shown in leukemia when there is a sudden drop in the leukocytic count.

There is still less evidence of what becomes of the lymphocytes. We know that certain substances, such as benzene, radium, and roentgen ray, cause a destruction of lymphocytes as well as leukocytes, but, even where they diminish rapidly in the blood following treatment by this means, it is hard to recognize how they disappear or disintegrate.

COAGULATION

Coagulation may be defined as the colloidal change which occurs under the influence of calcium electrolytes, during which the blood is transformed from the fluid state into the solidified state, which we recognize as coagulated blood. The changes which take place during this process are now more clearly understood, because the various factors which enter into them have been made capable of separate analysis. Coagulation of normal blood may be divided into three stages. Of the first stage very little is known except that certain definite changes take place during a very short period of time. The second stage, which is the formation of thrombin, depends on the reaction between two substances, cytozyme and serozyme, the one obtained from the cellular elements, and the other from the plasma, acting in the presence of calcium salts to form thrombin, which, in turn, during the third stage, combines with fibrinogen to form the fibrin clot. It can now be clearly demonstrated that the factor fibrinogen is disturbed in conditions primarily affecting the liver. Calcium itself is rarely affected except in those cases in which there is a sufficient quantity of bile salts in circulation to combine with the calcium salts, thus rendering them unavailable for combination with the serozyme and cytozyme.

The factor concerning which we know the most is that derived from the cells, particularly the platelets. There are two main conditions in which there is marked disturbance of this factor. In purpura hemorrhagica there is a deficiency in the number of platelets. When the platelet count falls below 100,000 we are in the danger limit; when it falls below 20,000, hemorrhage from lack of platelets will occur. In hemophilia, and in the ordinary case of hemorrhage of the new-born, there is a qualitative change in the platelets or their product, prothrombin. The total number of platelets may not be diminished, though qualitatively they may be so changed that hemorrhage may occur at any time. In hemorrhage of the new-born this is a temporary condition, which usually passes away within a very short time. We have been able to show from experimental work on the blood of the new-born that there is, during the first few days of life, a definite qualitative defect or, perhaps better, a lack of equilibrium in the prothrombin elements. In hemophilia, the condition is

hereditary and constantly present, whether there is bleeding or not. There are certain other types of hemorrhage of the new-born, such as that which occurs during acute septic infection of the new-born, in which the antithrombin, which Howell has demonstrated, is the main factor at fault; and there are certain other cases of liver injury, as demonstrated by Whipple, in which the fibrinogen is at fault; but the usual cases of hemorrhage of the new-born, and certainly those which respond to blood transfusions, are those in which the prothrombin element is affected. Just what is the underlying cause of this lack of balance in the prothrombin element in the new-born has not yet been demonstrated.

The fact that the life of the blood platelet is approximately only four days, which is a very much shorter period than that of the other cellular elements of the blood, explains the reason why the value of transfusion in hemophiliac conditions is so short-lived. As soon as the transfused platelets disappear, the primary condition returns. Some permanent effect on the prothrombin element has been obtained by feeding cephalin or thromboplastic substances to hemophiliacs. This line of treatment we feel offers the best permanent results in the treatment of true hemophiliac conditions; whereas direct transfusion in the temporary disturbance of prothrombin in the new-born successfully cures this condition, as the prothrombin factor reaches its normal level probably by the end of the first week. This explains very clearly the success which transfusions have given in these cases of hemorrhage of the new-born.

THE TIME ELEMENT

It is important to determine the coagulation time by proper methods. The ordinary methods of determining coagulation time by obtaining the blood from puncture wounds is open to grave objections. Unless the blood is derived directly from the vein, tissue juices are mixed with the blood, and so definitely affect the coagulation time that a true picture is not obtained. If the blood is drawn from a vein under proper conditions and tested, the normal coagulation time averages from six to twelve minutes; anything over twenty minutes can be taken as meaning definitely delayed coagulation.

If at the same time the sample of blood is oxalated, its recalcifying time will give an accurate picture of the prothrombin element. These two tests, coagulation time and prothrombin or recalcifying time, should be tested in all hemorrhagic cases. A further simple test is that of bleeding time, which is estimated by making a fresh cut in the finger or the lobe of the ear so that the blood flows drop by drop. The blood is taken up on absorbent paper at intervals of thirty seconds. In this way, each drop will give the amount of blood shed in the given interval. The total duration from such a bleeding point will be the bleeding time. Normally, bleeding time varies from one to three minutes and is independent of the coagulation time. For example, in purpura hemorrhagica the coagulation time is usually normal but the bleeding time markedly prolonged, whereas in hemophiliac conditions the bleeding time may be normal but the coagulation time is markedly prolonged.

As has been stated, fibrinogen, calcium and anti-thrombin are much less often affected unless there is liver derangement or destruction. Calcium is rarely diminished in quantity, and the giving of calcium, there-

fore, except in cases of marked jaundice, does not in any way affect coagulation. These studies have clearly demonstrated why so few results have been obtained from the administration of calcium, even in large quantities, in the ordinary hemorrhagic conditions.

THE CHEMICAL METHOD OF STUDY

At the present time, there is a great deal of work being done in studying the blood by the chemical methods. The impetus to this work rests on the introduction by Folin of the microchemical methods of studying small samples of blood, and almost every week new methods of study are being brought out. I shall not attempt to describe any of the various methods, but I shall describe some of the results of these studies and their application to a better understanding of disease, which should be considered if we are to understand the blood as a tissue that is capable of very intensive investigation, and which will lead materially to a better comprehension of normal and diseased conditions, not only those connected with the blood itself or blood diseases, but also disease as it affects other organs.

VARIATIONS IN BLOOD PROTEINS

Most of these studies have been carried on in relation to kidney conditions and to diabetes. It is of interest to note that, in certain nutritional conditions, the blood proteins vary materially. Whereas, normally the blood proteins vary from 7 to 8 per cent. in the normal adult, this level during the first year is from 6 to 6.5 per cent. In cases of malnutrition it may be reduced to between 4 and 5 per cent. The same may be true of the blood protein of premature infants, whereas, in diarrheal conditions during infancy the blood proteins may rise to 8 or 9 per cent.

Whipple, in his studies on blood serum protein regeneration under certain conditions of depletion and intoxication, has found that, where the serum protein is depleted to 1 per cent., this appears to be the absolute minimum below which the body cells cannot survive. When 2 per cent. is reached this is found to be a dangerous level of depletion. These experimental findings of Whipple agree very closely with those of Uthman in infants suffering from athrepsia or malnutrition. It is important, therefore, in these cases of malnutrition, to estimate the amount of blood proteins present, and, as Whipple has pointed out, there is marked similarity between the parenchymatous regeneration and blood serum protein regeneration. Whipple suggests that it may very well be that the protein for the parenchyma cells or the protein for the blood plasma may require similar construction periods and building material, and it may be that the blood protein construction depends on the activity of the cell protein. This regeneration period in chloroform poisoning, in which the liver is injured, takes from seven to ten days. These studies are very suggestive and throw considerable light on both the prognosis of nutritional conditions and the progress of the condition, if the proteins can be followed for their regeneration or lack of regeneration. And Uthman has pointed out that, in some of these nutritional conditions in which the blood proteins are reduced to the danger limit, repeated transfusions of comparatively small amounts of blood will often assist in tiding over very critical nutritional periods by raising artificially the blood protein level, thus giving an opportunity for the body cell metabolism to function from a better metabolic basis.

IMPORTANCE OF STUDYING BLOOD SUGAR

The importance of studying blood sugar has been clearly demonstrated in the study of diabetes; and it is well recognized today that the excretion of sugar by the kidneys is a sort of safety valve factor of the body. The real condition which needs careful attention is the hyperglycemia. The importance of this is shown in that, as diabetes advances, glycosuria becomes a less and less safe criterion of the stage of the disease, since the permeability of the kidneys for sugar is greatly lowered, especially as nephritic symptoms appear; and the blood sugar is a far better criterion of how the condition is progressing. Of further importance in the study of diabetes from a prognostic as well as from a therapeutic standpoint is the hydrogen ion concentration of the blood. This is especially true as an index of present or approaching acidosis; for the blood sugar and alkali reserve in the body are important as determining factors, and as indicating how the disease is progressing.

THE CARBON DIOXID CONTENT

The carbon dioxide content in the blood is composed of two parts: that in simple solution (or as carbonic acid, H_2CO_3), and that chemically combined as bicarbonate, (NaHCO_3). The amount in solution depends entirely on the tension of carbon dioxide to which the blood has been exposed and can be calculated directly from this solubility coefficient of the chemically combined carbon dioxide existing as bicarbonate. Hemoglobin plays a large part in the equilibrium of carbon dioxide, and in the acid-alkali equilibrium. In cases of severe anemia, it has been shown that the respiratory center is controlled by the reaction of the tissue fluids in the respiratory center. This is dependent on the carbon dioxide tension; and this tension in the tissues must exceed that of the arterial blood, and must be higher than in the venous blood. In anemia the carbon dioxide carried from the tissues, for each change in tissue tension, is less than normal, as has been pointed out by Peters; and, unless the blood flow is increased, this will result in an accumulation of the carbon dioxide within the tissues. With each increase in carbon dioxide tension, the hydrogen ion concentration rises relatively rapidly. In severe anemia, there is a tendency to accumulation of carbon dioxide in the tissues, a diminished ability of the blood to lose carbon dioxide in the lungs, and relatively rapid change in the hydrogen ion concentration with any change in the carbon dioxide tension.

All these factors tend to excite the respiratory center and produce dyspnea. This is, in particular, caused by the low hemoglobin, and therefore changes in the carbon dioxide tension produce considerable change in the hydrogen ion concentration.

PHYSICOCHEMICAL EQUILIBRIUM

Henderson has pointed out that there are six variables involved in a single physicochemical equilibrium, and that a knowledge of any two of these will give an estimate of the acid-base equilibrium of the blood. It has been pointed out by Means and his co-workers that acidosis may be compensated or decompensated, and it is important to determine which of these two states exists. This is valuable not only from a prognostic standpoint, but also from the standpoint of treatment; for in a compensated acidosis, though the alkali of the blood may be diminished on account of an increase of the nonvolatile acids in the blood, it may have a normal

reaction and the acidosis be compensated. In such a case, alkali therapy may not be indicated and at times may do more harm than good; whereas, in a decompensated acidosis, alkali is necessary to change the reaction of the blood. In such cases, however, the equilibrium may be pushed too far to the alkali side, and alkalosis occur unless care is taken. We may have either a condition of acidosis compensated or acidosis decompensated, or the opposite may occur; a compensated or decompensated alkalosis. Furthermore, Means has pointed out that in certain conditions, such as pneumonia, the buffer of the blood may be normal but the reaction more acid than normal, owing to a carbonic acidosis. In such a case, the condition is probably due to the fact that the pulmonary ventilation is insufficient to preserve the normal ratio between the soluble carbon dioxid or bicarbonates, and the blood is not getting enough carbon dioxid out. It is important, therefore, not only to estimate the reaction of the blood but also to estimate the available alkali; and it is the estimation of these factors that establishes the compensated or decompensated acid-base equilibrium.

PHENOMENA OF ACID INTOXICATION

Since the introduction of simple methods for estimating the carbon dioxid combining power of the blood, much light has been thrown on the phenomena of acid intoxication. Acidosis may result either from the overproduction of acid bodies or by their decreased elimination. The normal slightly alkaline reaction of the blood is maintained by the influence of the bicarbonates, phosphates and proteins of the blood. The carbonates may be considered as a first line of defense. During acidosis other acids combine with the carbonates and lower the body's alkaline reserve. Under normal conditions, the kidneys are able to secrete an acid urine from nearly neutral blood through the medium of acid phosphates, which may be considered as the second line of defense; and it is this line of defense, the acid phosphates, which breaks down in the acidosis of nephritis, with an increase in the nonvolatile acids and a diminished available supply of alkali. Testing the amount of acetone and diacetic acid in the urine does not give very much indication as to the severity of an acidosis. The estimation of the carbon dioxid combining power of the blood gives this information much more accurately. This is especially true in following the treatment of diabetes by the Allen method. In severe nephritis, the retention of nitrogen and of acetone often accompany each other; and this type of acidosis is more easily corrected by alkaline treatment than the acidosis of diabetes, in which fasting will often check the acetone body formation, and so affect the acidosis much more readily than it is affected by giving alkali.

The acidosis found associated with severe diarrhea of infancy is not due to the presence of acetone bodies but rather to the deficient excretion of acid phosphates by the kidneys. In such cases administration of sodium bicarbonate will often correct the characteristic symptoms and give normal blood tests for alkali reserve. Notwithstanding this, the child may die. Undoubtedly in such cases the nutritional metabolism of the cells themselves has been disturbed, and simply correcting the blood alkalinity is not sufficient to restore the cellular equilibrium. The importance of these blood studies is that, by repeated blood tests, we are able to arrive at a more accurate knowledge of the internal metabolism early enough to correct it; whereas, if we

wait until definite symptoms appear, even the most approved treatment will not check the process sufficiently to save the patient.

In nephritis the study of the nonprotein nitrogen in the blood becomes important, giving a better indication of kidney function than almost any other of our functional tests, from both the prognostic and the therapeutic standpoint. This statement is perhaps more correct for chronic nephritis than for acute nephritis.

In acute conditions, elimination of salts is, as we have learned, just as important. The retention of chlorids resulting from conditions of lowered permeability of the kidneys and the retention of phosphates in the blood have a great deal to do with the production of acidosis. Where the phosphates are greatly increased, the calcium content is greatly decreased and acidosis may result. In parenchymatous nephritis, the retention of salts is greater than that of the nonprotein nitrogen elements. The nonprotein nitrogen composition of the blood, although it constitutes only 1 per cent. of the total nitrogen of the blood, is more important because the nonprotein nitrogen factors show both the anabolic and catabolic processes more than the protein nitrogen, or at least they give us a better insight into what is going on, and variations from the normal in the nonprotein elements often aid us in appreciating what is really happening. It has been shown by many studies that the various constituents of nonprotein nitrogen have different origins. Urea is largely endogenous, while uric acid is partly endogenous and partly exogenous under normal conditions of diet and health, and creatinin is almost entirely endogenous. Urea is produced mainly by the liver as a result of the deamination of amino acids produced during digestion which are not used immediately by the blood. Uric acid, on the other hand, is the result of enzymatic transformation of the aminopurins and oxypurins. Creatinin is supposed to be formed in the muscle from creatin.

The distribution of these nonprotein nitrogen constituents varies greatly in the blood and urine. The percentage of uric acid in normal blood is greater than in urine, while the urea is much lower. In the case of creatinin and ammonia, it is very much lower. The kidneys remove creatinin and ammonia with great ease, whereas it is not so easy to remove uric acid. This explains why, in any altered function of the kidneys, the blood first shows a retention of uric acid, then urea, and lastly creatinin.

UREA OF BLOOD AND OF URINE

In diseased conditions of the kidneys, the normal level of urea and nonprotein nitrogen in the blood is usually first affected. The relationship between urea in the blood and the output in the urine should always be considered, especially in the study of kidney function. The important thing is the ratio between the urea content of the urine and that of the blood. One may have a high blood urea level with a high urinary output, and still have a fairly good functioning kidney, at least when it is able to cope with this situation, whereas, if the blood urea is high, and the urinary output low, it shows a very much more marked deficiency in kidney function. Addis has devised a urea function test that aims at an estimation of the functional capacity of the kidneys, and this after all is the most important evidence needed from the standpoint both of prognosis and of treatment. Urea retention occurs under a great

many different conditions besides nephritis, as in cardiac conditions, in syphilis, in lead poisoning, and in many of the anemias.

CONCENTRATION OF THE BLOOD

Certain conditions which raise the concentration of the blood, as vomiting, diarrhea, profuse sweating or polyuria, may cause an increase in the red blood cells. These conditions produce a water loss in the blood, so that the hematocrit reading (the reading in an accurately calibrated centrifuge tube after centrifuging) would show a marked reduction in the normal plasma and an increase in the cell content. We have seen the cell content as high as 80 per cent. (normal cells from 46 to 48, plasma from 52 to 54 per cent.), and the plasma content as low as 20 per cent. in cases of acute diarrhea. It is therefore important, in interpreting the number of red cells, to consider the change in blood volume and water content of the body. The water content of the body in children is especially affected by two factors; age and feeding. We have shown a definite curve in the blood volume in newborn infants and in infants during the first year of life. The effect of food on the water content, and therefore, the concentration of the blood, has been shown to have a definite relationship to the amount of carbohydrate food given. With high carbohydrate food, there is definite retention of water in the tissues. It has been shown that glycogen, when it is stored in the body, takes with it three times its weight in water, so that children on a high carbohydrate diet would tend to have a diminished blood volume.

RATE OF CIRCULATION

In nutritional conditions with marked anemia, the rate of circulation in the venous and capillary blood is important. It has been shown that there is a marked increase in the red cells and the hemoglobin content in the capillaries in cases of marked malnutrition, and that this is due to the peripheral constriction of the blood vessels, which is not found in normal infants or in those suffering from other conditions, except an acute diarrhea. In both diarrhea and athrepsia or malnutrition, the blood flow is markedly decreased. In cases of malnutrition, however, the hematocrit readings are reversed as compared with the cases of diarrhea, the plasma being increased and the red blood cell percentage decreased. In the anemias, often the blood flow is markedly increased. In all these conditions, besides the viscosity of the blood and the total blood volume, other factors must be considered in estimating the rate of blood flow, such as the condition of the heart, and the influence of the vasomotor system. In cases of acute diarrhea, starvation, athrepsia or malnutrition, as soon as food or fluid are given, the blood volume will be rapidly restored as well as the blood flow increased. The importance of the water quotient has thus been definitely determined by a careful study of these blood factors, and these studies have undoubtedly had more effect in lowering the mortality of these nutritional conditions in infants than any other studies that have been carried on during the last few years.

THE BLOOD VOLUME

The volume, as well as the concentration of the blood, plays an important rôle in the pathologic physiology of the blood. The normal values for plasma and blood volume are best expressed in percentages or fractions

of the body weight, or as the number of cubic centimeters per kilogram of body weight. The best method for estimating the blood volume is the vital dye method. As the dye is not taken up by any of the red blood cells or tissues, but remains for a comparatively long time in the plasma, it can be easily and accurately determined by colorimetric methods. In pathologic conditions, the changes from the normal blood volume are quite striking. For example, the blood volume following severe diarrhea is markedly decreased, and in these cases the hematocrit readings show a very marked relative increase in the red blood cells and a diminution in the plasma volume. In the chronic intestinal and nutritional conditions, such as athrepsia or malnutrition, the blood volume in these cases is relatively increased, whereas the red blood cell volume is decreased. In anemias, even where the total blood volume is not markedly lowered, there is a change in the comparative percentage of plasma and cells, as there is a relative increase in the plasma and a diminution in the red blood cell percentage. In both chronic nutritional conditions and anemias, the plasma may be as high as 80 per cent. of the total hematocrit reading. Boch has pointed out, however, that plasma tends to be constant, so that the variation in these pathologic conditions is one mainly of the red blood cells. Where the reduction of the blood volume is as low as 20 per cent., as has been shown by Robertson and Boch, there is definite indication for transfusion, because a lower limit is incompatible with life. These studies in blood volume have shown the importance of transfusion.

CONCLUSION

In this rather hasty and cursory discussion of some of the modern lines of investigation of blood, I have simply tried to indicate the various lines along which these problems can be attacked, and have pointed out some of the achievements which have resulted from these studies. We can confidentially expect that our knowledge of these problems will be much clarified by the continuation of these investigations.

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ABSTRACT OF DISCUSSION

DR. HERMANN M. APPEL, New York: In testing for hemolysis of the red blood cells, is urobilin obtained by duodenal intubation? In that way we get the first output of urobilin before it gets into the blood or into the urine, and it can definitely be established in that fashion.

DR. FRANK C. NEFF, Kansas City, Mo.: Dr. Lucas made an interesting observation about the cause of cyanosis in young children with high infectious states and in febrile states.

DR. WILLIAM PALMER LUCAS, San Francisco: We have devised a test for estimating the bilirubin in the blood plasma which gives the percentage ratio of bilirubin. We find that it appears earlier in the serum before any sign of icterus appears. I have some tubes here too small to pass around which show the gradation in the new-born. We have found very definitely that in the new-born it appears in the serum first. And then it depends on the function of the liver whether it is thrown out into the intestinal tract or not. We have been unable to find urobilin in the stools of the new-born during the first ten days, whereas during that period icterus neonatorum appears quite frequently. We feel that the amount of bilirubin can be estimated more accurately in the plasma, and its appearance and disappearance can be noted more clearly. The same thing occurs in hemolytic jaundice. About the cyanotic state—that was in cases of lowered temperature and not of elevated temperature. That is a different problem.

CHOLECYSTOGASTROSTOMY. AND THE
COURVOISIER GALLBLADDER *

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The clinical picture of chronic obstructive jaundice is so well recognized that it calls forth little comment. However, the rapid loss of weight, the emaciation and asthenia, the pruritus and disturbing mental depression, associated with cholemia, very often render imperative attempts at operative relief.

In a paper published in August, 1916,¹ entitled "Relief of Chronic Obstructive Jaundice by Palliative Operations," an argument was advanced for a more extended employment of cholecystogastrostomy. In the succeeding years, we have given this operation a far wider application and have utilized it in more varying pathologic conditions. Neoplasms or irremovable tumors involving the distal half of the biliary ductal system are the most frequent indications for diverting the bile current. There are, however, other lesser indications which may call for surgical intervention. These may be summarized, thus: (1) Mistaken diagnosis: Not infrequently a surgeon operates for supposed malignancy and finds the diagnosis has been incorrect, and by the institution of drainage, the inflammatory condition subsides with recovery of the patient. It is only upon such premises that the occasional "cures" of supposed cancer can be reasonably explained. "No one living is infallible in the differential diagnosis of obstructive jaundice. The diagnosis is always so difficult and the chance of a life saved is so important that however positive the evidence of malignancy may be I now advise operation in all cases."² (2) The relief of distention pain: All patients do not have pruritus or the mental depression of cholemia, but they suffer a gradually increasing pain from distention of the biliary apparatus. (3) Intractable pruritus: in many cases so severe that the patients positively demand relief. (4) Social: to prolong life in comparative comfort until such time as death takes place from metastasis or local extension of the growth. (5) As a preliminary measure in chronic jaundice when the origin of the obstruction is doubtful and when the condition of the patient with cholemia, asthenia and hemorrhagic tendency is such as to prohibit thorough exploration. (6) As a palliative operation in the aged and infirm. One has only to recall a patient on whom an emergency cholecystostomy has been performed with the idea of a more thorough surgical exploration later. Quite contrary to expectations, the second operation is attended with more danger than the first by reason of the great loss of bile that has taken place in the interim. It would seem that the patient's strength would have been more ade-

quately conserved by a cholecystogastrostomy with internal drainage of bile into the gastroduodenal segment. (7) In certain patients with recurrent cholecystitis and cholangitis, incompletely cured by cholecystostomy and in whom the closure of the sinus brings about an attack of jaundice and ascending biliary infection. Closely associated with this condition is an ill-defined group of cases with biliary cirrhosis sequential to chronic cholangitis in whom cholecystogastrostomy affords a remedial measure of undoubted value. (8) Cholecystogastrostomy is possibly indicated as a therapeutic measure in the treatment of certain types of ulcer of the stomach.³

FUNCTIONAL SIGNIFICANCE OF BILE

Our knowledge of the functional significance of the bile is by no means a closed chapter. Although the bile does not possess any direct power as an enzyme, it has, nevertheless, a zymosthenic or activating influence⁴ in that it increases the activity of the ferments of the pancreatic juice and activates the lactase of the intestinal secretion, and has a strong stimulating influence in the formation of invertin. It augments the lypolytic power of the pancreatic juice and favors saponification and thus aids materially in the absorption of fat. Protein by-products form insoluble compounds in an acid medium, but are redissolved in an excess of bile. Although bile has no antiseptic power, per se, it aids in preventing intestinal putrefaction by favoring the development of the less active organisms and by modifying the activities of such bacteria as are present. In addition, bile probably has an antitoxic function by neutralizing certain poisons arising from intestinal putrefaction.⁵ Mucin is coagulated by mucinase derived from the cells lining the intestines. Bile inhibits the action of mucinase with the result that the mucin in the upper portion of the intestinal tract is in a fluid state and undergoes coagulation only lower down in the large intestine. In normal feces, the saponified and unsaponified fats are approximately equal in amount. The pancreatic juice brings about the proper degree of fat splitting that must precede saponification so that if the excess of fat is due to a pancreatic defect, unsaponified fat will be in excess of the saponified. On the other hand, the absorption of fat is dependent on the bile salts acting on the fats already digested by the pancreatic juice. Accordingly, if there is loss of bile, saponified fats will be in excess because they cannot be adequately absorbed. It is due to this difficulty in the absorption of fat that chronic jaundice is so uniformly associated with wasting.⁶ The emaciation and loss of weight are not indicative of carcinoma, as both may be present in chronic pancreatitis with obstructive jaundice.

The bile salts that enter the bowel are reabsorbed and used over again several times. Soon after a cholecystostomy has been established, the salts in the bile fall to one tenth of the normal since reabsorption cannot occur. The loss of bile externally by prolonged cholecystostomy means an exhaustion of bile salts due to the inability of reabsorption and a progressively diminishing hepatic function of the liver.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* From the Surgical Department of New York Post-Graduate Hospital, Dr. John F. Erdmann, Director. The material and cases on which this paper is based are from the collective surgical service of the department.

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PANCREATIC CARCINOMA AND COURVOISIER
GALLBLADDER

Pancreatic or ampullar carcinoma is the most rapidly fatal of any form of neoplasm. Death ensues within from seven to eight months from the time of onset of noticeable symptoms, and occurs usually before the growth metastasizes or obtains any great local extension. There is no place, with the possible exception of the central nervous system, where a neoplasm, while yet small, induces so much widespread symptomatology as at the lower end of the common duct. The clinical differentiation between cancer and chronic pancreatitis is always difficult and sometimes, even with intra-abdominal exploration, it may be impossible to distinguish between these two conditions, particularly if the pancreatitis is nodular. They are both associated with chronic obstruction of the common duct, and the persistent jaundice and distended Courvoisier gallbladder give a similar pathologic picture. Bevan⁷ states that he has had "twenty or more of these cases, many of which were considered malignant at exploratory operation but had made complete recoveries."

Stone in the common duct is usually the result of a previous infection of the gallbladder and predicates a chronic cholecystitis with cicatrization and contracture. Courvoisier,⁸ reporting 187 cases of obstruction of the common duct, found that in 100, obstruction was due to causes other than stone and in eighty-seven the obstruction was due to calculous impaction. Of the 100 cases in which obstruction was due to causes other than stone, in ninety-two there was a dilatation or distention of the gallbladder and in eight cases there was a normal gallbladder or an atrophy of the gallbladder. Of the eighty-seven cases in which obstruction was due to stone, in seventy cases the gallbladder was atrophied and in seventeen cases the gallbladder was dilated. The deduction was made by Courvoisier that in cases of chronic jaundice due to obstruction of the common duct a contraction of the gallbladder signifies that the obstruction is due to stone: a dilatation of the gallbladder that the obstruction is due to causes other than stone. Cabot,⁹ reporting the cases of the Massachusetts General Hospital, found eighty-six with obstruction of the common duct. With the exception of four cases, which constituted only 5 per cent. of the total number examined, every record in which definite statements are to be found confirms Courvoisier's law.

The exceptions to Courvoisier's law are few: (1) stone in the cystic duct with hydrops or empyema and with stone in the common duct; (2) acute cholecystitis, with obstruction of the cystic duct and with a stone in the common duct; (3) chronic pancreatitis with stone in the common duct; (4) stone in the cystic duct with compression of the common hepatic duct, and (5) malignant disease along the course of the common duct, with an old chronic fibroid gallbladder.

It is usual to find the Courvoisier gallbladder distended with bile. This is not always the case, as a distinct hydrops and a well dilated common duct filled with clear mucoid fluid have been observed. This condition is associated with patulous cystic and hepatic ducts and is essentially a pressure acholia. In one of our cases with steadily increasing jaundice, the gallbladder and

common duct were found at operation to be enormously distended with clear fluid. A cholecystostomy was performed, and for a few hours clear fluid flowed from the tube. After the mucoid material drained away, bile was obtained in large amounts. Later necropsy revealed a small carcinoma at the ampulla of Vater. Kausch¹⁰ thinks that the hydrops in these cases is due to excessive secretion by the mucosa of the gallbladder and ducts, and, with the duodenal opening occluded, the pressure in the ductal system is so raised that the bile is forced into the blood and lymph vessels of the liver.

OPERATIVE PROCEDURES

Operations for carcinomatous jaundice will be palliative procedures to provide drainage for the biliary secretion. The simplest technic for this purpose is external drainage by means of cholecystostomy. Such an operation, however, entails a rapid loss of bile salts and body fluid and should not be the procedure of choice. The union of the gallbladder to various portions of the alimentary tract has been performed a number of times in almost all of the large clinics of the country. The union to stomach, duodenum, small intestine and colon has been variously performed for a wide variety of lesions. Theoretically, an anastomosis can be made between the gallbladder, hepatic duct, common duct and any contiguous bowel surface thus: (1) anastomosis between the gallbladder and various portions of the gastro-intestinal tract—cholecystogastrostomy, cholecystoduodenostomy, cholecystenterostomy, cholecystocolostomy; (2) anastomosis between the hepatic duct and the stomach, duodenum or a portion of the small intestine; (3) anastomosis between the common duct and the stomach, duodenum or small intestine.

The choice of a particular operation will depend on a number of factors, such as (1) the physiologic efficiency of the procedure; (2) the ease of technical accomplishment; (3) the relative immunity from ascending infection; (4) the immediate effect on the physiologic chemistry of the gastro-intestinal tract; (5) the remote effect on the patient's metabolism, and (6) the operative mortality. The classical operation of cholecystoduodenostomy will more nearly simulate the natural condition of biliary drainage than any type of operation. The technical difficulties of performing cholecystoduodenostomy with a fixed duodenum and the possibility of duodenal fistula are factors which will prevent this type of anastomosis from being accepted as a uniform surgical procedure. Moreover, the mortality of cholecystoduodenostomy is certainly greater than cholecystogastrostomy.

Technically, the union of the gallbladder and the stomach is probably more easily performed than any other form of anastomosis as the parts are naturally in close and intimate relationship, and little, if any, mobilization is necessary to bring the viscera in apposition. Cholecystenterostomy carries with it the possibilities of angulation and the necessity for a secondary entero-enterostomy to prevent kinking. The union between the colon and gallbladder is physiologically defective: (1) on account of the reflux of the highly charged bacterial content of the colon with an almost certain degree of ascending infection; (2) the

7. Bevan, A. D.: Present Status of the Surgery of the Bile Tract, Surg., Gynec. & Obst. **27**: 49 (July) 1918.

8. Courvoisier: Beiträge zur Pathologie und Chirurgie der Gallenwege, Leipzig, 1890, p. 58.

9. Cabot, A. T., quoted by Moynihan, B. G. A.: The Pathology of the Living, Philadelphia, W. B. Saunders Company, 1910, p. 203.

10. Kausch: Der Hydrops des gesamten Gallensystems bei chron. Choledochusverschluss, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **23**: 138, 1911. Outerbridge, G. W.: Carcinoma of the Papilla of Vater, Ann. Surg. **57**: 402 (March) 1913.

possibility of reverse mucous currents from the colon as described by Bond; (3) the loss of the digestive functions of the bile, especially in the saponification of fats; (4) the fact that the bile is soon evacuated with the stool means a rapid permanent loss of the bile salts which would be normally reabsorbed from the intestines, to say nothing of the profound changes that would be induced by the lack of bile in duodenum to neutralize the acid chyme. The union of the gallbladder to the colon can be summarily dismissed as being the least desirable of all forms of anastomotic surgery.

A review of the experimental and clinical evidences found in the literature pertaining to gastrobiliary fistula or cholecystogastrostomy demonstrates not only that the anastomosis is rational but also that it has advantages distinctly superior to any other method of anastomosis of gallbladder to any portion of the gastro-intestinal tract. The advantages of the union of the gallbladder to the stomach may be summarized thus: (1) A close anatomic apposition of the two viscera is easily accomplished; (2) the delivery of bile into the gastro-intestinal tract at an approximately normal point; (3) the facility of visceral mobilization and the ease of technical performance by reason of the fact that the anastomosis is between two viscera of fairly well developed size and thickness; (4) the adequate sterilizing mechanism of the stomach prevents ascending infection together with the known absence of infection in operations on the stomach and gallbladder,¹¹ and (5) minimal mortality.

Physiologically considered, there is no objection to the presence of bile in the stomach as has been demonstrated so often clinically and proved by experiments on animals.

In an experimental study by Grey,¹² in which cholecystogastrostomy was performed with complete division of the common duct, it was demonstrated that on a diet of meat and water, with bile constantly present in the stomach throughout the course of digestion, there was no appreciable effect on the acidity of the gastric content. Postmortem examination showed a functioning union, and the gastric mucosa showed no pathologic changes.

The presence of bile in the stomach produces no directly harmful influences. It is found constantly after gastro-enterostomy, and the Polya operation and its regurgitation with the various tests for pancreatic and biliary function suggests that it is tolerated by the stomach with impunity. At the completion of gastric digestion, duodenal contents flow back into the stomach through the relaxed pylorus.¹³ In animals that have been fasting, intestinal juice will continuously run out of a gastric fistula. Rehfuß¹⁴ found bile in the fasting stomachs of most of the normal students examined. Contrary to the usual conception, the normal reaction in the pyloric end of the stomach is actually alkaline, the hydrochloric acid being secreted mainly by the glands of the proximal two thirds; and it would seem that in the inactive or resting phase of the stomach bile is constantly present in the antrum.¹⁵ If

the alkalization of the stomach is the chemical means for the cure of gastric ulcer—a view taken by many surgeons—then there can be no valid objection to a technical procedure which will deliver the biliary current just proximate to the pyloric ring by a cholecystogastrostomy.

For performing a cholecystogastrostomy, it is necessary to have a gallbladder with a patulous cystic duct, with relatively normal walls, or not too seriously diseased in order that the gallbladder and cystic duct may properly function as a delivery tube from the common hepatic duct to the stomach. After union of the gallbladder with the stomach, the gallbladder probably contracts and elongates into a small tubular channel. Roentgen-ray studies in cases in which cholecystogastrostomy has been performed showed that bismuth or barium do not enter the gallbladder.¹⁶ In functional determination of the gastric acidity after cholecystogastrostomy, the amount of free acid is not less than the normal amount, although there is a varying diminution in the total acidity.

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ABSTRACT OF DISCUSSION

DR. JOHN B. DEEVER, Philadelphia: I am inclined to attribute the emaciation sometimes associated with jaundice to the toxic effect of the bile in the blood rather than to the difficulty in the absorption of fats. What proof is there that the loss of bile per se is harmful? In the treatment of chronic, as well as in some cases of subacute, pancreatitis, associated with disease of the gallbladder or bile ducts, patients do just as well where bile drainage has been done to the outside through a tube in the gallbladder or in the common duct. True, these patients have to wear a bottle, in the case of women in a little pocket made in the corset, and in men in the underwear. My patients who are discharged wearing T tubes wear the tube from nine months to two years, and even as long as four years, with perfect comfort, and what is more, perfect well being. Cholecystogastrostomy versus cholecystoduodenostomy is more or less a Hobson's choice. Both are procedures that should be used only in comparatively few cases. That the gastric anastomosis is easier than the duodenal may be true, but it scarcely is an argument in its favor. However, I question whether one who cannot trust himself to do the latter should do the former. The duodenum may, perhaps, not always be accessible, and in such instances gastric anastomosis can be made. With few exceptions, I mobilize the duodenum, which enables me to bring it up well enough to make this anastomosis without difficulty. Cholecystoduodenostomy is certainly the more logical operation because it is the more physiologic one. But in either operation, in the absence of complete obstruction of the common duct, these openings close sooner or later. I have demonstrated this in a number of instances in which I have reoperated six or eight months afterward. When I do a choledochostomy I often close off the tube two or three times a day for a short time, convalescence being well established. In pancreatic or other cases in which patients are discharged with the T tube in place, they are instructed to clamp it off occasionally with the hope that the bile itself will get in the intestine. I certainly would not advocate the operation of cholecystogastrostomy in the treatment of ulcer. Considering the good results obtained in the treatment of gastric ulcer by excision of the ulcer, combined with posterior gastro-enterostomy, or by partial gastrectomy, it certainly does not seem justifiable to use so extreme and unphysiologic an operation as cholecystogastrostomy for these ulcers.

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15. Hertz, A. F.: *The Sensibility of the Alimentary Canal*, London, Oxford Press, 1911, p. 58.

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choledochostomy. One point is sometimes overlooked: In anastomosing the fundus of the gallbladder and the intestine, the bile will not drain through the anastomosis unless there is practically a complete obstruction of the common duct. We have found cholecystogastrostomy in cases of complete jaundice more satisfactory than cholecystoduodenostomy, although, when the latter can be done as easily, we still employ it in some cases. We should continually bear in mind that in some of these cases the lesion is a carcinoma of the head of the pancreas, and that in others it may be a chronic pancreatitis. This emphasizes the point Dr. Heyd brought out, that, under ordinary circumstances, these cases of painless jaundice should be explored. Considerable work is being done on preliminary treatment in jaundice cases. The risk from hemorrhage after operating in jaundice cases is being reduced considerably by the intravenous administration of calcium and by repeated transfusions.

DR. MOSES BEHREND, Philadelphia: There is no question that the operation of cholecystogastrostomy has been performed for conditions for which it should not be done: for instance, gastric ulcer. Whenever we can we ought to anastomose the gallbladder and the duodenum. That is true. But there are conditions in which it is impossible to bring up the duodenum to the stomach. Therefore, the proper thing to do is to anastomose the gallbladder to the stomach. Patients may vomit for from twelve to twenty-four hours after the operation, but following that they are comfortable, and free from symptoms. Our anastomotic openings have stayed patulous and have given the greatest relief. If I wanted to have this operation performed and were to choose between external and internal drainage, I would much prefer an internal drainage operation. I believe there is less discomfort with internal drainage than with external drainage. We cannot always tell whether there is carcinoma at the head of the pancreas. I operated on a patient three years after Dr. Deaver performed a cholecystectomy for cholelithiasis. I drained the common duct for about six months with a T tube. The patient was apparently well for two and a half years. Then she began to have symptoms again of pancreatitis. I thought she had carcinoma of the pancreas and performed a choledochogastrostomy. This patient has been well for seven months with absolute relief of jaundice and pain. It is an operation that can be recommended, and I sincerely hope it will be performed many times hereafter.

DR. JOHN J. GILBRIDE, Philadelphia: Dr. Heyd has given you Courvoisier's law, which is that there is a dilated gallbladder under certain conditions and a contracted gallbladder under other conditions. Therefore, the appellation "Courvoisier's gallbladder" is not a good one. In all these cases of anastomosis of the biliary passages with the gastrointestinal tract there is more or less continuous drainage of bile. This is also true after cholecystectomy. I occasionally see cases of cholecystectomy with regurgitation of bile, especially those cases in which there are many adhesions. Attacks of vomiting and various other gastric disturbances continue off and on for weeks at a time. We should not anastomose the gallbladder to the stomach for gastric ulcer. If bile does any good for gastric ulcer it should be effective in duodenal ulcer below the papilla of Vater. It evidently is not. We all agree with Dr. Heyd as to the advisability of operating in cases of chronic jaundice because of the possibility of error in the diagnosis. The ideal operation is anastomosis of the gallbladder with the duodenum. Occasionally one sees a duodenum whose walls are so soft as not to hold the suture. In four cases of chronic jaundice due to malignant disease of the head of the pancreas that I have seen there was no itching. The first case of this kind came under my observation in 1905, and I was impressed by the absence of scratch marks on the body, although the patient was deeply jaundiced. Therefore, it occurred to me that there might be a difference, aside from color, between the jaundice caused by malignant disease and the jaundice of nonmalignant disease. Physiologists teach that the itching associated with jaundice is due to one of the bile salts. I have thought that the itching is due to infection. If that is true, there would be an absence of itching in jaundice from any cause when not associated with infection.

DR. CHARLES GORDON HEYD, New York: If nature intended bile to be excreted, she would have devised an apparatus to perform this function as she does with the urinary system. Again, bile is delivered at the first portion of the small intestine where absorption takes place. Furthermore, we know that after cholecystostomy the amount of bile salts in the bile diminishes to one-tenth the normal amount and there is a condition of exhaustion due to the too rapid loss of bile salts, as Gerster brought out when he urged the feeding of cholecystomized patients with their own biliary discharge. Dr. Deaver states that he clamps off the tube in his cases periodically to prevent the too rapid loss of bile. In chronic pancreatitis it does not matter whether you drain internally or externally. I was advocating this operation primarily for permanent occlusive processes of the common duct; I did not intend to "ride" the operation as a cure for gastric ulcer. As to the apparent contradiction pointed out by Dr. Deaver as to not diminishing the acidity of the gastric contents by cholecystogastrostomy I would draw attention to the fact that the normal reaction at the terminal or antral portion of the stomach is alkaline, and that an alkaline fluid at the outlet of the stomach does not necessarily interfere with acidification or acid digestion in the proximate two thirds of the stomach.

THE USE OF EXPERIMENTAL PSYCHOLOGY IN THE PRACTICE OF MEDICINE*

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It is often said that much of the practice of medicine consists of understanding the psychology of the patient. The experienced physician does not fail to estimate personality, looking for signs of irritability or emotion or hypochondria. In this way he may be aided in deciding to what extent the symptoms are merely subjective, and may learn how best to handle the individual. Every one knows that even if there is organic disorder, successful treatment may depend on keeping the patient in a favorable state of mind—perhaps cheerful and occupied and obedient to general directions. In all of this, suggestion is commonly used. Accordingly, we may agree that every practitioner makes use of some type of psychology, whether he knows it or not; but the point to be emphasized here is that such knowledge used by the average physician today as a rule is based merely on his individual opinions and his general experience with persons in everyday life, and so does not differ from what the intelligent lawyer or layman might use under like circumstances. His knowledge of the mind does not come from the laboratory, and is popular rather than scientific.

A first step toward giving the average physician a groundwork in scientific psychology has been taken by many medical schools of this country in making that study a part of the premedical requirement. Evidently this is good, so far as it goes; but the student often complains, and with justice, that it falls far short of satisfying his future practical and scientific needs. He is carried through elementary studies of sensation, perception, attention, memory and the like, and finds little indeed in all of this that seems to bear directly on his future medical work. Kahane complains of the same sort of thing in Germany. Every one knows the reason for this deficiency

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in our curriculums: experimental psychologists have more largely turned their attention to education and other branches, and have somewhat neglected the application to general medicine. Yet when one recalls the general importance of psychology, it is almost amazing that the modern practice of medicine has so much delayed the placing of foundation stones on a firm experimental basis.

Although physiology is now commonly taught in connection with laboratory experiments at every step, and psychology is often handled likewise, yet there still are many exceptions. Apparently, if we admit this evil, it can be corrected only through a growing recognition of the difference between the general psychologist and the experimental psychologist and through insistence that work for the medical student always be presented from the experimental standpoint.

As applied to medicine, experimental psychology falls principally into two parts: (1) in relation to psychiatry and (2) in relation to general medicine. As the former already has attained a flourishing growth, it would seem worth while to begin there, and so—even at the risk of repeating things already known to you—briefly to review and discuss some of the outstanding methods, instruments and results.

EXPERIMENTAL PSYCHOLOGY

The instruments used in experimental psychopathology give ocular proof of the growth of that science. Besides apparatus familiar also in the physiologic laboratory, such as the pneumograph, Marey tambour and sphygmograph, there have been developed an amazing array of special devices. One may mention the plethysmograph, and its well known use for recording changes in circulation of a part during mental activity. The string galvanometer of Einthoven was in general use for the study of emotion long before that instrument became so common for electrocardiography. The study of tremors was reduced to a fine point when Sommer, improving on methods previously employed at Harvard, developed his machine for recording movements of the extremities in three directions, and since then has been turned to chorea, hystero-epilepsy and other disorders. Of late years a device has been developed for recording tiniest movements of the eye, and one also for changes in facial expression, such as wrinkling of the forehead. The ingenuity shown in some of these measures is astonishing. For example, in the study of vasomotor conditions, one worker has developed a means of recording so delicate a thing as flushing of the skin. This is done with a Marey tambour in contact with a selected portion of the face, so that as blood enters the skin, a slight pressure is made on the drum membrane. The membrane in turn presses on a little column of illuminating gas, which lights a small burner. As the flame then fluctuates, it affects a selenium cell, causing electrical changes shown on a galvanometer provided with a needle which is deflected and so permits a record to be made on a smoked drum. Many and various are the tachistoscopes for the exposition of optical stimuli, each in some respect an improvement on one of the foregoing. Hipp chronoscopes or tuning forks have been used to measure the time taken by mental process in terms of thousandths of a second. Often this has been done in connection with reaction time: The individual waits for a certain color or other object to be suddenly exposed, then at once presses on an electric tele-

graph key, whereupon the time interval may be measured. It is clear that many of these instruments could be simplified for clinical use, if interest among psychiatrists might once be sufficiently aroused.

With apparatus of this sort, many and various studies have been made under controlled mental conditions and often with mathematical accuracy of the behavior or reactions of the patient, or of his physiologic functions, or of his subjective reports. Of course, the reliability of the subjective report may vary with the condition of the patient; yet with time and skill the intelligent patient can often be trained to give reports no less valuable than those obtained in the laboratory. Experimental psychologists draw a distinction which is of the greatest importance between mental reaction and introspection. The former means any mental act in response to stimulus, as when an individual repeats numbers during a memory test, or again, when he utters aloud his associations in response to some word. On the other hand, introspection or, as it is better called, the method of examination, means the act of scientifically observing conscious processes at a particular moment; that is, under controlled conditions the subject observes his sensations or attention or other mental process and gives his report to the experimenter. The task often requires intelligence and special training. Just as a beginning student of pathology cannot without previous experience describe the contents of a microscopic section, so also the scientific introspector is not born ready made. The desired end in training the student of pathology is to teach him to observe, and to describe accurately and fully, yet to keep his observations distinct from his interpretations. Such training in observation is also a goal in psychology. This is perhaps not always realized by every physiologist and other workers along mental lines, who sometimes seem to ignore the existence of technical observation and literature in this field. Unfortunately, it may be admitted also that the method of examination of conscious processes, as developed by Wundt and his followers and in a special way also by the Wuerzberger school as well as by Binet and certain American workers, has not yet become generally known and precisely applied even among all experimental psychologists. Under these conditions we must not look for too much from introspective psychology applied to psychiatry in the near future. On the other hand, very much has already been done in the study of behavior, psychophysical reactions and mental activity.

METHODS AND RESULTS

At the risk of boring you with relating further what you already know, it seems worth while very briefly to review some of the methods and results. In extensive studies of fatigue with the ergograph, it has been found that every individual has a characteristic curve of fatigue. If the index finger is made to adduct repeatedly against a constant load, the normal curve is a gradual rise to a peak, then a phase in which the curve is either horizontal or convex or concave, with periodic waves of highest activity due to mental or mechanical varying factors, and at the end a sudden breaking off or else a period of relatively slight movement. At this point electrical stimulation may still move the muscle, where the will-impulse fails. However, if the weight is somewhat reduced, the muscular activity may continue in a relatively undiminished way, and if the weight is correspondingly reduced as

fatigue progresses, the muscular activity may be continued practically without end. Accordingly, the chief seat of this type of fatigue seems to be in the muscle rather than in the nervous system. Caffein was found by Kraepelin to increase the amount of muscular work, while alcohol increased the height, although it decreased the number of possible strokes. Massage helped the fatigued muscle toward a temporary recovery. It seems characteristic of melancholia that the peak of the curve may be lacking, or else may be short and relatively low, followed by a rather quick decline to a low level, which remains constant for a long period. On the other hand, in catatonia the contractions may be vigorous, but the distinguishing characteristic is the comparative constancy of the level of the curve. There is comparatively little difference between the amount of work done by the muscle at the end as compared with the beginning of the experiment. In fact, the catatonic often stops short, thus ending the curve. Here, then, is graphic registration of stereotypy of movement, which would seem to have a certain diagnostic value. The writing machine of Kraepelin and the simpler device of Henry have been warmly recommended for registering voluntary motor activity. Records are made not alone of the speed but also of the pressure in writing. In melancholia a rapid decrease of pressure and speed has been noted, while in manic excitement the opposite seems to be characteristic. In catatonia, even when letters are made correctly and well, it seems characteristic that the time intervals are markedly irregular. This trait seems to come and go with the phase of catatonia, and would appear to be a fine sign pathognomonic of this condition.

The use of the string galvanometer for recording the objective electrical changes that take place in the presence of emotion is very well known. Various workers, including Veraguth, Féré and Binswanger, have tested the emotions by passing a feeble current through the individual, using electrodes of the same material. On arousing an emotion by means of spoken words, so-called "association tests," the galvanometer shows a marked deflection, and this change in conduction has been called the psychogalvanic reflex. Studies have been made of catatonics, organic demented and melancholics, and most extensively of psychoneurotics, whereby objective signs of mental complexes have been gained, valuable not alone for diagnosis, but also for treatment. The pneumograph also has proved of interest to various workers, the recorded breathing showing variation with the state of pleasure or discomfort, or with concentration of the attention. In a case of stupor, Gregor used the test of changes of breathing made in response to sensory stimuli, in order to decide whether there was consciousness.

In a brief and general paper it is impossible to do more than touch upon interesting points here and there. Experiments have been made on the sense of time by having the patient compare two intervals of a fraction of a second to six seconds in length, marked off by the sound of a falling hammer. In Korsakoff's psychosis it was found that the disturbance of temporal orientation is simply due to failure of attention or observation, rather than to any disturbance of some assumed sense of time. Experiments on understanding have shown typical disturbances in such disorders as hebephrenia. The topic of association tests is too broad to be more than touched on here. They have been used, for example, in the psychologic diagnosis of epileptic psychosis

by Sommer, Fuhrmann, Ritterhaus and Klepper, who applied them also to catatonic conditions. As is well known, in the hands of Jung, Ricklin, Binswanger and their associates, these tests have been offered as a bridge between the older and generally accepted experimental psychology and the new candidate for recognition, namely, psychoanalysis. Careful methods for testing the memory in psychiatry have been worked out by Ranschburg and others, and one of the results has been some concrete suggestions for improving the memory of the mentally weak along lines that differ from education of the normal. Stern developed a valuable method for getting a general idea of diverse mental functions of the patient with the aid of colored pictures. Isserlin opened the way toward a scientific understanding of the "flight of ideas," explaining that this disturbance is due to failure of what Ach called "determining tendencies."

What now, in summary, is the use of experiment for psychiatry? It explains, clarifies, makes precise and adds to what has been found in the clinic. Fundamental ideas gained from experiment underlie the system of psychiatry of Kraepelin, and may appear in the form of brilliant investigations, such as those of the clinic of Sommer, or in the form of a general work on the diagnosis of mental disorders, such as that of Gregor.

Turning now to the second part of our subject—the application of experimental psychology to the general practice of medicine—we find only occasional areas, so to speak, that have been developed. The effects of drugs on diverse mental and physical functions have been well studied by Kraepelin and many others, and need not here be reviewed. Tests of association and of the galvanic phenomenon in functional nervous disorders, as previously said, have been extensively developed. In the literature of physiology, particularly of the gastro-intestinal system and of the internal secretions, when the topic borders on emotion, work has been done which often smacks of experimental psychology. At times it would seem as if the physiologic knowledge displayed were not sufficiently supported with familiarity with what had already been done in the corresponding field in psychology.

IMPORTANT PROBLEMS

What now are some of the important problems of general medicine, which may be attacked with instruments and methods such as those above described or mentioned? It would seem worth while to attempt to answer this question under about eleven headings:

1. *The Effects of Suggestion.*—There are several subtopics here: (a) What can and what cannot be accomplished by suggestion on mental processes, for example, on depression, general irritability, excitability and the like? (b) What are the possible physical effects of suggestion, and what their limitation? This matter might best be considered in terms of the various systems of the body, namely, the effects on the gastro-intestinal or vascular or glandular system and the like. In Great Britain the work of Pawlow on dogs has been repeated and similar results obtained with men, confirming some of his principles of gastric secretion with the ingenious use of hypnotic suggestion for arousing emotions. (c) What functional or organic changes may arise in an individual or among the public as the result of suggestion? (d) What maladies may be improved and to what extent by suggestion, with and without other means?

Of course, such inquiries must be undertaken only with a very critical spirit under controlled conditions, with knowledge of any preceeding work, and so far as possible with mathematical accuracy. It is clear also that methods of precision may be used no less in the clinic than in the laboratory. However, if I understand correctly, three points must be kept in mind if such studies are to be carried out with clarity: First, a clear idea of what is meant by suggestion is to be sought not so much in current definitions as in current usage. If one seeks the common meaning as ordinarily employed, it seems evident that suggestion is a very broad term. In one sense it may be said to apply to the mental state of any individual at any moment, since one may truly say that any mental content has been suggested, at least in part, by something else. To be suggestible apparently means that an idea or mental process once aroused partly or completely fails to meet with other contrary ideas or inhibiting mental processes. Again, an individual may be suggestible if his mental processes are so emotionally toned, so intense, as to forestall inhibition. A familiar example of suggestibility is the hypochondriac who overhears the recital of some cardiac symptom and at once presumes that he has heart trouble. It seems worth while to dwell on these fundamental conditions of suggestion, if only because of the danger of individual groups of workers taking too limited a view of the field. For instance, certain psychoanalysts have recently put forth the theory that suggestion is but a form of "transference." Now possibly their point of view is correct so far as that form of suggestion is concerned which arises through the influence of one personality on another, as in hypnosis; but apparently what needs to be kept clear is that the common usage of the term, suggestion, is broader than the personal variety, and can no more be fully expressed in terms of transference than can attention or memory or other like fundamental psychophysical process. A second point that seems worth making is that there are varieties of suggestion. Therapeutic suggestion generally means the effect of belief, since with certain ailments, when we arouse the belief of the patient that he will get well, the result is said to follow. Evidently it is not a matter of no account whether a therapeutic suggestion or belief is aroused by the words of the physician or by a drug or by electricity or by hypnosis. In each of these cases we have what may be called a different *vehicle* of suggestion, and the possibility of cure, indeed, the very mechanism and the precise character of the result, may vary with the character of the vehicle. Finally, it seems worth while to emphasize that ever since Braid and Bernheim made the conception of suggestion familiar and popular, it has become almost a fad with some persons to attempt to explain every mental effect on the basis of suggestion. Of course, any student of experimental psychology will testify that this is not so, but rather that suggestion is only one form of mental influence. Among other types of mental influence may be named the effects of pleasure or pain, of cheerfulness, of distraction of the attention, of psychophysical rest or overexcitement, and of what has been technically called the "Aufgabe" or "task consciousness" or "determining tendencies" of Ach. In short, experimental psychology teaches that we must not be too prone to call every new form of treatment suggestion. Those persons, for example, who are inclined to believe that all electrical therapy is purely suggestive will do well to read

R. Sommer's article on electrochemical therapy published in 1913, in which he shows that the theory of suggestion has been exaggerated in that field, certain effects indeed being due to suggestion and certain others to the specific character of the anode and cathode.

2. *Faith or Confidence*.—It would be of moment to get very carefully controlled data as to the effect under given conditions of the faith of the patient that he will get well. Is there any indirect way in which such faith may influence organic disorders of any type or to any extent?

3. *Emotion*.—Types that may be considered are pleasure and pain, cheerfulness, melancholy and excitement. It is to be studied (a) in endocrine disturbances and (b) in other disorders. It may be of special interest to inquire: (I) In what disorders and at what stages does a characteristic emotional tone appear and what are its physical correlations? (II) What are the emotional characteristics of a particular disease, such as diabetes or tuberculosis? (III) What are the possible influences of emotional tone on the course of disease? (IV) In what way may treatment be assisted by stimulation of a desired emotional tone?

4. *The Origin of Subjective Symptoms*.—It is commonly known that a particular organic malady may be present within certain limits with or without symptoms. One individual will suffer in various ways where the other may scarcely notice the affliction. In this manner some persons often complain of gastric distress where there is apparent absence of any organic change, while another individual scarcely knows he has been ill until his surgeon suddenly finds an ulcer that has perforated. From this it would seem clear that the symptoms of a malady are not necessarily to be traced entirely to the anatomic pathology, but rather are in part a function of the nervous and mental constitution of the individual. Possibly from this point of view various chapters of medicine may at some future time be somewhat modified. Another matter that seems important is the distinction between pain and suffering. By pain is meant the sensation produced by some destructive stimulus; it is a specific type of sensation of specific pain nerves, or else the sensation produced by marked overstimulation of any sensory nerve. Suffering is quite different from this; apparently it means reaction to pain. For example, one individual may remain calm in the presence of a painful stimulus which causes another to fidget and fume. It can readily be shown that this is not due to the nerves of one individual being more sensitive or painful than those of the other, but rather in large measure is due to the habits of motor and associative reaction—that is, the general overexcitability. Likewise, virtually any type of sensation, no matter how painless in the strict sense, may cause suffering corresponding to the associations it arouses. For instance, the sight of a child may cause suffering to a mother bereft of her own offspring.

5. *Psychologic Features of Work and Rest, and Their Influence on the Course of Disease*.

6. *Distraction of the Attention*.—The possible effects on functional and organic disorders is a large field that calls for investigation.

7. *Mental Factors in Particular Diseases*.—It will be of interest to study the effect of mental influences, such as pain or emotion or suggestion, on the gastro-intestinal and other systems.

8. *Can Functional Disturbance Lead to Organic Disorder? If so, in what way?* Osler mentions worry and

mental shock as sometimes exciting causes of gouty arthritis, while depressive influences, such as disappointment in love or dread of the disease itself, as sometimes having an important influence in leading to hyperthyroidism. Joslyn states that a strenuous life may predispose to diabetes.

9. *A Systematic Study of Mental Conditions in Individual Diseases.*—Instances of this may be infectious fevers, constitutional maladies such as diabetes, or again cardiac or particular alimentary disorders.

10. *Psychophysiology of Anesthetics.*—The work of Crile and perhaps also certain articles in the *American Journal of Psychology* provide an opening wedge here.

11. *Psychology of Prognosis.*—Every physician has met instances wherein an unfavorable prognosis, although justified by the pathology, has nevertheless proved of damage to the patient's nervous welfare. Psychologic consideration makes it clear that the physician may with tact be candid and yet take into account the possible effects of his own words and attitude as part of his therapeutic relations to the patient.

CONCLUSION

One may venture to express the belief or at least the hope that with the future development of experimental psychology applied to medicine, a new period of treatment may gradually arise, not merely for functional but also for organic conditions: a period in which the internist will not be content with considering the nervous and mental aspects of disease utterly out of his domain; a period in which it will not be considered sufficient to doctor the body alone, or in other instances the mind alone; but rather the assumption as a rule that, with every patient and in practically every malady, there is both a physical and a mental side that may demand delicate attention. From this point of view therapeutics in general should have a combined physical and mental approach.

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ABSTRACT OF DISCUSSION

DR. ISADOR H. CORIAT, Boston: At present my psychotherapy is psychoanalysis. The most important aspect of medical psychology is the therapeutic aspect, and as psychiatrists we must emphasize this therapeutic aspect. The association tests I have used less and less, for I found that the associations would merely stimulate the foreconscious and did not reach the unconscious motives. Suggestion, either waking or hypnotic, is but a form of transference, and if a patient transfers well to suggestion, it is successful, and if not, it is unsuccessful. I have become more and more skeptical in the therapeutic value of suggestion because the psychoneurotic does not really want to get well or eliminate those unconscious desires which keep his neurosis active. That is the chief reason why suggestion has been wrecked and why the analytic investigation has been of such tremendous value in the cure or amelioration of neuroses and psychoneuroses.

DR. ELLA G. STONE, Boston: How could you eliminate suggestion from psychoanalysis?

DR. CORIAT: There are two kinds of psychoanalysis, the first by expert and practical analysts, who are at the same time neuropsychiatrists, the second by mere dabblers and amateurs. In the hands of expert analysts, suggestion does not enter, for it is eliminated very carefully. Secondly, there is a form of psychoanalysis, called by Freud wild psychoanalysis, in that suggestion is used and all sorts of incorrect advice given to the patient. No trained psychoanalyst uses suggestion; if he uses it, he is not a trained psychoanalyst.

DR. CHARLES R. BALL, St. Paul: I have long had a feeling that the medical profession has not lived up to its opportuni-

ties in the use of psychic methods in the treatment of its patients. As I have gone about our Minnesota towns and have seen the increasing number of osteopaths and chiropractors, the truth of this statement has been borne in on me. If we consider the manner of the osteopath's diagnosis and his method of procedure, we shall realize that he, in a psychologic way, has the advantage. There are many patients in whom we cannot find anything wrong, yet they are always complaining and are very sensitive about these complaints. They go to the practitioner of medicine, who is unable to find anything the matter with them, and consequently he tells them to go home and brace up—good enough advice, but far from being satisfactory to the patient who feels he is already under some degree of suspicion by his family and friends as to the genuineness of his symptoms. So, somewhat offended in his pride, he goes to an osteopath, who immediately finds that a bone is out of place, or is pressing on a nerve, and at once there is self-justification for the patient in the complaints he has been voicing; he has something to show for them. He feels that he has been vindicated. If the osteopath is vigorous in his handling of the dislocated bone, he can obtain a snap audible to the patient as it supposedly slips back into place, which is further proof to the latter that he had very good reason for his complaints. In this way the osteopath gets the better of the more honest hard working physician, who has been too much obsessed by his knowledge of the physical condition of his patient and too little impressed with the importance of the psychic. When no adequate physical explanation can be found to explain the patient's symptoms, it is a near thought that some psychic basis exists, but it is not often that we take the trouble to search for it. In regard to the unconscious suggestion briefly referred to, I cannot see how something the patient has completely forgotten about is going to be very much of a factor in the causation of his symptoms. The repression of unpleasant things is one of our natural defensive reactions, and the more completely we can repress them the better we are off. Everybody recognizes the truth of this. We are consciously or unconsciously trying to forget the things which disturb us, and if we are able to do this successfully, we secure peace of mind. If we are unable, we continue to be unhappy. While I think suggestion is only a palliative procedure, I do not see how we can afford to neglect the powerful therapeutic value of it in our contact with our patient. If we wish to utilize all the means at our command in the treatment of our patients, we must not forget the positive value of suggestion skilfully applied, which often succeeds when medicines fail.

DR. C. R. WOODSON, St. Joseph, Mo.: The plain English of psychotherapy is one's ability to divert the mind of the patient, and honest suggestion is far better than dishonest suggestion. The one who has power to gain confidence and hold confidence must be honest. The one who does so by deception, misrepresentation and solely to divert, loses confidence. The one who can entertain and take the mind off of self by suggestion or conversation is curing. The individual who worries because of thinking of self, some imaginary trouble, by hesitating or doubting does not do well. To get the mind off of self by thinking of more pleasant things, by seeing everything it comes in contact with, by thinking of the pleasant things and letting the unpleasant or imaginary things pass should be the desire of every good nurse. The nurse who is capable of entertaining or diverting or getting the mind off of self is a very valuable adjunct in treatment.

DR. HENRY KELLER, New York: Dr. Jacobson tried to emphasize the necessity of introducing properly controlled psychologic methods into medicine instead of haphazard guesswork. As an orthopedic surgeon, I feel that were I to eliminate psychology from my practice I should certainly do an injustice to my patients. In addition to a requisite knowledge of kinesthetic equivalents and sensations, which is needed in order to interpret pain sensations coming from joints, tendons and muscles, one must also be conversant with distance and color perceptions in children and other characteristics peculiar to the child, and utilize it to encourage active cooperation in Erb's palsy and infantile paralysis, etc. Many patients after a trauma or contusion of muscles

near a joint cannot be induced to use their muscles voluntarily unless they have first been convinced of the contractile power of the muscles through electric stimulation. Hence, the electric battery will be the psychologic factor in restoring the normal function of the injured limb. However, in addition to using every scientific method for the purpose of ascertaining the nature of the ailment of the patient who is seeking relief, we must not forget that we are dealing with human beings, and not with laboratory apparatus. We must use judgment how to deal with each patient individually, and all our knowledge, experience and doings must needs be fixed with an appreciable grain of common sense. Only in that way shall we be able to get the best of the chiropractors, osteopaths and all other cults whose sole claim to cure patients is based on that which we as physicians frequently lose sight of, namely, that every sufferer must be approached through his cranium. With Socrates we can say, "This is the great error of our day in the treatment of the human body, that physicians separate the soul from the body."

DR. WALTER F. ROBIE, Baldwinsville, Mass.: One speaker said that analysts attempt to eliminate suggestion. That is utterly impossible. I do not think any one can speak to an audience without conveying a suggestion. I translate transference as sympathy, and I wish to register my approval of suggestion as being efficacious. Freud, Jung, in fact, the whole coterie of psychoanalysts, convey suggestions to me when I read them; they use suggestion with every patient.

DR. MINER H. A. EVANS, Boston: There seems to be some confusion about what we mean by the term suggestion. Any mental or psychologic process which is set up in the patient and leads to some change in his attitude, whether the change is in the direction of his attention or some alteration of his interest in his problem, is suggestion. In this sense I suppose all education is the result of suggestion. I do not believe it is possible to eliminate suggestion from any method of treatment. However technical and high grade the analysis, and however industrious the effort of the analyst, it is impossible for him to know just what processes have been initiated in the mind of his patient. And it is impossible for him to know the ultimate results of these processes. Changes in the attitude of a patient toward his illness may begin before he sees the analyst at all. It may begin when, after much uncertainty, he finally decides to go and be analyzed.

DR. EDMUND JACOBSON, Chicago: Suggestion is, of course, not the only topic of experimental psychology; but if there is such general interest in it, as is apparent from the expressions brought out, most of the questions that have been raised might well be worked out by way of carefully conducted experiments. So long as such matters of discussion are left to general opinion, they remain speculative, and only by separating them into particular problems can one get conclusions that are reliable. It was farthest from my purpose to introduce the topic of psychoanalysis. My task was not to discuss the possible status of that subject, or to inquire whether there are such things as unconscious mental processes, for it is clear that the general practice of medicine does not involve some supposed unconscious mental process on the part of every patient who visits the office for advice and diagnosis. But it does involve a general psychology, since every ailment has some mental aspect, and this calls for the application of general principles, for which there is urgent need of an experimental basis. The patient's mental life must be studied, and this evidently means that there is a diagnostic as well as a therapeutic phase of psychology applied to medicine. If the point of view of experimental psychology is correct, suggestion is by no means the only method of psychotherapy, just as psychoanalysis is by no means the only method of psychotherapy. There would seem to be too much of a tendency of this or that school's assuming that its own interests comprise the whole of medicine, and thereby failing to appreciate the accomplishment of others. Suggestion, however valuable, has its distinct limits, and various other methods are available. The general principles of experimental psychology, if introduced into medicine, may put observation in the place of opinion and speculation, and may lead to a better understanding of the human material one deals with.

DETERMINATION OF THE BASAL METABOLISM

AS A METHOD OF DIAGNOSIS AND AS A GUIDE TO TREATMENT *

JAMES H. MEANS, M.D.

BOSTON

The preceding papers in this symposium have set forth the fundamental principles of the subject in hand, human calorimetry and the basal metabolism of man.

It will be my purpose to discuss briefly the rôle that calorimetry plays in the clinic of today, the help that calorimetric observations may be expected to give to the clinician both in diagnosis and in therapeutics, and the nature of this help, particularly its extent and its limitations.

The medical profession of this country is indebted to Atwater and to Benedict and to their collaborators for a vast fund of information on the energy metabolism of the normal human being under nearly every conceivable condition. To Benedict also and his collaborators, and to Du Bois and his collaborators, the profession is indebted for the introduction and application of the science of calorimetry to clinical problems. It was with the development of an accurate surface area formula by Eugene H. and Delafield Du Bois¹ that clinical calorimetry really became a practical possibility, for it supplied the previously lacking prime requisite, an accurate method of judging of the normality or lack of normality of any given person's metabolism.

Since the advent of this formula, the measurement of the gas exchange and the calculation of the heat production therefrom, that is to say, indirect calorimetry, has come into increasingly wide use in American clinics, so that today there is a reasonably extensive literature on the subject. The work of Boothby² at the Brigham Hospital, Boston, and that with which I³ have been concerned at the Massachusetts General Hospital, is, I believe, among the earliest of the sort. The latter work was begun in 1914.

The practical application of calorimetry to the clinic has been chiefly in the group of thyroid diseases, and in the following remarks it is with them I shall have chiefly to deal. In other fields, however, certain helpful information has been gathered which I shall discuss briefly a little later on.

Before considering the metabolism in disease, a remark is in order regarding that of the normal person. The physiologist is oftentimes impressed with the unaccountable variations in metabolism of essentially similar normal persons, and for that reason he may feel that the clinician is not justified in assuming a definite standard for normal metabolism, as is now done. From the physiologist's point of view, he is correct. There are differences in the metabolism of normal persons that are not explainable on the basis of size,

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

¹ This article, and the one by Du Bois which follows, are part of a symposium on "Basal Metabolism." The previous articles by Drs. Plummer, Benedict, Lusk and Boothby appeared last week. The complete symposium, including the discussion, will be published in pamphlet form.

1. Du Bois, Delafield, and Du Bois, E. F.: The Measurement of the Surface Area of Man, *Arch. Int. Med.* 15: 868 (May) 1915.

2. Boothby, W. M.: *Boston M. & S. J.* 175: 564 (Oct. 19) 1916.

3. Means, J. H.: *Boston M. & S. J.* 174: 864 (June 15) 1916.

weight, form, age or sex. Nevertheless, these variations are slight compared with the gross differences found in disease. The physiologist, accustomed to measuring bodily processes by methods of precision, is impressed by the slight differences which the metabolism of normal subjects shows; the clinician, on the other hand, obliged as he generally is to estimate abnormalities of function by the qualitative information gained by observation at the bedside, is impressed by the constancy of the metabolism of normal persons.

We are familiar with a number of physiologic constants. None of these are constant in an absolute sense. They are, so to speak, relative constants. From one point of view they may not be constants at all; from another they may present a high grade of constancy. For example, any change in the reaction of the blood except within a minute range is incompatible with life. Indeed, our whole physiologic economy in a sense seems to be regulated to preserve this factor constant. It is one of the most striking constants in nature, and yet within a narrow range it is a variable. The same may be said of the body temperature, the basal metabolism, and in a very limited way of the pulse rate.

It would seem absurd to say that the normal pulse rate is a constant; it is not, and yet it varies within sufficiently understood limits for us to recognize pathologic rates, tachycardia and bradycardia. To that extent it may be considered a constant. It would be equally absurd to fix any arbitrary limits above or below which a pulse rate was considered abnormal; but this does not prevent us from saying that a resting pulse of 40 is a bradycardia or one of 90 a tachycardia. The same reasoning may be applied to the basal

With the metabolism, as with the pulse, it is illogical in a sense to fix arbitrary limits of variation and to consider the metabolism abnormal if it falls outside them. Yet for convenience we may do so if we at all times bear in mind the arbitrariness of the procedure. When we say that a given patient has a bradycardia, we are, in our own minds fixing an arbitrary low limit for the

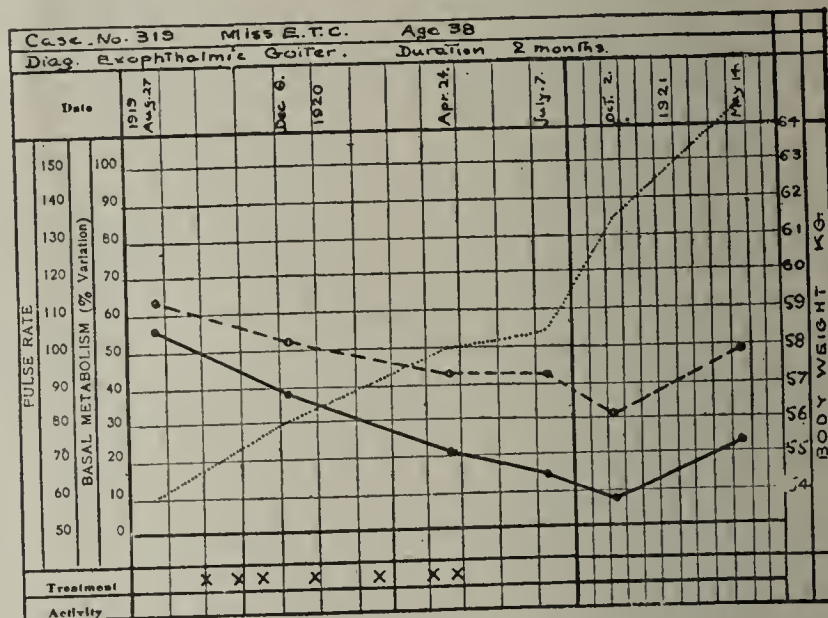


Chart 2 (Case 2).—Under "Treatment," X denotes a roentgen-ray treatment. It will mean the same in succeeding charts.

normal pulse. This is a justifiable and useful mental process. It is legitimate to do the same in the case of the metabolism.

In interpreting the significance of abnormal metabolism findings in patients, we must correlate them with clinical findings and weigh their probable importance in comparison with every other sort of evidence in any given case, exactly as we should do in interpreting any other laboratory or special finding, such as roentgen-ray, phenolsulphonephthalein test, blood sugar, and the like. We must not rush off and say that, because a given patient's metabolism was 25 per cent. above the normal standard or prediction figure, he has hyperthyroidism. The high finding may have been due to some other disease, pernicious anemia, or leukemia perhaps, or possibly to the fact that although we neglected to take his temperature he had a fever at the time the test was made. Such warnings might seem to be unnecessary, but yet I feel that with the wide popularity that clinical calorimetry has suddenly met, they are in order. So too, is a warning against inaccurate technic in order. This has already been given by various writers. It will bear repetition, particularly for the reason that various instrument makers are exploiting the sale of metabolism apparatus and are trying to convince the practitioner that he needs a metabolism machine in his office quite as much as he does a stethoscope in his pocket. Furthermore, simplified metabolism apparatus of one sort and another is making its appearance in the advertising pages of our journals before it has been described in their scientific columns. The widespread application of calorimetry by persons who do not take the trouble to acquaint themselves thoroughly with the literature and technic of the procedure is fraught with danger, danger to the individual patient through faulty interpretation of results, danger to the profession at large through the publication of erroneous results, that is to say, to the reporting as evidence of a pathologic condition in the patient an abnormal finding which is in actuality the result of technical error.

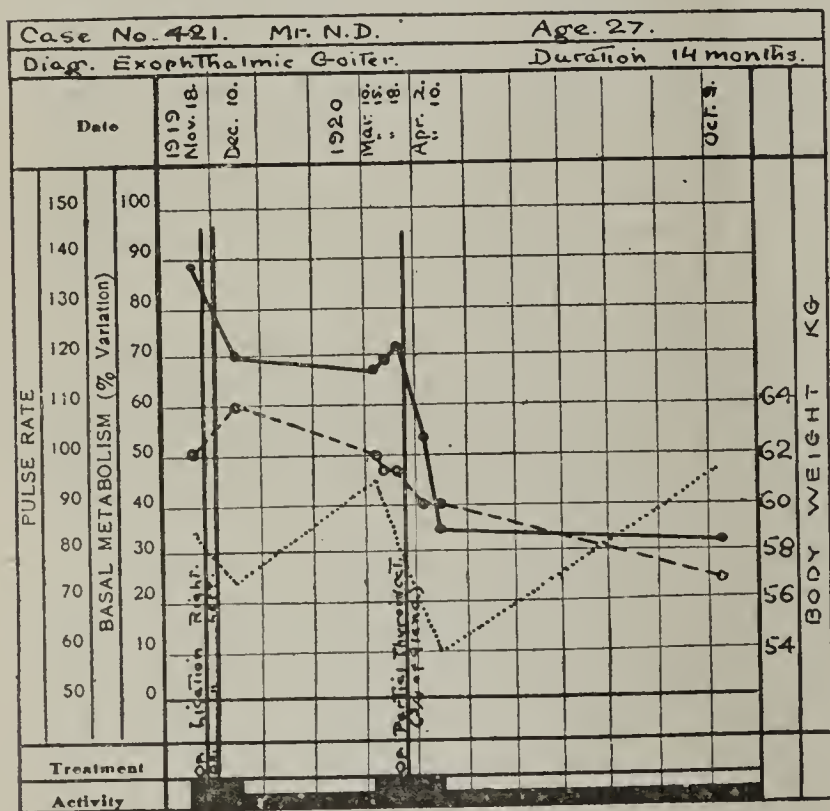


Chart 1 (Case 1).—Basal metabolism (per cent. of variation from Sage Institute standard) shown by the solid black line and dots; pulse, by interrupted line and circles; weight, by the dotted line. Under "Treatment," the type and time of operation is shown. Under "Activity," the rest factor is indicated. When the space is entirely black it denotes complete rest in bed; half black, partial rest; when blank, that the patient is following his ordinary mode of life. The same system will be followed in the succeeding charts.

metabolism. Only here the normal range of variation is distinctly less than in the case of the pulse. It is more nearly a constant than is the pulse, and is therefore a more accurate index of disturbed function than is the pulse, at least as between different individuals.

I am frequently asked either by practitioners or by clinics whether they ought to set up a metabolism laboratory. I tell them that I cannot see that they are under any obligation to do so, and that whether or not it will be desirable for them to do so will depend on their special needs. The up-to-date clinic is really obliged now to make Wassermann tests; as I see, it is not at all in that sense obliged to make metabolism determinations. The metabolism determinations in the management of thyroid cases, for it is with them that it has its chief use, is in general a refinement rather than a necessity. We could undoubtedly take reasonably good care of typhoid patients if we were deprived of the clinical thermometer; so we can with our thyroid patients without a metabolism apparatus. The metabolism determination in the thyroid case is of less importance than is the thermometer in typhoid. Furthermore, it is easier to make inaccurate observations with a metabolism apparatus than with a thermometer. It is far better to make no metabolism tests than to make them inaccurately. But, with these warnings and limitations in mind, it seems to me that it can be said that, for the clinic or practitioner handling a considerable number of thyroid cases, facilities for making metabolism observations will be a help. They will give a somewhat more accurate conception of the intensity of the disease than will clinical observation alone; they will add a quantitative aspect to the impression of the case that will, to say the least, be of assistance; and in the differential diagnosis of borderline cases they will be very valuable.

The actual help afforded in thyroid disease can best be observed by some illustrative cases. My purpose at

decreased, above in the former instance or in the latter below what the individual's level would be if he were in a normal state. The order of magnitude of these changes is somewhere in the neighborhood of a drop of from 20 to 40 per cent. in myxedema, and an elevation of from 20 to 40 per cent. in mild, 40 to 60 per cent. in moderate, and 60 to 100 per cent. in severe hyperthy-

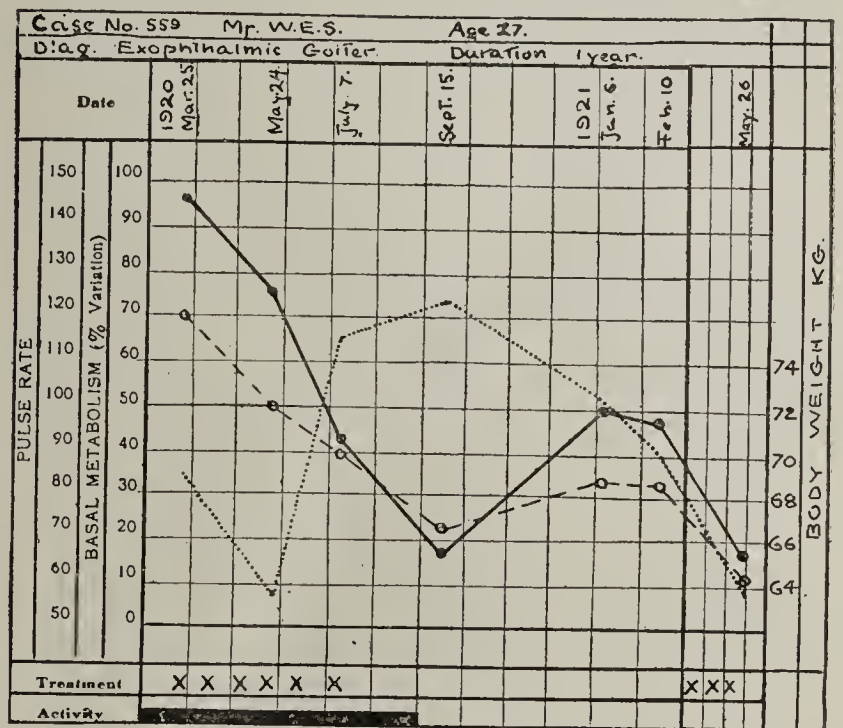


Chart 4.—Basal metabolism, pulse and weight in Case 4.

roidism. The determination of the metabolism in the thyroid cases constitutes essentially a functional test of that gland.⁴

The progress of a febrile disease is rendered more easy of visualization by the clinical chart. The clinical chart in pneumonia or typhoid consists of pulse, temperature and respiration curves—these are the three factors of cardinal importance. A clinical chart in thyroid disease also helps visualization of progress. But here the factors of first importance are the basal metabolism, the pulse and the body weight. These three curves, when plotted, give us information of a similar nature to that given by the usual chart of the febrile patient.

It is the construction of such charts that has interested us most at the Massachusetts General Hospital.⁵ A series of observations, when extended over a period of months or years, gives a very striking picture of the patient's progress. Such series, I believe, in general are of considerably more importance than isolated observations.

Let us consider a few of these by way of illustration. In the typhoid patient's chart the perpendicular lines represent days. The diseases of the thyroid are for the most part chronic. In our thyroid chart, therefore, the perpendicular lines are months; and while the typhoid chart at most covers a matter of a few weeks, the thyroid chart may well be extended for a period of years.

ILLUSTRATIVE CASES

CASE 1.—Chart 1 is that of a man with severe exophthalmic goiter of fourteen months' duration untreated and progressing unfavorably at the time, Nov. 18, 1919, he first came to our

4. Means, J. H., and Aúb, J. C.: A Study of Exophthalmic Goiter from the Point of View of the Basal Metabolism, *J. A. M. A.* **69**: 33 (July 7) 1917; Basal Metabolism in Exophthalmic Goiter, *Arch. Int. Med.* **24**: 645 (Dec.) 1919; Basal Metabolism in Hypothyroidism, *ibid.* **24**: 404 (Oct.) 1919.
5. Means, J. H.: *M. Clinics N. America* **3**: 1077 (March) 1920.

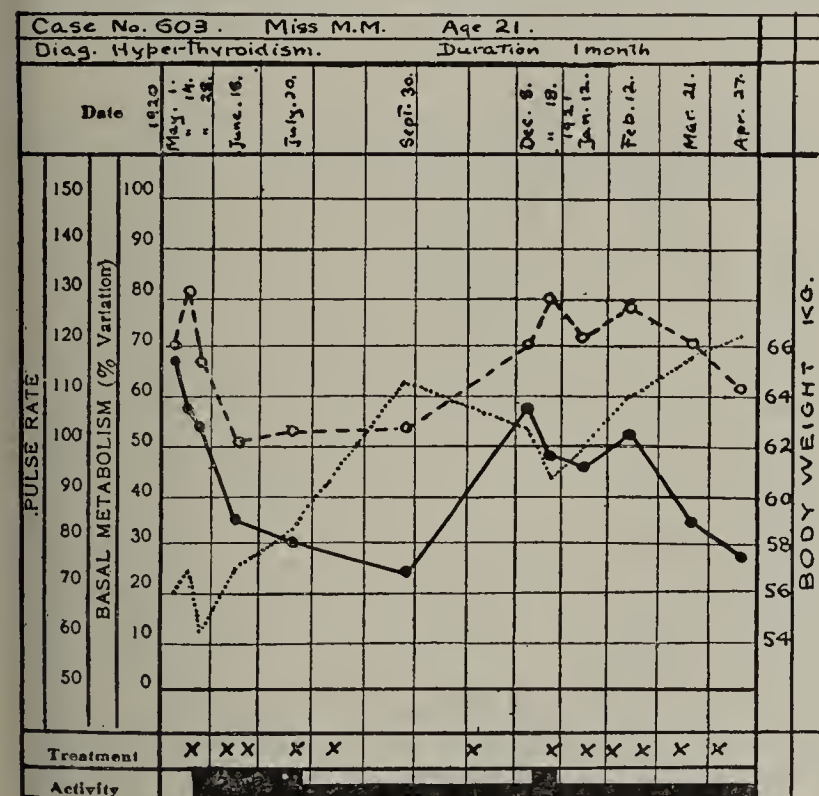


Chart 3.—Basal metabolism, pulse and weight in Case 3.

the present time is not in the least to discuss the treatment of hyperthyroidism. The cases that I shall present will be for the purpose of showing what the metabolism determination adds to our impression of a given patient's disease.

It is well recognized that one of the main functions of the thyroid is to regulate the intensity of combustion within the body. When it is overactive, the basal metabolism is increased; when underactive it is

clinic. The disease had begun while he was in the army. The chart shows at a glance the progress of this patient for a period of a year and the treatment that he received. Three operations were done by Dr. E. P. Richardson: November 24, ligation of the right superior vessels; December 1, of the left, and, March 24, 1920, a subtotal thyroidectomy. About three quarters of the gland was removed. After the ligation there was a slight fall in metabolism and pulse and a slight gain in

essentially no treatment but roentgen ray. Between March 25 and July 7, 1920, he received six full treatments. During this period he was not working but was reasonably active and had no real rest. There was a most astounding fall in basal metabolism and pulse, and gain in weight. There was a corresponding clinical improvement; this was so great that against advice he returned to work. His work, that of chauffeur on a fire truck, was hardly of a suitable sort for a man recently ill with exophthalmic goiter. The not surprising result was that he again became thyrotoxic, which is well shown in the chart. In spite of this he has continued at work and, even under these adverse circumstances, a second course of roentgen-ray treatment seems to be curing him.

CASE 5.—Chart 5 shows the findings in the case of a woman, aged 31, who had had moderately severe exophthalmic goiter for about a year at the time the chart was started. Eleven roentgen-ray treatments (seven before the chart was started) had failed to accomplish any clinical improvement or to reduce her metabolism below plus 65 per cent. It might be said, however, that she had followed her ordinary mode of life during this period. A short rest in bed in the hospital then reduced her metabolism some 15 points and, March 26, 1920, Dr. C. A. Porter ligated the superior arteries on each side. Two months later the metabolism had remained at the lowered level, but had shown no further drop. Dr. Porter operated again and, June 16, 1920, did a subtotal thyroidectomy. There was a prompt clinical improvement after that and fall in pulse and metabolism. Eleven months after the last operation the metabolism was plus 24 per cent.; the patient had gained considerable weight and clinically was practically well.

CASE 6.—Chart 6 illustrates the effect of overirradiation in exophthalmic goiter. This patient, a woman aged 29, had a rather mild form of the disease which she had had for a year. Four roentgen-ray treatments were given between Jan. 16 and March 22, 1920, and from January 12 to February 11 she had complete rest in bed in the ward. She showed a marked clinical improvement and fall in metabolism and pulse. The treatment was stopped. April 28, 1920, she reported for observation. Within the last three weeks she had gained a great deal of weight; her face had become puffy and she com-

weight; after the thyroidectomy, a striking fall in metabolism, all of which occurred in the fortnight after operation. Six months after operation the metabolism was essentially unchanged, still being plus 32 per cent. The patient had gained weight and his pulse had fallen to a normal level. Clinically he was much better, but still had some nervousness, tremor and increased sweating. He was not yet able to do a full day's work.

CASE 2.—Chart 2 is that of a schoolmistress of 38 with a rather mild form of exophthalmic goiter which she had had apparently for only two months at the time she first visited the clinic. The chart shows her progress over a period of twenty-one months, during which time she received seven roentgen-ray treatments from Dr. George W. Holmes with absolutely nothing else in the way of therapy. She pursued her normal mode of life and continued with her teaching. Oct. 2, 1920, she was subjectively and objectively well, as, indeed, she also was on May 14, 1921, though at that time metabolism and pulse showed a slight upward trend. This rise may or may not be of importance. But it illustrates, it seems to me, the usefulness of the chart, for it puts us on our guard against a possible relapse which we might have missed on the basis of the clinical picture alone.

CASE 3.—Chart 3 is that of a girl of 21 with the characteristic symptoms of hyperthyroidism but with only a very slight fullness of the thyroid and with no eye signs. The picture was what one may call, for want of a better name, simple hyperthyroidism. Her chart covers a period of about a year. During that time she had been taking quinin hydrobromid, 5 grains, three times a day, and for about half the time ergotin. 1 grain, three times a day. As shown in the chart also, she had had partial or complete rest for a year. Roentgen-ray treatment was started, May 18, 1920. August 11, she had had five treatments, with a marked fall in metabolism and pulse and a gain in weight, and definite subjective and objective improvement. In the fall of 1920 she had a relapse with return to about the starting point. A second course of roentgen-ray treatment seems to be relieving this, much as it did in the first instance.

CASE 4.—Chart 4 is that of a man, aged 27, with severe exophthalmic goiter of a year's duration, who had been having complete rest and quinin hydrobromid for three months under the direction of Dr. Charles A. McDonald when he was referred to the clinic. His symptoms had begun the year before while he was serving in the navy. This patient received

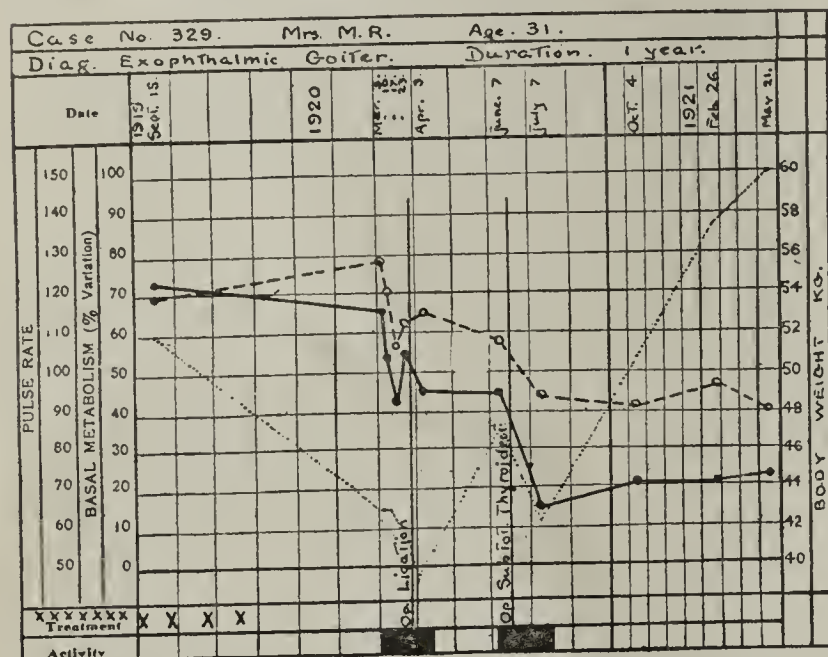


Chart 5.—Basal metabolism, pulse and weight in Case 5.

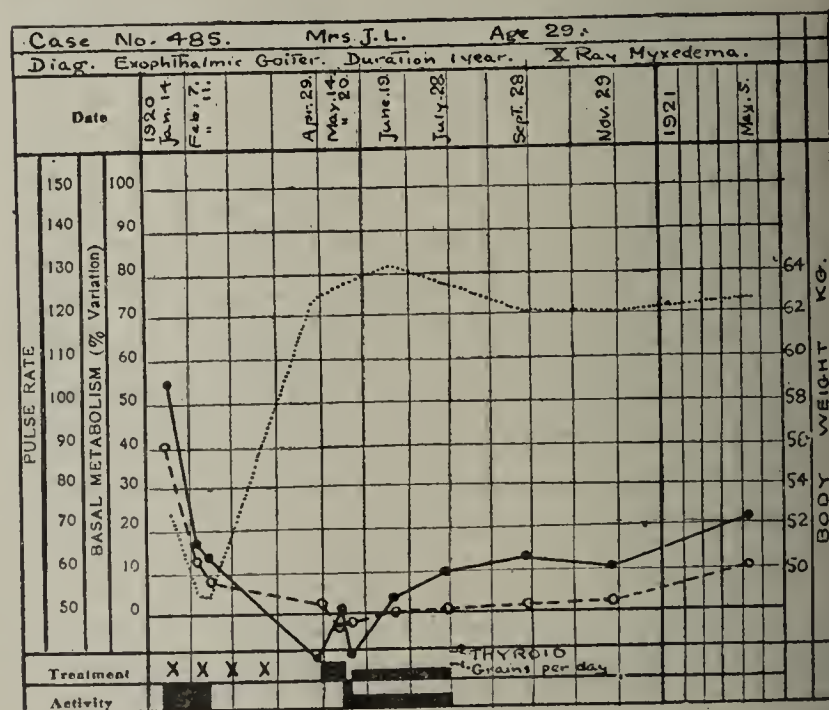


Chart 6 (Case 6).—Under "Treatment," the thyroid dosage is indicated by shading. The first dose employed was 1½ grains per day; the next, 1½ grains every other day.

plained of feeling dull and dozey. The picture was essentially that of myxedema. The metabolism was minus 11 per cent. She was started on thyroid gland, 1½ grains per day. May 14, her metabolism had returned to normal. The thyroid was stopped. May 20, the metabolism had fallen again to minus 11 per cent. Thyroid administration was begun again, but in a smaller dose, 1½ grains every other day. July 28, her metabolism was plus 10 per cent., and all symptoms of hypothyroidism had gone. The thyroid was stopped. She was

followed for nine months more. The metabolism never fell again, and no symptoms of myxedema returned; indeed, on the last observation, May 5, 1921, the metabolism was slightly supernormal, indicating that perhaps a return of her hyperthyroidism was impending, though clinical signs were lacking. This case shows from both the clinical and laboratory points of view that, in certain cases at least, irradiation really seems to lower thyroid activity. It also shows that in the

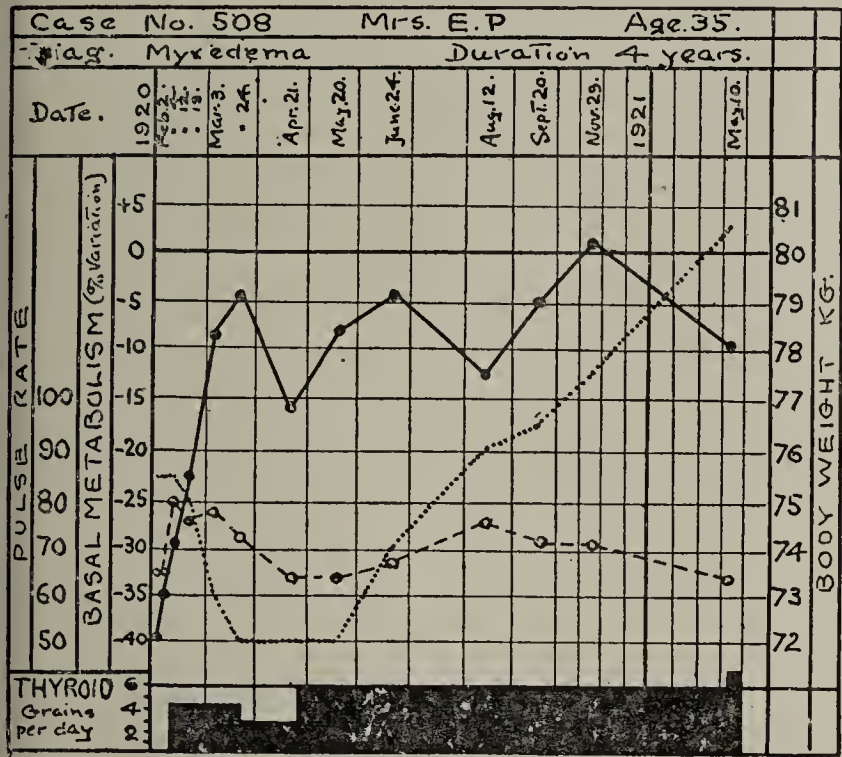


Chart 7 (Case 7).—In this and in Figure 8, "Activity" is not indicated. Both these patients pursued throughout a normal life. The dose of thyroid employed is indicated by the width of the black area.

roentgen-ray treatment of exophthalmic goiter the possibility of overtreatment must be borne in mind and guarded against. The very delicate response of the metabolism level to thyroid administration is also well shown by this chart.

CASE 7.—Charts 7 and 8 are of patients with hypothyroidism. Figure 7 is that of a woman, aged 35, with frank myxedema which had existed for four years. The metabolism was promptly returned to normal by thyroid administration. At the same time the weight fell and the symptoms improved. The effect of a reduction in thyroid dosage is shown in the chart, a fall in metabolism and pulse. The dose was again increased, with a return of the metabolism toward normal. This patient has been followed for well over a year. In the main her metabolism has been within normal limits, and she has been free from symptoms. At the time of her last visit, because of a slight tendency to subnormal metabolism and steady gain in weight, she was told to increase the dose of thyroid still further.

CASE 8.—Chart 8 also illustrates the control of thyroid dosage by metabolism findings. This patient, a man, aged 29, did not have frank myxedema; he had suggestive signs only: a tendency to gain weight, and some sluggishness, both mental and physical. He was found to have a subnormal metabolism and was started on thyroid; 4½ grains a day brought his metabolism to normal, then a decrease to half that dose was followed by a fall. The original dose was resumed and now for a year and a quarter his metabolism has been kept essentially within normal limits, and clinically he has been much improved.

COMMENT

These eight charts, it is hoped, will illustrate what to my mind is the chief rôle of indirect calorimetry in the clinic of today; namely, the quantitative estimation of thyroid function and the accurate representation of the effects of treatment, either those measures in hyperthyroid states which are designed to reduce thyroid activity, or thyroid therapy in conditions of hypothyroidism. In the latter, particularly, the discovery of the exact dose of thyroid gland which will make a given

patient's metabolism assume and stay at a normal level is most fascinating.

Outside of thyroid disease, the metabolism determination as a diagnostic procedure or functional test does not play an important rôle. By that I do not mean to say that the study of a variety of pathologic states by calorimetric methods is not of fundamental importance. It most assuredly is; but such studies belong primarily to research, while the matter under consideration is the, so to speak, routine use of calorimetry in the clinic. The place of calorimetry in the investigation of disease does not come within the scope of the present paper.

Before closing, I wish to add merely a few words as to the metabolism determination in the field of differential diagnosis. From what has already been said here and elsewhere, it is obvious that when hypothyroidism or hyperthyroidism is suspected, metabolic studies will be of great assistance in the differentiation of effort syndrome and mild hyperthyroidism, for example, and of toxic from nontoxic goiters, or in the borderline hypothyroid conditions. In my hands it has been particularly useful in the recognition of the latter. Chart 8 is an excellent illustration of this.

One other direct clinical application is in the matter of obesity. Studies published elsewhere⁶ have shown that in simple obesity the basal metabolism is normal. Such obesity is due, to my mind, to a disproportion between food intake and bodily activity, and not to any fundamental change in the rate of combustion in the body. In such persons the giving of thyroid raises the metabolism to an abnormal level, produces hyperthyroidism, in other words. The treatment, then, of simple obesity with thyroid is in my opinion pernicious. It relieves one evil by creating another. I have, too, been impressed of late with the very common use of thyroid by the laity for purposes of weight reduction. Personally, I think the sale of this drug except on prescription

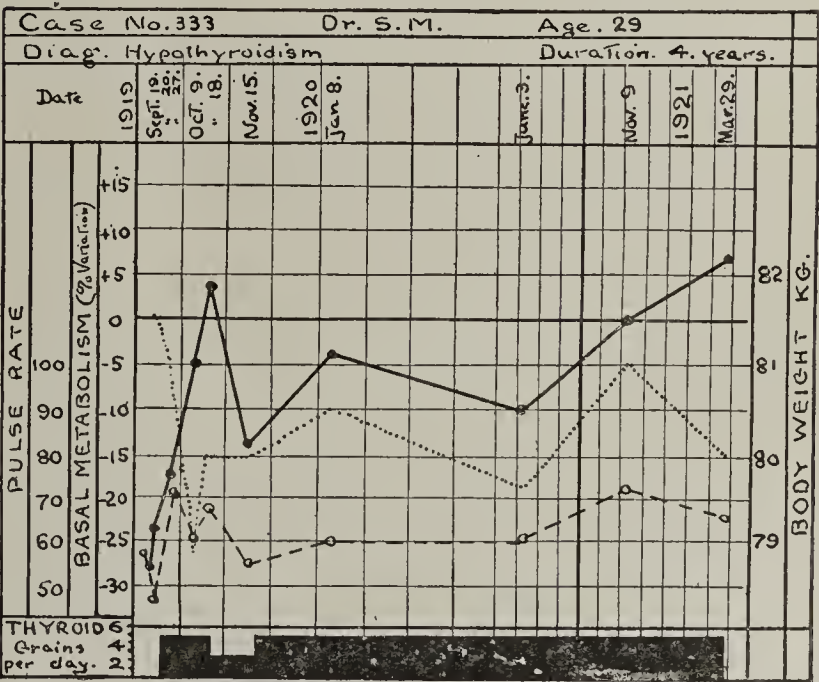


Chart 8.—Basal metabolism, pulse and weight in Case 8.

should be prohibited by law. Metabolism studies have convinced me that thyroid should never be given except to persons who exhibit subnormal metabolism.

By means of the metabolism determination, the case of simple obesity can be differentiated from the obesity due to endocrine disease. This applies not only to

6. Means, J. H.: J. M. Res. 32:121, 1915; The Basal Metabolism, in Obesity, Arch. Int. Med. 17:704 (May) 1916. Means, J. H., and Woodwell, M. N.: Ibid. 27:608 (May) 1921.

hypothyroid obesity but to pituitary as well. In hypopituitarism there is a reduction in metabolism level just as in hypothyroidism, though perhaps of lesser degree, so that calorimetry may help us in recognizing obesity of pituitary origin also.

Of diseases other than of the thyroid and pituitary in which there are alterations in basal metabolism, the most striking are the leukemias and severe anemias, particularly pernicious anemia. The significance of these changes, however, is as yet not clearly understood, and they have at present no routine diagnostic or therapeutic bearing, although it is altogether likely that later they may have.

In conclusion, I will simply reiterate that indirect calorimetry has furnished us with a quantitative test of the thyroid, with a method for clearly visualizing the progress of patients with thyroid disease, of accurately controlling the treatment of them, and of clinching the diagnosis in certain borderline cases. It also has thrown light on the nature of obesity and has furnished us with a means of distinguishing between simple and endocrine obesity, and has demonstrated the inadvisability of treating the former condition by the administration of thyroid gland.

THE BASAL METABOLISM IN FEVER *

EUGENE F. DU BOIS, M.D.

NEW YORK

The clinician has several definite and practical questions to ask regarding the basal metabolism in fever. He wishes to know whether he can calculate the total metabolism of a patient with a given degree of temperature in order to have a rational basis for the fever dietary. It is important for him to know whether there is anything abnormal in the metabolism of proteins, fats, carbohydrates and water. Being interested in the whole subject of fever, he desires information regarding the relative importance of the various factors which increase the metabolism in hyperthermia.

The answers to the questions must be sought in the voluminous literature of the last thirty years. We have at our disposal a large number of experiments on animals with fever produced by lesions of the central nervous system, by drugs and by artificial infections. These have been well reviewed by Richter,¹ and more recently by Barbour.² but they do not give us much help in our problems with man. We have a few experiments on men warmed artificially by hot baths, but in these the effect of the external heat outweighs the fever. We have a large number of experiments on fever patients made by the Zuntz-Geppert apparatus, Benedict apparatus and similar machines which measure the heat production by means of the method of indirect calorimetry. These have given us much information and have laid the foundation of our present knowledge of the metabolism in fever. They have certain disadvantages since the subjects are exposed to different environmental conditions and are more or

less disturbed by the application of mouth pieces or masks.

The discussion in this paper will be limited almost entirely to the groups of fever patients studied in the respiration calorimeter of the Russell Sage Institute of Pathology in Bellevue Hospital, New York, between the years of 1913 and 1920. Patients and normal controls have been exposed to uniform conditions of environmental temperature and humidity. They have lain almost motionless on a comfortable bed in a quiet respiration chamber for periods of from two to four hours, and in some instances all night. The temperature has been read every four minutes by means of an electrical thermometer which lies about 10 cm. in the rectum. The heat production has been measured by the chemical methods of indirect calorimetry and by the physical methods of direct calorimetry which determine the exact heat loss by radiation and conduction and by the vaporization of water. Incidentally, we may note that the close agreement of these two methods proves that the law of the conservation of energy holds good in fever patients.

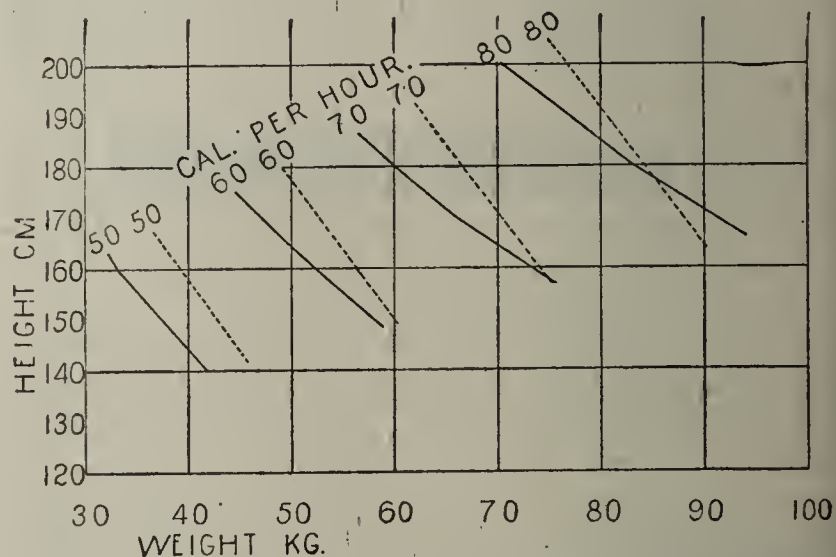


Chart 1.—A comparison of the normal standards for men 30 years old. The solid curved lines give the calories per hour according to the surface area chart and standards of Aub and Du Bois. The dotted lines represent the figures according to the Harris-Benedict multiple prediction tables. For instance, a man 30 years old, 180 cm. tall and 60 kg. in weight would have a predicted normal basal metabolism of 70 calories per hour according to the surface area curves, and about 67 calories per hour by the other method. The results according to the Harris-Benedict formula are lower, but the two sets of lines are almost parallel for this age group.

The published work consists of studies in typhoid fever by Coleman and Du Bois,³ in malaria by Barr and Du Bois,⁴ and in tuberculosis by McCann and Barr.⁵ The unpublished work here presented consists of studies made by Coleman, Cecil, Barr and Du Bois in erysipelas,⁶ arthritis⁷ and the fever produced by intravenous injections of protein.⁸

Comparisons with the normal were made according to the usual method of the Sage investigators, who consider that the normal metabolism for a given age

* From the Russell Sage Institute of Pathology in affiliation with the Second Medical Division of Bellevue Hospital and from the Department of Medicine of Cornell University Medical College.

* Read before the joint meeting of the Section on Practice of Medicine, the Section on Pharmacology and Therapeutics, and the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Richter, P. F.: Fieber, in Oppenheimer's Handbuch der Biochemie.

2. Barbour, H. S.: The Heat-Regulating Mechanism of the Body, *Physiol. Rev.* **1**: 295, 1921.

3. Coleman, Warren, and Du Bois, E. F.: Clinical Calorimetry, Seventh Paper, Calorimetric Observations on the Metabolism of Typhoid Patients With and Without Food, *Arch. Int. Med.* **15**: 887 (May) 1915.

4. Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Twenty-Eighth Paper, The Metabolism in Malarial Fever, *Arch. Int. Med.* **21**: 627 (May) 1918.

5. McCann, W. S., and Barr, D. P.: Clinical Calorimetry, Twenty-Ninth Paper, The Metabolism in Tuberculosis, *Arch. Int. Med.* **26**: 663 (Dec.) 1920.

6. Coleman, Warren; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Thirty-Second Paper, The Metabolism in Facial Erysipelas, to be published.

7. Barr, D. P.; Cecil, R. L., and Du Bois, E. F.: Clinical Calorimetry, Thirtieth Paper, Observations on the Metabolism in Arthritis, to be published.

8. Cecil, R. L.; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Thirty-First Paper, The Effect of the Injection of Foreign Protein on Metabolism, to be published.

and sex is proportional to the surface area.⁹ Practically all of the subjects studied were between 20 and 40 years old, and the standard used for this age was 39.5 calories per square meter per hour.¹⁰ If we express the matter graphically on a chart (Chart 1), we can show the curves for the predicted metabolism of normal individuals of different heights and weights. If metabolism were proportional to height, these lines would be horizontal; if proportional to weight, they would be vertical. If proportional to surface area, they would have the slant shown in the curved solid lines of the chart, and our results do agree with these curved lines. A purely statistical study of the normal basal metabolism by Harris and Benedict¹¹ has resulted in a height-weight-age formula. With a little calculation we can show their results for men 30 years old on this chart. It is significant that the dotted lines for the Harris-Benedict formula are parallel to the surface area curves.

of from one to three hours at a given temperature level. The normal temperatures were obtained in afebrile periods or in the first eight days of convalescence. The diagonals are sketched to represent the direction of the swarms of dots. It will be seen that in tuberculosis the diagonal crosses the 40 C. line at a level of about 32 per cent. above the normal. In many of these patients there was enough undernutrition to account for a certain diminution in metabolism. In erysipelas the metabolism is a little higher for the same temperature. In typhoid fever, the line crosses the 40-degree level at 48 per cent. above the normal metabolism. In malaria and the fever following the intravenous injection of foreign protein, the metabolism is slightly higher. Of course, it is necessary to leave out the shivering periods in these two conditions. It is possible that some of the results in the high temperature following the chill are slightly affected by the previous severe muscular exercise.

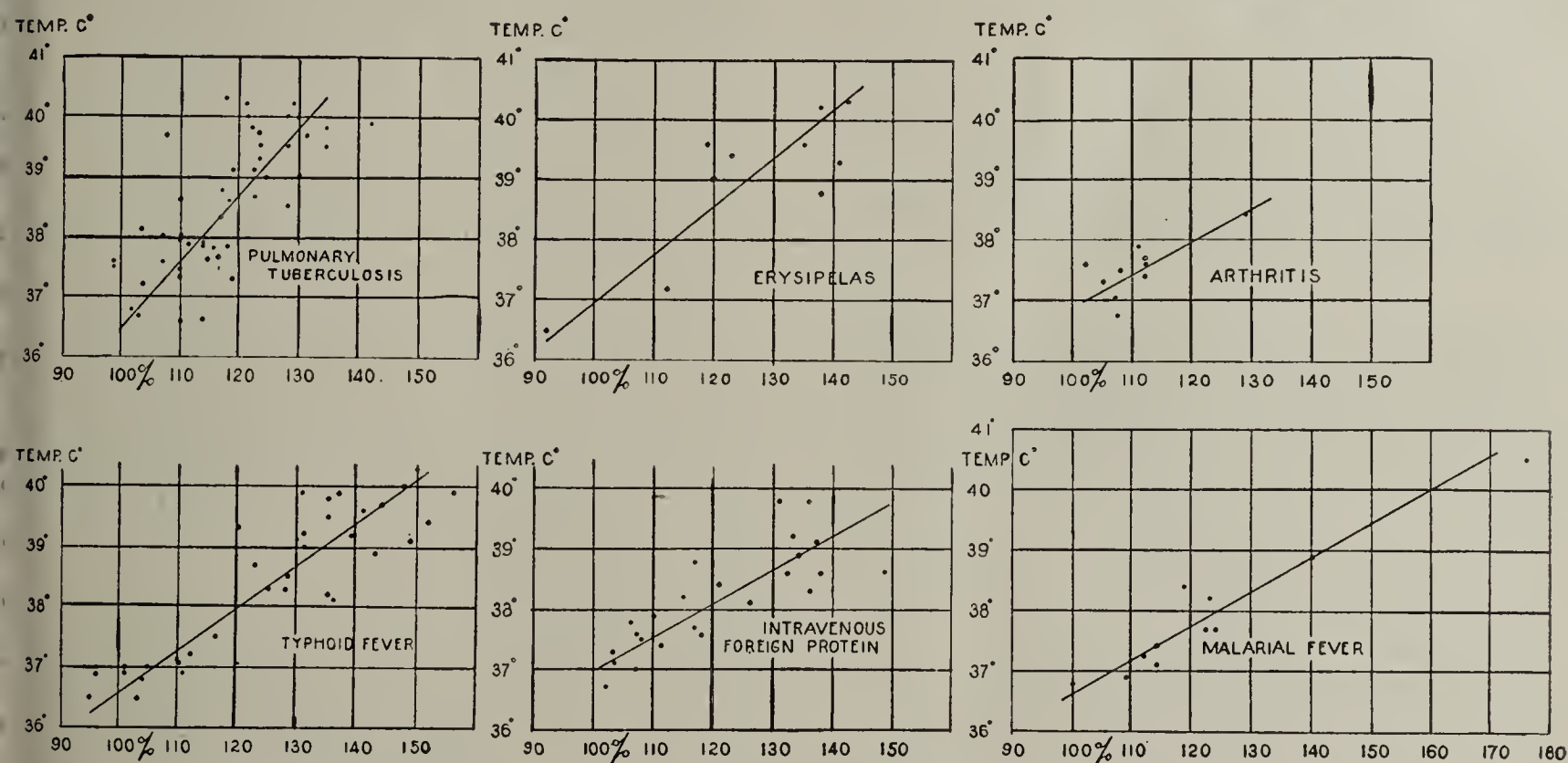


Chart 2.—Relationship of basal metabolism to temperature in various fevers. Ordinates represent rectal temperature in degrees centigrade, abscissas the metabolism expressed in percentages of the average normal; e. g., 150 equals 50 per cent. above the average. Each dot represents a calorimeter experiment of from one to three hours at the given temperature.

The studies of large groups of normal controls show that about 90 per cent. of normal men come within 10 per cent. of this standard; but a few who are apparently normal may show figures as much as 15 per cent. above or below.

Can we predict the metabolism as closely as this for any specified degree of fever?

Chart 2 shows the results in all the fevers studied in the calorimeter, expressed by the method used by McCann and Barr in tuberculosis. The ordinates show the rectal temperature in degrees Centigrade. The abscissas show the level of the metabolism in percentage of the average normal. The line 90 means 10 per cent. below the average; 150 means 50 per cent. above the average. Each dot denotes an experiment

Most of the patients whose metabolism is very high for the degree of temperature were typhoid or malaria patients with a high level of protein metabolism. Most of those with low basal metabolism were tuberculous patients with low protein metabolism. We know that protein increases the metabolism through its specific dynamic action, and this may explain the difference between the groups of patients. The ingestion of a large protein meal does not increase the heat production in typhoid fever, in which the protein metabolism is already high, but it does cause a striking increase in tuberculosis, in which the protein metabolism is at a much lower level. Although the increased protein metabolism seems to be a factor of some importance, we believe that it is outweighed by another and simpler factor.

We note particularly the similarity between fevers of greatly different origins, such as typhoid and erysipelas, malaria and intravenous injections. We are impressed by the importance of the nonspecific element in fevers. This is even more striking, if we group all the hetero-

9. Du Bois, Delafield, and Du Bois, E. F.: Clinical Calorimetry, Tenth Paper, A Formula to Estimate the Approximate Surface Area if Height and Weight be Known, Arch. Int. Med. 17:863 (June) 1916.

10. Aub, J. C., and Du Bois, E. F.: Clinical Calorimetry, Nineteenth Paper, The Basal Metabolism of Old Men, Arch. Int. Med. 19:823 (May) 1917.

11. Harris, J. A., and Benedict, F. G.: A Biometric Study of Basal Metabolism in Man, Publication 279, Carnegie Institution of Washington, 1919.

geneous fevers in one chart (Chart 3). The continued diagonal line is here drawn from statistical calculations, and the dotted lines are placed to represent divergences of 10 per cent. from this average. Out of the total of 137 experiments in various fevers, 82 per cent. come within 10 per cent. of the average. In other words, the percentage variations in the metabolism for a given temperature are scarcely greater than in a similar group of normal individuals.

This surprising uniformity of results suggests at once that we are dealing with the law of physical

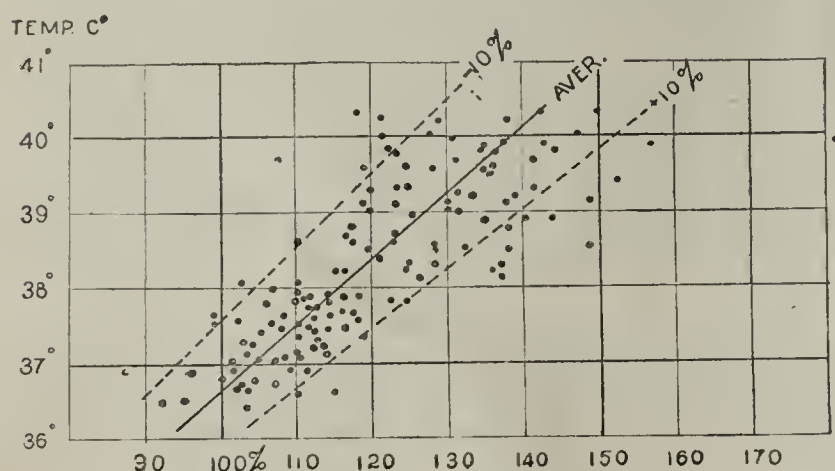


Chart 3.—Results in six different fevers grouped in one chart. The continued line shows the average and the dotted lines are drawn to represent metabolism 10 per cent. above and 10 per cent. below the average.

chemistry enunciated by van't Hoff.¹² For ordinary temperatures the van't Hoff law can be thus expressed: "With a rise in temperature of 10 degrees Centigrade, the velocity of chemical reactions increases between two and three times." In other words, the temperature coefficient is usually between 2 and 3. This means an increase of from 30 to 60 per cent. for the 3 degree rise from 37 to 40 C. Practically all of the fever experiments are within these limits, and the average line shows a temperature coefficient of 2.3.

Van't Hoff and Kanitz¹³ give the temperature coefficients which show the rate of increase in a number of chemical reactions with an equal rise in temperature. If we plot these in exactly the style of the fever patients (Chart 4) we note that the lines have approximately the same slope. In other words, the reactions in a fever patient respond to a rise in temperature in a manner which resembles closely the chemical reactions in a test tube suspended in a water bath.

There is a tremendous gap between the simple reactions in the test tube and the complex oxidations in the diseased human body, and we should hesitate to compare them were it not for the large number of biologic reactions which show temperature coefficients between 2 and 3. Van't Hoff calls attention to the rate of carbon dioxid elimination in plants, which shows a coefficient of 2.5. Kanitz¹³ gives a long list of similar coefficients for plant respiration, rate of isolated hearts, contraction of smooth muscle and the metabolism in cold blooded animals.

We have seen that the gross results in different fevers are strikingly similar. It is interesting to note the similarity in the details of the mechanism of the rise and fall of temperature in the chills of malaria and those which follow the intravenous injection of foreign pro-

tein. The first curve (Chart 5) shows the results obtained in a malaria patient by Dr. David P. Barr and myself. Before the chill the metabolism and temperature were normal. In the period of the thirty-four minute chill there was terrific shivering, and as a result the heat production rose to 216 per cent. above normal. After the chill the metabolism was increased by the hyperthermia, and then fell gradually as the temperature became lower. The chill was accompanied by no change in the heat elimination. The old idea that the rise in temperature is largely caused by a decreased elimination has been proved false. The rise is due to the increased heat production, and this is caused in part by shivering and in part by some chemical regulation, the nature of which is still in doubt.

After the temperature has reached its zenith, the elimination must, of course, exceed the heat production.

The curve of the rectal temperature does not always parallel the curve for the changes in the average body temperature. We shall never know the exact level of the average body temperature, because we cannot place thermometers all over the extremities and in the viscera; but if we know the differences between heat production and heat elimination, we can calculate how many calories have been stored in or lost from the body, using the method devised by Barr.⁴ If we start the average temperature curve half a degree below that of the rectal temperature, we can then follow its changes. Apparently the region whose temperature is measured by a thermometer deep in the rectum shows a more rapid rise than the whole body, with its large mass of tissue near the surface and in the extremities.

The curve of the arthritic patient who was given an intravenous dose of 35 million dead typhoid bacilli is almost identical with that of the malaria patient (Chart 6).

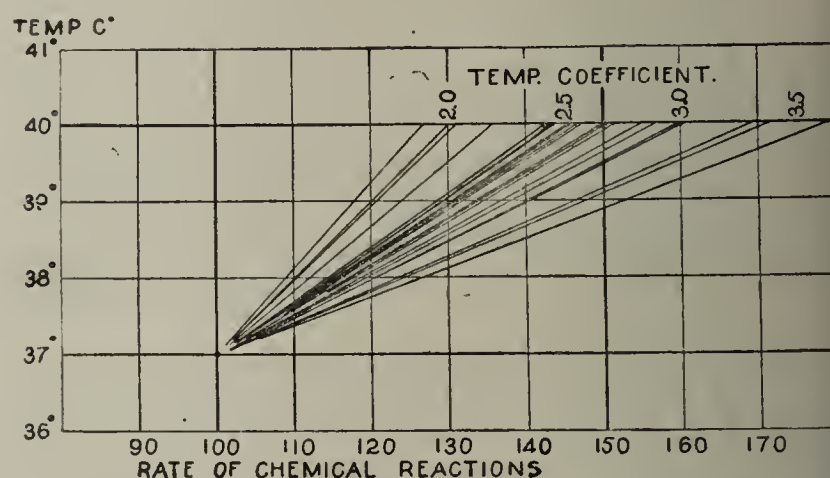


Chart 4.—The lines in this chart represent a number of typical chemical reactions taken from van't Hoff and Kanitz. The slant of the lines shows the increase in the rate of the reactions as the temperature is raised. Note that the lines correspond closely to those which represent the total oxidations in the human body.

A study of the respiratory quotients in various fevers indicates that there are no significant changes in the metabolism of fat and carbohydrate. Protein metabolism is high in fevers, and the protein minimum or "wear and tear quota" cannot be reduced to the normal level. This increase seems to be proportional to the toxemia, since it is excessive in patients seriously ill with typhoid and erysipelas, and comparatively insignificant in chronic tuberculous patients with the same degree of fever.

Balcar, Sansum and Woodyatt have produced excessive fever in dogs by depleting the water reserves

12. Van't Hoff, J. H.: *Studies in Chemical Dynamics*, Revised by E. Cohen, Translated by T. Ewan, Easton, Pa., Chemical Publishing Company, 1896.

13. Kanitz, A.: *Temperatur und Lebensvorgänge in Biochemie in Einzeldarstellungen*, Vol. 1, Berlin, Gebrüder Borntraeger, 1915.

of the body, and they infer¹⁴ that an abnormal water metabolism may be the cause of fever in man. If this were the case, we should expect to find striking abnormalities in the total or percentage loss of heat through vaporization in febrile patients. A careful scrutiny of the calorimeter results shows no such phenomenon. The

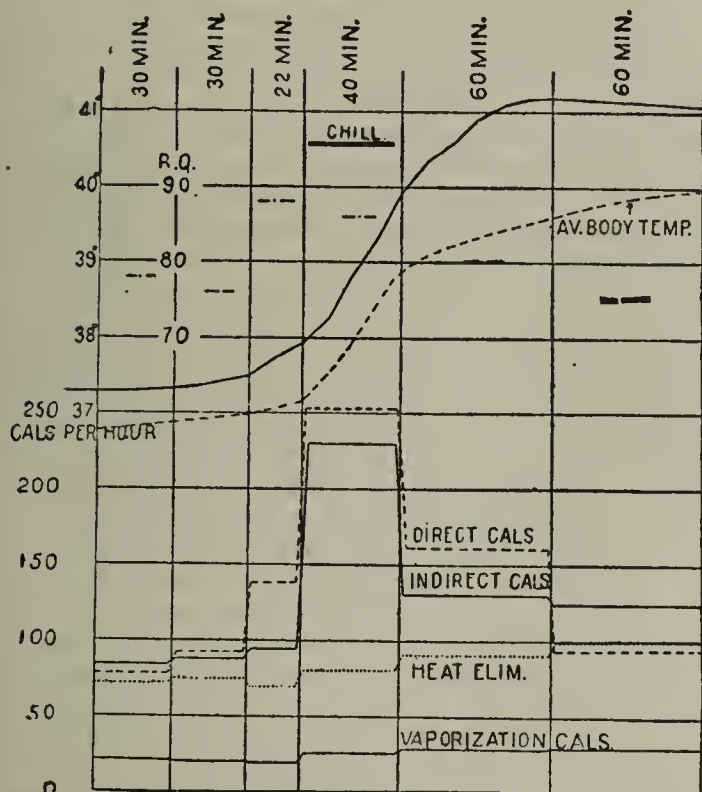


Chart 5.—Calorimeter results during a malarial paroxysm. The upper continued curve shows the rectal temperature.

water metabolism of fever patients corresponds closely with that of patients with an equal percentage rise in metabolism caused by hyperthyroidism.

Let us now answer the original questions. We can say that it is possible to estimate the basal metabolism of a patient by calculating his normal according to surface area standards. To this we should add about 13 per cent. for each degree Centigrade above the normal temperature (7.2 per cent. for each degree Fahrenheit). This should be increased by 10 per cent. in the case of toxic patients with great destruction of body protein, and by approximately 10 per cent. in all other febrile patients who are receiving much food. A further allowance of from 10 to 30 per cent. for muscular activity may be necessary if the patients are restless.

It is interesting to note that our practical calculations in the clinic are based on the law of the conservation of energy, on the surface area law of Rubner, on the laws of the specific dynamic action of foods as formulated by Rubner and Lusk,¹⁵ and on the temperature law of van't Hoff.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PLUMMER, BENEDICT, LUSK, BOOTHBY, MEANS AND DU BOIS

DR. GEORGE W. CRILE, Cleveland: I wish to assent to the statement by Dr. Boothby that the roentgen ray does not control exophthalmic goiter. We have often seen great benefit following roentgen-ray treatment, with recrudescence as a rule. At present we have no accurate and absolute basis for the classification of exophthalmic goiter. I do not think that the classification may be based safely on the histologic

study of the thyroid. Usually it is impossible to make the classification by the variation in the basal metabolism rates. I operate on quite a few patients who do not show alteration in the basal metabolic rate, and yet we secure good clinical results. I think that the most important points are taking a careful history and making a careful physical examination. After that the basal metabolism rate is of great importance, but I would not regard it as being of pathognomonic importance, nor would I classify exophthalmic goiter wholly on basal metabolism rates. I was glad to hear Dr. Boothby say that he does not think basal metabolism measurement would be a true guide for projecting a surgical operation. We feel that the best guide, after all, is the judgment of the surgeon or physician. For example, the basal metabolism rate will tell you what rate of expenditure the body is making; but it does not tell you how much reserve there is in the myocardium, in the liver and in the central nervous system. If surgery will avail itself of all its opportunities of minimizing to the utmost degree the impression made on the patient, every patient will be operable.

DR. CHARLES H. MAYO, Rochester, Minn.: After all, the importance of the subject relates mostly to chronic diseases and especially to diseases of the thyroid, in the changes of basal metabolism incident to normal, hypothyroid or hyperthyroid function. Enough is now known concerning the thyroid, its function and diseases so that in severe types of hyperthyroidism, basal metabolism determination, while not the sole indicator of severity, is of importance considered with the symptoms. Without it psychoneurosis, in which the Goetsch or epinephrin test shows a low stability of the nervous system, altogether too variable a test for much dependence in the analysis of exophthalmic goiter, might be classified in the category of hyperthyroidism.

DR. JOSEPH AUB, Boston: We are just completing some work in our laboratory to see whether the tremor of hyperthyroidism or the tonus of the muscles could be the cause of the increased metabolic rate. The work was done on cats. Their normal metabolism was first determined. Thyroxin was then injected intravenously and intramuscularly and the effect watched by following the metabolic rate. When well

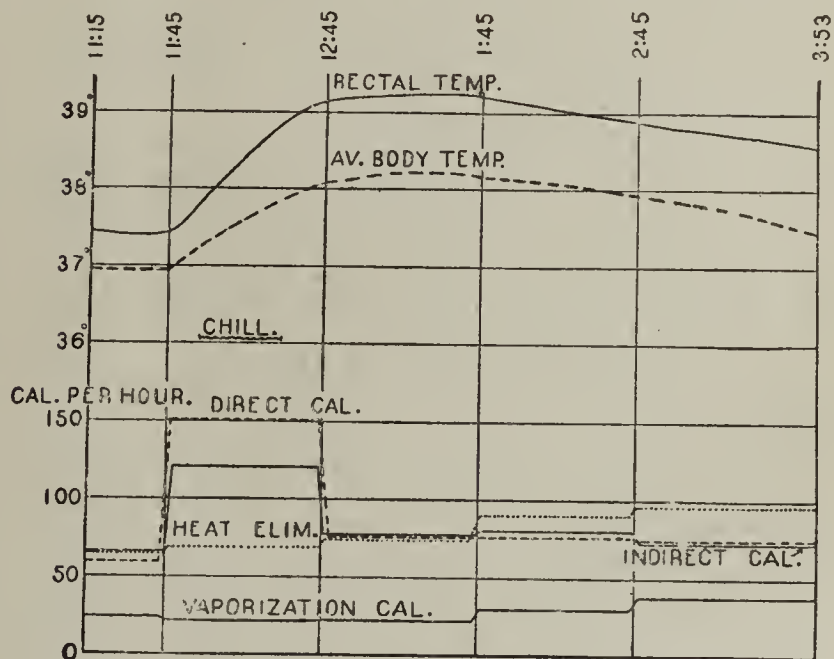


Chart 6.—Calorimeter results following the intravenous injection of 35 million dead typhoid bacilli. The percentage rise in metabolism does not appear so great because the chill occupied only a portion of the period between 11:45 and 12:45.

intoxicated, the animals were anesthetized with urethane, and their metabolism further studied. Its level remained approximately the same, in spite of the fact that the tremor of the muscles was absent and the muscles felt flabby. If later we cut all the nerves to the limbs, and so eliminated all tonus of these muscles, the metabolism did not return to its normal level. Therefore, the conclusion is suggested that muscular activity and tonus are not the main features in the high metabolism of hyperthyroidism, and this work supports the view that the body cells themselves increase their usual basal rate of oxidation.

14. Balcar, J. O.; Sansum, W. D., and Woodyatt, R. T.: Fever and the Water Reserve of the Body, *Arch. Int. Med.* 24: 116 (July) 1919.
15. Lusk, Graham: *Science of Nutrition*, Philadelphia, W. B. Saunders Company, 1919.

DR. FRITZ TALBOT, Boston: It seems to me that true basal metabolism cannot be obtained in children under 10 years of age with the mouth and nose piece, but must be obtained in the respiratory chamber. It surely cannot be obtained in children 6 years of age. Consequently, I would give warning to draw no interpretations from findings obtained with apparatus using the nose and mouth piece, except in those children who have been thoroughly trained to the apparatus, so that there is no element of excitement, and those who can keep absolutely quiet. The second point I would like to make is that the interpretation of results in childhood is fraught with more dangers than in the adult. The reason is that childhood and infancy is the period of rapid change. The standards to be used change accordingly and looking at the chart of the metabolism per unit of body surface you will see that there is a very marked change in metabolism during the first year and a half or two years of life. Another point: Malnutrition in infancy is quite different from malnutrition in the adult. Two or three speakers have said that in malnutrition you expect a lowered basal metabolism. The reverse is the truth in severe infantile malnutrition (infantile atrophy). The basal metabolism is above the average, sometimes 60 or more per cent. Then, in regard to the subject that receives most attention, hypothyroidism and hyperthyroidism: I have recently been able to study two infants, 3 months of age, who clinically were early cretins; one of them had a basal metabolism of minus 18 per cent., and the other had a normal basal metabolism. One was in the state of hypothyroidism and the other was not. Finally, it is generally assumed that at puberty there is no increase in the basal metabolism. Two or three of Benedict's and my cases show an increase in the metabolism, and I have recently been studying selected girls from our outpatient department who at puberty have palpable thyroids. The tendency of this selected group is to show a definitely increased metabolism.

DR. GRAHAM LUSK, New York: I would ask Dr. Boothby to withdraw the definition, "specific dynamic action" of thyroxin. If the term came to be applied to such diseased conditions as manifest an increased heat production, the disturbances would then become "specific dynamic" diseases. It seems that this definition, which was coined by Rubner to indicate the increased heat production after the administration of food, had best be restricted to the significance which it has already enjoyed for twenty years.

DR. FRANCIS G. BENEDICT, Boston: Probably no one has given more attention to the extraordinarily difficult problem of determining the average temperature of the human body than has Dr. Du Bois. I wonder whether the wholly remarkable correlation he finds between the temperature of the body and heat production is based on rectal temperatures or on the computed average temperatures. It is easily seen that the cell activity would have to be considered on the basis of the average body temperature rather than the local rectal temperature.

DR. WALTER M. BOOTHBY, Rochester, Minn.: We have found that Du Bois' basal metabolic rate standards of normality based on the law of surface area are exceedingly accurate, and that the limit of normal variability is in a large majority of instances distinctly within plus or minus 10 per cent. of his zero. The consistency is exceedingly remarkable in a large series. We have made more than 23,000 determinations, and we hardly ever find a case with an abnormal basal metabolic rate that does not have a reasonable clinical explanation. In regard to what Dr. Crile said, it is obvious that, if he includes in his operative statistics for exophthalmic goiter the cases with normal basal metabolic rates, this factor, in addition to his beautiful technic, influences materially his mortality rate.

DR. JAMES H. MEANS, Boston: About the matter of body surface, the only thing I would like to say is that a study we have recently completed on the Du Bois, Benedict and Dreyer methods of judging of normality of basal metabolism shows that these three methods give almost identical results. I am often asked which method should be used. It does not matter. The result will be essentially the same. Dr. Crile spoke about the roentgen-ray treatment of goiter; I do not

want to go into the subject of treatment. I do not want to say anything more now than what we have already said, which is that we believe that in certain cases there is more rapid improvement in clinical condition, and fall in rate of basal metabolism, pulse, etc., than one could expect as the result of spontaneous recovery. Spontaneous recovery exists, as everybody knows. The matter of recrudescence after roentgen-ray treatment has been mentioned. There are recrudescences. I have also seen recrudescences after surgery, after fairly complete operations, so that I do not believe the fact that recrudescences occur after roentgen-ray treatment means that the treatment has no place. In many cases it does no good; in others it does. The production of myxedema is the best possible proof that it may quiet the thyroid. It is easy to correct myxedema so arising by giving a little thyroid. As a matter of fact, in the cases we have seen the myxedema is transient, as I showed in one chart. I have seen several cases of myxedema following surgery.

DR. EUGENE F. DU BOIS, New York: Dr. Benedict has sounded a much needed note of warning in stating that the simplification of technic has not simplified the understanding of the subject of basal metabolism or the interpretation of clinical results. Time saved by the modern technical improvements should be devoted to the study of textbooks on nutrition. As Dr. Benedict suggests, the increase in the metabolism in fever should follow the curve for the average body temperature rather than the rectal temperature. Practically, there is little difference between these two curves, except during sudden fluctuations. Furthermore, we are unable to determine the actual level of the average body temperature, and it is therefore necessary to use rectal readings. The manner in which the metabolism in fever follows the laws which govern the rate of chemical reactions lends support to the adoption of the term "metabolic rate" introduced by Dr. Plummer.

DR. J. EARL ELSE, Portland, Ore.: During the last year and a half, I have been making a correlated study of the basal metabolic rate, pathologic findings, and clinical manifestations in toxic goiter. I have recently reviewed those cases in which the findings did not coincide, and have classified them into three different groups. In the first group are the errors in diagnosis. The patients had small goiters, with symptoms similar to those of mild toxic goiter, and a normal basal metabolic rate. These patients had other lesions, such as an early tuberculosis, or chronic infected tonsils, which produced the symptoms. I wish to take exception to the statement of Dr. Means relative to the value of basal metabolic studies. In the borderline cases, the basal metabolic rate is very important in diagnosis. The second group includes cases of toxic goiter in the stage of remission. Clinically, the patients show evidences of toxic goiter because, as has been shown experimentally, symptoms are present for a considerable period of time after the injection of thyroxin, while the basal metabolic rate remains elevated only for a comparatively short period of time. The third group includes cases of toxic goiter in which recovery has occurred so far as the thyroid and the excess secretion of thyroxin are concerned; but, on account of the patient having received an excessive amount of thyroxin over a long period of time, permanent lesions have been produced in the heart muscle, in the nervous system, behind the eyeball, and elsewhere, so that the patient still has a damaged heart, tremor and exophthalmos.

DR. A. E. ROUSELL, Philadelphia: I disagree with the speaker who minimized the value of estimating the metabolic rate. Many cases of hypotension are unrecognized. Some of them, with edema and the presence of albumin and casts in the urine, will necessitate the estimation of the basal metabolism for a correct diagnosis, just as the study of blood chemistry is necessary in various forms of nephritis. The study of basal metabolism is an important adjunct to the practice of medicine, as are other methods of precision and, just like these other methods of precision, it has its limitations. I have been particularly interested in the fact of the decrease of the metabolic rate under the use of the roentgen ray. I have reported the marked improvement and cures that have existed for as long a period as four or five years

in cases of toxic goiter treated by intensive doses of roentgen rays. Probably, the lighter doses produce just the opposite effect. Here the question is to produce necrosis, as one speaker represented the fact of producing myxedema is the best expression of the fact that the roentgen-ray treatment of toxic goiter is of extreme practical value.

DR. HENRY S. PLUMMER, Rochester, Minn.: The papers on this program were not supposed to deal with therapeutics. The authors have touched on the effects of roentgen-ray treatment, the excision of the thyroid, and they have discussed some of the relations of basal metabolism to fever and their application in clinical medicine. However, this was done largely from the point of view of basal metabolism, and it seems desirable to avoid diverging into the subject of the relative merits of therapeutic measures in the treatment of goiter. It is the obligation of every one interested in thyroid surgery to avoid the error of accepting basal metabolism as an index of the operability of the patient. It is the status of the patient relative to basal metabolism that is of much significance in determining operability in a case. It is the most fundamental measurement of the patient's condition. We have never seen, in the thyroids of pregnancy and adolescence, any evidence of the diffuse hypertrophy of the degree that is present in exophthalmic goiter and sometimes in the thyroids of laboratory animals. It seems probable that there is a relatively high rate of exhaustion of thyroxin during pregnancy and adolescence. Accepting this, a slight elevation of the basal metabolism during the period of pregnancy and adolescence, if present, does not necessarily indicate an elevation in the amount of thyroxin in the tissues. While it is possible that there are some other hyperthyroid states, we have not absolutely definite knowledge of any except that which follows the administration of thyroxin and those associated with adenomatous thyroids and exophthalmic goiter. The conservative stand at present is to assume that an individual having a normal basal metabolism is neither hypothyroid nor hyperthyroid. There is considerable evidence to suggest that there is rarely a short phase at the beginning, during the course of the disease, or following thyroidectomy for exophthalmic goiter in which the basal metabolism is normal, and a syndrome attributable to a perversion of the thyroid secretion is present. If true, we have no reason to believe that it often involves the question of differential diagnosis in cases in which the syndrome suggests hyperthyroidism, but in which the basal metabolism is normal. We have seen a large number of patients having relatively little complaint, no definite pathologic findings, and a basal metabolism ranging from 10 to 15 per cent. A study of this group indicates that these cases, although we cannot definitely classify many of them, cannot be considered up to the normal standard physiologically.

Early Diagnosis of Lead Poisoning.—Since systematic examination of the blood for granulated erythrocytes has been introduced to detect lead poisoning in its incipency, the amount paid out for disability on this account has dropped from 133,439 to 5,143 marks in the Leipzig *krankenkasse*. For nearly two years there has been no claim for disability from this cause. J. Schoenfeld, in the *Zentralblatt für Gewerbehygiene* 9:3, 1921, says that he regards as positive even less than 100 granulated erythrocytes per million. As the proportion grows larger or smaller, the course of the lead poisoning can be estimated. The certainty afforded by this blood index reassures the workmen, and gives a basis for enforcement of protecting devices, dustless paints, etc. With the exception of the band for hematoporphyrin in the urine, all other signs of lead poisoning, he adds, are not pathognomonic, or only accompany irreparable damage. A conference of physicians connected with German factories making lead paints was held recently at Halle. Among the problems proposed for further study were whether the absorption of lead could be prevented by ingestion of charcoal, kaolin or thick gruels; and whether laxatives, gardening and other physical work aid in evacuation of the lead. The speakers were unanimous in saying that the blood and urine tests had removed the danger from lead poisoning, reducing it to a question of mere cleanliness.

IN WHAT CASES DO UTERINE FIBROIDS STILL REQUIRE OPERATIVE REMOVAL?*

FRED. J. TAUSSIG, M.D.
ST. LOUIS

In four of the most important fields of gynecologic work, cancer of the uterus, fibroids of the uterus, inflammatory disease of the adnexa and disorders of menstruation, the last five years have witnessed a remarkable trend away from operative procedures. So pronounced has been this tendency that before long the general surgeon may leave us to our own resources, particularly if gynecologists cease to poach on the domains of their fellow surgeons. It may well lead to the better definition of gynecology as a specialty, which is the more needed because of the way in which many of our best universities have separated it from its twin sister, obstetrics. It is well, however, to hold a rein on our enthusiasm, lest the current of nonoperative treatment carry us too far in the opposite direction. I have, therefore, felt it pertinent to analyze from our present experience the indications for treatment in one of these fields, uterine fibroids. The basis for my opinions is (1) a study of personal experiences during the last three years, during which time I have had radium available for treatment; and (2) a review of the numerous reports on this subject from clinics here and abroad.

TABLE 1.—INDICATIONS AND RESULTS OF TREATMENT IN OPERATIVE CASES

	Number	Average Age	Indications for Operation							Results		
			Size	Pis-tube	Ovarian Cysts	Prolapse	Desired Children	Operation Preferred	Other Reasons	Good	Phlebitis	Death
White.....	24	41.9	4	1	1	4	3	3	8	22	2	0
Colored....	63	36	35	12 (5)	6 (2)	1	0	0	9	60	0	3
Total....	87	38	29	13	7	5	3	3	17	82	2	3

COMPARISON OF RESULTS FOLLOWING TREATMENT BY OPERATION AND RADIUM

Since January, 1918, I have treated, either by operation or with radium, 123 cases of uterine fibroids. A considerable number of additional cases were seen by me during this time; but either these patients did not require treatment or refused it for one reason or another. Of the 123 patients eighty-seven were operated on and thirty-six were given radium treatment. The analysis of indications and the results of treatment can best be shown in the accompanying tables. So far as I know, no one has heretofore attempted to differentiate therapeutic indications according to race. Certain striking differences between the negro and the white race are manifest. It will be noted that while only five out of sixty-eight negro women were found suitable for radium treatment (7.3 per cent.), the proportion among the white was thirty-one out of fifty-five (or 56 per cent.).

In explanation of these tables it should be stated that, when a tumor was large enough to extend more than half way between the symphysis and the umbilicus,

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

operation was advised, provided no contraindications, such as serious heart or kidney complications, existed. The bracketed figures under pyosalpinx and ovarian cyst mean that the condition existed in addition to the size of the tumor to justify operative removal. Under the head of "other reasons" in the operative group were included carcinoma of the cervix, 2 cases; submucous fibroid in vagina, 3; intraligamentous fibroid, 2; ectopic pregnancy, 2; pregnancy, 1; appendicitis, 1; wrong diagnosis, 1; tuberculous peritonitis, 1. In one case with mild hyperthyroid symptoms, I desired to avoid the castrating effect of radium and hence preferred a subtotal hysterectomy.

In the thirty-six radium cases, the dosage ranged from 800 to 1,750 mg. hours, with an average of 1,250 mg. hours. Usually 75 mg. hours were applied within the uterus in silver and brass for about sixteen hours. In three instances of somewhat larger growths, roentgen ray was used in addition to radium; but in one of these, the menorrhagia still persisted and the patient decided to be operated on. In ten patients the radium was applied in the vaginal fornix instead of intra-uterine. Additional treatment was given in but one case. As to amenorrhea the rule was that in patients over 40, no further menstrual flow occurred after radiation, whereas in younger patients one or two periods occurred before cessation of flow. In some

high mortality (4.7 per cent.). At the St. Louis Negro City Hospital, we have occasion to see many women die without being operated on as a result of fibroids or complications produced by fibroids. When we consider how rarely we find a white women in whom fibroids have caused death, we must agree that the condition is a far more serious one in the negro race, and that palliative measures will only rarely be suitable for this group.

In one respect, however, the operative treatment of fibroids among white women presents greater danger. This is in the complication with thrombophlebitis. While I have not time to look up definite statistics on my fibroid cases in which operation was performed previous to 1918, I do not recall a single instance of thrombophlebitis in about 300 colored women operated on for fibroid during the last fifteen years. Among white patients the incidence of this troublesome complication is about one in every twenty or thirty cases. In Hornung's¹ recent analysis of the cases at Kiel, thrombophlebitis occurred fourteen times in 447 operations, about 3 per cent. In my own series, it occurred twice in twenty-four operations. This is to my mind an important additional reason for preferring radiation to operation in white women. At present, we have no way of preventing these unfortunate thromboses, and assuredly they are the bugbear of all gynecologists. With radiotherapy we do not have to fear this trouble.

From a practical standpoint we are constantly brought face to face with human fears and prejudices. The dread of the knife has in the past kept many patients from consulting a physician, or, after they have consulted him, it has made them put off treatment month after month. How often have we all heard the story, "Yes, doctor, I noticed the lump about six months ago, but I thought it would go away, and I knew you would say I should have to be operated on." If it is true concerning cancer that "in the early recognition and treatment lies the *hope* of cure," it is well to emphasize to our patients that in the case of fibroids "in the early recognition and treatment lies the *chance* of cure." It seems to me that already among the more educated classes this knowledge of other methods of treating fibroids besides surgery has permeated and has led more patients to come promptly for the relief of symptoms. Certain it is that many of my patients would have refused operation but did not object to the simpler, safer and usually equally effective treatment with radium. I should not be surprised if, in the course of the next decade, among white women, the percentage of cases in which radium was sufficient to effect a cure would increase from the present 40 to 50 per cent. to almost 80 or 90 per cent.

As to the expectancy of cure after radium or roentgen-ray treatment my own experience is too recent to justify any statement but there are ample reports from current literature² on this point: Zweifel, 222 fibroids; Clark, 150; Kupferberg, 325; Kelly, 182; Steiger, 59; Weibel, 53; Clarke, 50; Brettauer, 32; Miller, 26. These men using radiotherapy, either in the form of roentgen ray or radium, attained a symptomatic cure in all but forty-eight out of these 1,099 cases of fibroids. This would make a percentage of cure of 95.5 per cent., assuredly a sufficient justification for the more extensive adoption of this form of treatment.

TABLE 2.—INDICATIONS AND RESULTS OF TREATMENT IN RADIUM CASES

	Number	Average Age	Indications for Radium			Results	
			Size	Operation Contra-Indicated	Good	Complications	Failure
White.....	31	42.5	29	2	28	2	1
Colored.....	5	35.0	3	2	4	0	1
Total.....	36	41.5	32	4	32	2	2

of these younger persons, menstruation returned in from six months to a year, but was not excessive in amount. In three instances the flow never ceased but became normal in amount. Excessive bleeding was not the only symptom that justified treatment. Backache and pressure against the rectum were, in two instances, greatly relieved by the marked diminution in the size of the tumor. The diminution in the size of the tumor continued for several months after the original treatment. In this respect, the reaction of fibroids to radiation has a certain similarity to that of keloids in which a slowly progressive absorption has been noted for long periods of time.

One of the outstanding contrasts in these two tables is the frequency of complications in fibroids among colored women. This is due in part to the greater frequency of gonorrheal infection but also to the inherently earlier appearance and more rapid growth of fibroids in the negro race. I do not think this point has been sufficiently emphasized, though doubtless all gynecologists living in Southern states will bear witness to this fact. The age incidence in my series was more than six years less in the negress than in the white woman, and yet in spite of this fact large tumors reaching to the umbilicus, or above it, were about nine times as frequent among the colored as among the white race. These large tumors, particularly when associated with infected tubes, often affected the heart and kidney function, and their removal was attended with great technical difficulty resulting in a relatively

1. Hornung, R.: Zentralbl. f. Gynäk. 45: 381-389, 1921.
2. Gellhorn, G.: Am. J. Obst. & Gynec. 1: 767, 1921. Detailed references to recent literature under this head.

CONTRAINDICATIONS TO RADIOTHERAPY

And now let me briefly state the contraindications at present existing to radiotherapy.

1. *Size*.—When the mass of the fibroid uterus is more than 12 cm. in its average diameter, operation is usually to be preferred. I think it better to employ this form of description rather than the distance of the tumor above the symphysis, since a relatively small uterus may be situated high and reach almost to the navel, whereas a large fibroid filling the whole pelvis may barely be felt from above.

2. *Location*.—Submucous fibroids protruding through the cervix, subserous fibroids of considerable size with a definite pedicle, cervical fibroids and intraligamentous fibroids had better be operated on. I do not, however, agree with Zweifel in excluding fibroids that are merely pressing against the rectum or bladder, provided they are not already partly wedged into the pelvis. In several instances, I have seen such pressure symptoms completely disappear after the shrinkage produced by radiation.

3. *Degeneration*.—Rapidly growing tumors, calcified fibroids, necrotic fibroids and those complicated with malignancy are not suitable for radiation.

4. *Age*.—There is no absolute contraindication to radiation on account of age except so far as the desire for children or a preservation of menstruation makes myomectomy or subtotal removal of the body of the uterus preferable.

5. *Complications*.—Pyosalpinx and ovarian cysts, except small retention cysts, are a positive contraindication in my opinion. Often we encounter difficulty in differentiating between a laterally situated fibroid that is somewhat adherent and an adnexal mass. It is well not to be in too great a hurry. In those cases in which there is still reasonable doubt, I would prefer operation to radiation, for it will take many more reports than those of Van de Velde³ to convince me that radium treatment of pyosalpinx is anything more than a very dangerous experiment.

Such in the main are the contraindications to radiation. It is evident that only the careful diagnostician will be able to differentiate between the cases that are suitable for operation and those that are suitable for radiation. It is, therefore, greatly to be deplored if the general practitioner should, without further consultation, send all his fibroid patients to the roentgenologist for treatment, or even worse, if the roentgenologist should undertake the treatment of fibroids with roentgen ray before a careful pelvic examination by some competent person has been made.

As to the use of the roentgen ray in fibroid cases, I cannot speak from personal experience but from what I have seen of the cases treated by others with roentgen ray, I must share Clark's⁴ decided preference for the intra-uterine application of radium in these cases. Radium may cause leukorrhea for a period of time; but it does not produce the pronounced intestinal derangements (vomiting, cramping, catarrhal stools) that so often follow roentgen-ray treatment. Furthermore, it seems to be more certain in its results. In two of my cases, roentgen ray in the hands of competent men had failed to produce amenorrhea, while

a single application of radium promptly brought about the desired result. The diagnostic curettement which should always attend a radiation for fibroid makes the intra-uterine application of radium a simple therapeutic measure.

CONCLUSIONS

Let me, in conclusion, emphasize these points: Radiotherapy of fibroid tumors is destined more and more to displace operation as patients learn to come early before contraindications to its use have arisen. In the negro, however, surgery will still have to be generally employed in fibroid tumors on account of their earlier, more rapid and more complicated development. Radiotherapy is a measure that has definite contraindications and the selection of cases suitable for such treatment should remain in the hands of the trained gynecologist.

ABSTRACT OF DISCUSSION

DR. GEORGE GRAY WARD, JR., New York: The use of radium in fibroids is a method of great value, but we should appreciate the limitations. We shall now get these cases very much earlier. Fear of the knife will not keep these patients away. And as we get them earlier they will consequently be more frequently in the child-bearing age, and the question of sterility will be a very important factor to bear in mind. Therefore, the operation of myomectomy must not be forgotten, as probably the most valuable method for use in child-bearing women who have fibroids. Radium has increased the importance of the operation of myomectomy. Formerly we feared overlooking a fibroid so small as not to be visible at operation, but which might later cause trouble. Now we need not fear this, because we have radium to fall back on should a tumor subsequently develop. Therefore, there would be no need of a second operation. We have also found radium of value in large fibroid tumors associated with severe hemorrhages, producing a marked anemia, so that the cases were not suitable for operation on account of the grave risk to life. In these cases we have used a preliminary application of radium to check the hemorrhage and allow the patient to build up and, therefore, become a better operable risk. We have used radium in the form of a tandem application in these cases, that is, two tubes are placed, one above the other, so as to irradiate a larger surface. In the case of large fibroids we use 1,500 mg. and in the cases of young women when we do not wish to cause cessation of menstruation, we have used from 200 to 500 mg. hours, according to the size and conditions. I wish to call attention to two important dangers: If the bladder is allowed to become markedly distended during irradiation, on account of its proximity to a small uterus, it will be affected through the uterine wall; and necropsy has shown that if the intestine is adherent to a small uterus, irradiation caused a burn of the intestine, which produced ulceration and death.

DR. WILLIAM J. MAYO, Rochester, Minn.: Radium treatment is not conservative. It is quite as destructive as operation, and sometimes more so, because it destroys the function of the ovaries as well as that of the uterus. If hysterectomy is performed, one or both ovaries can be saved in 50 per cent. of the cases. I agree with Dr. Taussig in his limitations on hysterectomy. Radium can be used in a large number of cases of the type in which hysterectomy has been thought necessary. But the desirability for continuation of the function of menstruation in young women must be considered, especially in young women who desire motherhood. If enough radium is used to cause shrinkage in tumors of considerable size, it is just as destructive as hysterectomy, or even more so. It has been urged against myomectomy that it is more dangerous than hysterectomy. Some years ago I looked up the records of 741 cases in which myomectomy had been performed in the clinic, and

³ Van de Velde, T. H.: Zentralbl. f. Gynäk. 44:994 (Sept. 4) 1920.

⁴ Clark, J. G.: The Treatment of Myoma Uteri with Radium, J. A. M. A. 73:957 (Sept. 27) 1919.

found that the average mortality had been less than 1 per cent. Six hundred and nineteen of these myomectomies were abdominal, with only 0.6 per cent. mortality. The remainder were vaginal myomectomies with a little over 2 per cent. mortality. About half these patients were married. Twenty-one had raised one child each, and seven had raised two or more children. Fourteen of these patients were pregnant at the time of operation; eleven went to term and bore living children. The disturbance which occurs in fibroid tumors in women who are pregnant is usually due to changes in the circulation, and the operation is comparatively easy in these cases. Premature expulsion of the fetus occurred in but three of the fourteen cases, and none died. Only nineteen of the myomectomized patients had second operations, some of which were performed a number of years afterward. In the meantime, several of the women had borne children. Most of the second operations were for infections. Myomectomy is the operation of choice for fibroids in women under 35 or 40. Hysterectomy is best for women over 50 if there is a suspicion of malignancy, and for women having large tumors. Radium has a great field of usefulness for smaller tumors that cause hemorrhage at the menopause period.

DR. HENRY O. MARCY, Boston: At the International Medical Congress in Washington, in 1887, this subject was discussed with extreme care. I rather reluctantly felt obliged to ask Apostoli of Paris to come over and give his address on the application of electricity. I had been prejudiced against his method, perhaps unjustly, because Dr. Ephraim Cutter had devised a method somewhat similar, except that he thrust one pole into the large tumor through the abdominal wall and then applied this high current into the uterus. Apostoli had his application diffused through a water pad. Dr. Keith of Edinburgh had removed seventy-two large uterine myomas without a single death. He said, "I am sure we will see no more operations for the removal of fibroid tumors." Apostoli has settled the problem, and the curability is absolute, with entire safety. I asked Apostoli to come to my hospital here and apply the method. He did it. I was convinced I must be wrong. I purchased the apparatus and made 600 applications with the greatest of care, measuring the current and the time, and every patient insisted on it that she was a great deal improved. I did not find a single case in which I thought there was the slightest benefit, except in the hemorrhagic condition of the intra-uterine type. This history shows a direct effect of the mind, of the patient's nervous system, on the up-to-date cure. I wish you would consider this in reference to the effect of radium treatment. It was almost exactly the same in its application with that of Apostoli. He has been forgotten, except in an historical sense. We are placing too much importance on the application of radium. I have sent a number of patients to experts without benefit. I have had serious criticisms on the results. I do believe that while radium is still in the experimental state we must not expect too much from its results. Fortunately, its high cost tends to keep it in the hands of only a few experts. It must be used with care.

DR. FREDERICK J. TAUSSIG, St. Louis: In fibroids of the uterus we can establish a routine that is in contradistinction to what I said as to the treatment of cancer. I think the treatment of fibroids of the uterus with radium can very well be extended to any person qualified to make a gynecologic diagnosis. As to myomectomy, I quite agree with Drs. Ward and Mayo regarding its value in younger persons. Yet, let me call your attention to the figures in my tables showing that in those cases that were suitable for radium, in other words, fibroids that were within the pelvis, in white women, the age incidence was 42½ years. In other words, there are relatively very few of these cases in which we can seriously consider an operation for the preservation of the function of conception. As to the incidence of thrombophlebitis, I have spoken with a number of my colleagues from the South, and their general impression is the same as mine, namely, that the incidence of thrombophlebitis among colored people is relatively very low. However, I trust that further information will come when more extensive statistics are available.

"WAR" NEUROSES AND ALLIED CONDITIONS IN EX-SERVICE MEN

AS OBSERVED IN THE UNITED STATES PUBLIC
HEALTH SERVICE HOSPITALS FOR
PSYCHONEUROTICS *

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At this time, more than two years after the cessation of the hostilities of the great war, the term "war" neurosis is virtually obsolete. Only occasionally are there now received for treatment cases presenting a "War" neurosis syndrome, and such as are received may be attributed to an attenuation and fixation of former symptoms. The symptom-picture today, then, is principally a neurosis occurring in ex-service men. In a large number of cases actual warfare would seem to have comparatively little to do with the production of the neurosis—the actual war experiences being less influential in the production of the present train of symptoms than the environment and the demands outside of camp life, which are further nurtured by response to the influence of the spirit of the times. This relates to the personal equation of each individual, and the degree of expression of symptoms has little to do with the severity of the actual war experience but is in direct proportion to the interpretation of that experience by the individual. Hence, a soldier whose total army life and experience consisted of one night in camp and ninety days in a hospital presents a more hopeless picture than many a full-fledged veteran of two or three years of most varied and arduous war experience. It is, therefore, the patient's conception of the situation and his attitude of mind toward that situation that develops the emotion which determines his reaction.

This is consistent with normal humanity. The abnormal is only an expression of hypo-emotivity or hyper-emotivity generating reactivity. Mental stability, including apperception, judgment and decision as psychologic factors, is a criterion for the distinction of the two states. We have, then, presented at this time a neurosis thoroughly commensurate with the neuroses

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* To this date the U. S. Public Health Service has maintained only two hospitals (No. 42 at Perryville, Md., and No. 37 at Waukesha, Wis.) principally or solely for the care of psychoneurotics. Since the author's observations were made mainly at one of these, a few remarks for purposes of orientation are in place. U. S. Public Health Service Hospital No. 37, situated at Waukesha, Wis., to the best of my knowledge holds the distinction of being the first institution devoted solely to the care and the treatment of the psychoneuroses. The institution was formerly a hotel sanatorium, known as "Resthaven," and was built some ten years ago at an expense of about half a million dollars. In 1919 it was acquired by the government, which since then has planned and is now executing extensive alterations to the end of making it a model of its kind. The plant, when completed, is expected to represent all that is most desirable and advantageous as suggested and accepted generally as adequate in the care, the treatment and the rehabilitation of the psychoneurotic. The contemplated total capacity of the hospital is 300 beds. Among its general assets it enumerates a fully modernized clinical laboratory, including studies in blood chemistry and basal metabolism; a thoroughly equipped roentgen-ray department, and an active dental section. Among its special assets are numbered an electrocardiographic station; a speech clinic presided over by an experienced specialist in speech defects; a resident psychologist; and, thorough-going rehabilitation adjuncts. The reconstruction work includes a quite uniquely equipped physiotherapy department with its various subdivisions; a progressive occupational therapy department, and an alert representation of the Federal Board for Vocational Training. The Red Cross is distinctively represented in its psychiatric case workers, and its recreational activities. Furthermore, the hospital has the fortunate advantage of six attending specialists in the professional fields of surgery, cardiovascular diseases, urology, orthopedics, eye, ear, nose and throat, and speech defects.

of civil life, being precipitated perhaps a little more quickly by virtue of certain sentimental conditions previous to going overseas, occasionally with additional violence and actual warfare at or near the battlefields abroad, and the excessive sentimental conditions persisting since having returned to home ties. These conditions, perhaps, influence the patient further by furnishing him a seemingly legitimate excuse for the state which he finds himself in, the productive elements of which obtain the same as for a neurosis in civil life and are expressed by the formula of "pressure versus personal resistance." Patients with a persistence of the true war-syndrome usually respond to psychotherapeutic treatment readily, and hence their prognosis is ordinarily favorable under proper management. Occasionally the immediate symptomatology of present-day cases gives certain reactions a self-engendered mild military coloring. The reason for this is, of course, obvious.

The cases are grouped in this hospital under the headings included in the official nomenclature of the U. S. Public Health Service and are reported under the diagnosis decided on at the time of the patient's discharge from the hospital and not under the tentative diagnosis often applied at the time of the patient's admission. The official nomenclature purposes the psychoneuroses to be classed under the terms psychasthenic type, neurasthenic type, hysterical type, and the anxiety neuroses. These types may exist more or less alone and uncomplicated, or complicated, with admixtures and concomitants of one or more types, or with tendencies expressing a mild symptomatology in other directions. They also frequently occur, of course, in the presence of fundamental and coexisting organic conditions which may be mere factors in the case or true concomitants. Thus, we recognize in one man a neurasthenia per se, in another a neurasthenia with mental subnormality, in another a neurasthenia with hypochondriacal tendencies, and in still another a neurasthenia with a chronic interstitial nephritis, or other organic factors, and again a neurasthenia with coexisting organic conditions, such as chronic tonsillitis, bronchitis, colitis or impaired sight. Tension states of anticipation, timorousness and anxiety are usually symptomatic and concurrent residuals which have been carried over and in a few instances somewhat accentuated, but more frequently attenuated. Inadequate personality traits and eccentricities are very common. Psychopathies often appear as concomitants. The effort syndrome, or so-called neurocirculatory asthenia, appears occasionally—usually symptomatic and often associated with vague vagotonic manifestations. Very occasionally the real effort syndrome is present apparently uncomplicated and so marked that even moderate exercise (ten knee stoops or fifty hops) will exhibit excessive exhaustion, dyspnea, cyanosis, tachycardia, excessive perspiration, etc. This, however, appears to occur only in individuals of a particular makeup, namely, that expressing subnormal organic capacity. Real exhaustion is otherwise scarcely ever seen. Syndrome and neurosis symptom-pictures of concussion and of gassing appear not infrequently in the personal histories of the patients thus far studied.

Elements of malingering are often present and more or less persistent, usually in the form of subconscious or coconscious malingering, which forms have been accepted as a normal reaction quite universal in young children and quite persistent in the simple minded.

for the reason that the child has not yet learned to bear with equanimity responsibilities which are to be a part of his normal relationship to society, whereas the simple minded has not the ability of such acquisition. Many patients ordinarily classed as psychoneurotic present mental subnormalities from the dull normal type back to the high grade imbecile. When such as these demonstrate elements of malingering, they are regarded as not being of the criminal type, even though they may otherwise present many delinquencies or possibly other criminal tendencies.

PENSION NEUROSIS

An element, however, of pronounced importance and becoming continuously more noticeable is the presence of a recently acquired pension neurosis. It now frequently expresses itself as the predominant factor in a symptom-picture complex. This, again, can be regarded as the expected outgrowth of the recent spirit of the times. So much has been said about compensation for the ex-service man, his care and rehabilitation that the individual with feelings of inadequacy or real inadequacies naturally gravitates in the direction in which relief from responsibilities and the stress of life has been promised or may be assured. The heterogeneous attempts on the part of welfare workers, however good their intentions, have unfortunately done much to foster that attitude. In due deference to these workers, it must be remembered that many were without adequate experience and had little or no training at the time the United States declared war. Consequently, and in keeping with the predominating impressions of the horrors of the European conflict, sympathy and sentiment was dispensed excessively and without adequate knowledge of its applicability to the individual soldier or the probable result of its leading to the production of certain stereotype states which are now afflicting a very large majority of the patients entering the hospitals of our country. It is not at all a new aspect in human history. It might be well maintained that the greater bulk of charitable endeavor, by virtue of its being misconducted and misdirected, grossly miscarries and not only utterly falls short of its intent but actually does damage. This result can not be entirely obviated because we are dealing with human beings, and as such no one is infallible.

Stimulated by the horrors of the World War, but without an adequate conception of the work that medical men are called on to accomplish, and with little or no rational understanding of the choice or of the refinement of the methods to be used, public sentiment, as was to be expected, went far afield. This is now very evident from the results in hundreds of individual cases. While some are benefited, others remain entirely indifferent; and to each soldier accrues such results as his individual capacity is capable of, which may be good, bad or indifferent.

Discipline is the keynote in the success of army life, and yet the response to discipline to one man means loyalty, to another punishment; and there is no common ground between the two situations possible for either personality. The adequate personality type of individual and the inadequate personality type of individual act and react entirely dissimilarly and quite opposed to each other many times under exactly the same stimuli; hence, the precipitation of dissimilar results in entirely similar situations. And consequently a single standard of approach by these multiple wel-

fare agencies in their multiple activities, before, during and since the World War has resulted in both temporary benefit and lasting harm. For instance:

A recent patient admitted to this hospital for treatment after two years of continuous efficient work since his discharge from the army comes to the hospital apparently solely because he has just learned, through a welfare organization, of his legalized privilege to become a beneficiary of the War Risk Insurance Act. The patient is mildly neurotic congenitally but shows no other symptomatology and had been handling his problems satisfactorily since his discharge from the army.

Let me cite another instance:

B. C., aged 21, with mental deficiency, enlisted, Aug. 29, 1918, did not go overseas, and was discharged, May 26, 1919, at Camp McPherson, Ga. Two days after being discharged he had reached home. Two days later he had gone to work at his old job as "laborer," at which he continued for some fourteen successive months. During that time he even added to his responsibility by becoming married. Next he fell under the well meant influence of local welfare workers and was sent to this hospital, Aug. 18, 1920, with the complaint: "There is nothing wrong with me as I can see. I eat pretty good—sleep fine—bowels all right—no headache—no pain—no one or nothing bothers me in any way." During the patient's residence in the hospital his wife gave birth to a son. The patient was discharged from the hospital, September 13, after many personal requests for discharge. A notation on the case reads: "Patient is a typical good natured man without apparent vicious tendencies." Now, since his hospitalization we get numerous reports from the same welfare association which sent him to this hospital of his not being willing to work at all steadily, at times working very little, failing to provide adequately for his wife and child, and continuously soliciting funds from the welfare organizations.

This simply expresses, as I conceive it, the danger of a break in the continuity of lives susceptible to the adoption of deplorable habits of reaction. This sort of break is more or less inevitable, perhaps, in most of the lives of such individuals, but usually comes later on at the age from 35 to 45, perhaps when the children of the family have grown to a self-supporting age, or are able to contribute to the general maintenance of the family, when the father quits and becomes more or less dependent, or at least resigns his responsibility.

The recent rapid growth of pension neurosis as expressed by the patients in this service is remarkable—much more noticeable as time advances and we recede farther from the acute neurotic manifestations accredited to the effects of warfare. In the vicious cycle occurs most assuredly a knowledge of the War Risk Insurance Act, which knowledge is being continuously more thoroughly disseminated among the ex-service men. This neurosis obtains not only in the constitutional psychopathic inferior group but also in many others whose industrial efficiency and natural desire for work and the concurrent responsibilities of life have never been very high. A large number of men whose industrial efficiency during all their industrial years has never exceeded \$30 per month are naturally quite satisfied to enter a hospital of this type on a complaint of "nervousness" and "weakness" and that they "get dizzy," and thereby to remain and to draw \$80 per month compensation together with board, room, multiple free entertainments and other considerations.

Although these patients are conscious of overdoing their real physical infirmities they are not truly criminal malingerers because of their faulty understanding which makes them feel that such is their just due. For this reason, or by virtue of their natural habit of

oversublimating, many of them are so confident in that opinion that they insist that what is offered them by the government in return for their overestimated past military services is not good enough for them. They will frankly tell you not only that the food is unpalatable and the beverages unpotable, but also that the hospital is an unendurable and inhospitable "joint," and even not infrequently add that the government should be ashamed to ask any ex-service man to come to such a place. Yet, if you suggest that the hospital has probably done for them all that is possible and mention that their discharge is being considered, they will wire to their congressman in Washington, stating that they are being thrown out of the hospital because their doctor does not like them—or some equally flimsy excuse, and thereby start a commotion along the whole official line. This, of course, represents the acts and the reactions of the inadequate personality type of individual whose apperception is faulty, who cannot see things as they are, and who cannot be persuaded to accept them as others see them nor to view them in the verifying light of experience, judgment and wisdom. This represents the class of patients which one can scarcely do anything with or for, because of the intense fixation obtaining by virtue of the common tendencies prevailing in the uncritical makeup of him who believes the things which please him and rejects those which do not.

OTHER NEUROSIS FACTORS

Perplexing situations often arise in the treatment and management of these cases. Particular group conditions frequently exist. In addition to the recently growing pension neurosis group, another group has been present and prominent continuously since the opening of this hospital. The particular condition occurs among foreigners, especially Italians, Greeks, Austrians and Poles. It is most pronounced in Italians, but in all the personal equation is very similar and so persistent that there is little chance for modification or correction. One of the fundamentals of the condition seems to arise from a general belief that the United States is a very wealthy country and that its government is due and destined to provide for them for the rest of their lives. These people are often unable to demonstrate any somatic maladies. They do not show psychopathies in the usual sense of the word, but their attitude is so persistent and usually so consistently free from somatic factors that I frequently facetiously refer to these patients as sufferers of "Italianitis."

We also have a similar composite which may be referred to as a "Red Cross neurosis"—not that I would make any criticism of the great work done by the American Red Cross, for it comes about as well through other welfare agencies and is produced by the desire of the ex-service man to avail himself of every opportunity that might enhance his welfare. These patients too frequently have no pride—but a great deal of vanity. They are willing to accept any assistance for which they need to expend no actual physical effort. They believe in a divine right of assistance from the Red Cross and other welfare organizations, and will accept anything and everything from cigars to a furnished flat, and to get these they are induced to overestimate their somatic symptoms and in some instances to manufacture them; but the influence of the spirit of the times on this man's personality makes

him feel that he is thoroughly justified in doing this and the thing soon becomes a habit.

The service is burdened with many rounders of this type who represent many, many types of individuals. Some are vicious malingerers, but many are unconscious of any improper motive. They are a distressing problem to the management of a hospital, to the district supervisor, and to the War Risk Bureau. They have not, many times, a legitimate difficulty; and yet, if they are dismissed from one service they will immediately get into another, and because of their own belief in their symptoms or their own misinterpretation of their symptoms they succeed in getting into another hospital, getting more attention and deriving more profits not strictly belonging to them. This situation, I think, has been thoroughly recognized by the profession at large. Because of the multiple complaints made by these patients they have been directed from one physician to another for examination, nearly always with negative results. But let it be repeated that often the patient honestly

CLASSIFICATION OF CASES TREATED AT THE HOSPITAL

Classification *	Number
243 Constitutional inferiority	10
244 Constitutional psychopathic state.....	8
287 Dementia praecox (unclassified).....	6
288 Dementia praecox, catatonic type.....	2
289 Dementia praecox, hebephrenic type.....	1
290 Dementia praecox, paranoid type.....	8
398 Exophthalmic goiter	3
468 General paralysis of the insane.....	2
628 Hysteria	71
628 Hysteria, with organic factors.....	6
628 Hysteria, with concomitants.....	3
628 Hysteria, with admixtures	5
845 Neurasthenia	43
845 Neurasthenia, with organic factors.....	14
845 Neurasthenia, with concomitants	4
845 Neurasthenia, with admixtures	3
851 Neurosis, gastric	5
857 Neurosis, traumatic.....	22
1006 Psychasthenia	8
1010 Psychosis, hysterical	2
1011 Psychosis, intoxication (inebriety, consisting of alcoholism and morphinism)	4
1012 Psychosis, manic-depressive	6
1341 Tuberculosis, chronic pulmonary	4
2549 Psychosis, with constitutional psychopathic inferiority.....	1
2552 Constitutional psychopathic inferiority, with admixtures....	5
2553 Mental deficiency, without psychosis.....	5
Miscellaneous †	30

* The numbers in the left-hand column are those of "Nomenclature of Diseases and Conditions," U. S. P. H. S., 1916.
† Among these thirty miscellaneous cases occur a number of organic cardiac cases, several respiratory cases, a few uncommon organic affections, and isolated cases of the more unusual neurologic and psychiatric conditions.

believes that he is thoroughly incapacitated, and he is so mainly because he cannot conceive the difference between his individual equation and one that is more efficient.

Under inadequate personality traits we recognize psychosomatic inferiority or constitutional inferiority without the markedly morbid psychopathic manifestations. The constitutional psychopathic inferior is usually that ingrate liar, social misfit, and delinquent so well known to all psychiatric workers. Occasional cases represent individuals reacting at the level of the constitutional psychopathic state. Mental subnormality and mental deficiency have already been referred to, both appearing very frequently and quite usually dominating the symptom-picture of the individual case, and rendering prognosis more or less hopeless as these states usually predispose to delinquent and criminal tendencies.

The 281 cases treated in this hospital from its opening, July 10, 1919, to the end of the fiscal year June 30, 1920, were classified according to the accompanying table.

PROCEDURE AT THE HOSPITAL

The general problems involved in the study of these cases is primarily the study and understanding of each case individually, the individual psychosomatic entity, the detection of organic disease as pathology or physiopathy, to determine when such changes are found, the actual degree of disability in function and its relation and bearing on other somatic states, to determine whether it can be cured, relieved or condoned with or without residuals, and by what means alterations may be brought about. These problems lead to every degree of diagnostic and therapeutic detail, and hold within them the possibilities of many interesting studies.

Together with the somatic side of the equation comes the psychic, and one must determine at what psychobiologic level the patient is reacting and to what extent this level can be modified to meet the necessity. Is the patient cooperative or lacking in cooperation, can he be induced to cooperate, or does he persist antagonistic or indifferent; has he an inalienable fixation on some organic malady that does or does not exist without somatic importance? Does the whole picture represent a neurosis by virtue of suppression, repression, compensatory states, regression or dissociation? Does the patient desire to recover from this present condition, or is he satisfied to remain indefinitely in his present state? By what means can the patient be appealed to? This requires at times considerable unwritten ingenuity, and one does not always succeed on the first approach. But a failure at first approach is seldom fatal because one usually learns of the other open avenues or, if none are apparent, it may be advisable or necessary to employ one's forces directly against the resistance in continuous bombardment until it is broken down and thus overcome.

Without going into details that are a matter of common experience, it will be apparent that in each case differential diagnosis is paramount. A thorough analysis of all components of probable morbid import must be carried out with painstaking care. Those elements of the individual personality expressing the psychobiologic level at which the patient was reacting at the time of the first manifestation of his difficulty, and the further psychobiologic level at which he is reacting at the time of his admission to the hospital, are factors of which at least a partial understanding must have been arrived at before therapeutic management can be expected to prove successful.

In this hospital we endeavor to analyze every one of the individual symptoms, and estimate their importance to one another and to the whole or any part of the composite whole. This is augmented by the administration of all classes of applicable tests and diagnostic methods known to general and special medicine. The final results of such studies are from time to time reviewed and discussed in a conference of all members of the hospital staff.

Under the head of therapeutic management are obviously classed all such methods as are usually recommended and adopted in special therapeutics. The first effort made toward the rehabilitation of these ex-service men is on the physical side, if any physical disease is at all apparent. Such efforts are supplemented by psychotherapeutic persuasion, suggestion and reeducation, and all other practical methods are applied and persisted in, together with work, amusement, distraction, recreation, and what other efforts seem to be

indicated or are necessary to be instituted to remove or modify the patient's malady or special difficulty. The final results, however, in these cases are very dissimilar. Work with this class of patients is not the most encouraging. A few patients are cured, many are relieved, many of them refuse treatment and are discharged at their own request, some desert from the hospital, others refuse treatment or refuse in any way to cooperate. Many patients move from one hospital to another, either on the same pretext or by introducing a new symptomatology. They leave one hospital and immediately proceed to another, where they also stay only a short time. They thus often fail in every way to cooperate or to receive any essential benefit from their observation, attempt at supervision, or offer of treatment. The reason for this attitude has already been adequately referred to. Careful study of the personal history, supplemented by observation of cases in hand, leads one to feel that one is not treating a disease but a personality. The study of personality, though engaged in by able men for several generations, is still in its infancy; its modifiability is still governed only by the requirements of each individual case.

It is the policy of this hospital, so far as possible, to maintain a case as long as treatment is necessary, and to accomplish in the least possible time the greatest amount of benefit to the patient. This cannot be fully accomplished readily, as one must make extensive alterations in the personal equation. One must create in his patients a desire to get well and so encourage that desire that they are willing to help themselves. A predominating tendency among these patients is to be quite satisfied with their present condition and to blame their physician for everything in the world—except their own presence. They respond very slowly to advice, and reluctantly get about doing anything personally constructive. A few very satisfactory patients come in with a desire to get well and make wonderful effort to accomplish that which is explained and outlined, and usually promptly succeed in getting well. Others are able to learn to condone certain conditions that cannot be removed, and hence they go out quite at *their normal* capacity. The period of hospitalization, however, which is required to bring about these results is rather long. We rarely have a patient under observation and treatment less than thirty days. Patients are more frequently under treatment three, and occasionally six months. On a few occasions, hysterics have entered the hospital and within a few hours have been relieved of their incapacitating manifestations and sent home. Not a few others for similar conditions have entered the hospital, and within a short time have discovered that if they remained in the hospital they would lose their malady and hence, in terms of probable monetary considerations, deemed it selfishly advantageous to sever their relationship with the hospital as soon as possible. Thus, in point of type of case and therapeutic requirement, the proverbial variation is in no sense wanting.

SUMMARY

The psychoneuroses met with in the U. S. Public Health Service hospitals are more the neuroses of *ex-service* men than they are the neuroses of *war*, and as such their symptomatology is becoming progressively more like that of the civilian neuroses.

In grouping the neuroses of *ex-service* men, the common nomenclature for the psychoneuroses has been

adhered to and, when various elements with a war coloring have occurred, they have been added as admixtures or concomitants of the symptom-composite. The latter include the therapeutically stubborn pension neurosis, and that even more unyielding psychic syndrome seen in *ex-service* men of foreign birth and characterized by a parasitic incapacity born of the patient's unalterable opinion that the discharge of his patriotic duties merits governmental benevolence for the rest of his days.

The therapeutic management of the neuroses of *ex-service* men is beset by many problems. In the solution of these problems, many difficulties are encountered; but a fair proportion of favorable results are being obtained.

ABSTRACT OF DISCUSSION

DR. SMILEY BLANTON, Madison, Wis.: Dr. Benton, in making his diagnoses and drawing his conclusions, did not content himself with a one-sided examination either from a mental or a physical standpoint. Because of the unusual equipment of the hospital, as well as the attending specialists, Dr. Benton was able to make a complete study of each case from a physical standpoint. He added to this a thorough study of the patient's personality. Dr. Benton's emphasis on the fact that the neuroses are really due to lack of adaptation to life, often caused in the war cases by a break in continuity, and that the physician must concern himself not so much with the disease but with the personality, accentuates a forward looking phase of our work which is sometimes neglected. Dr. Adolph Meyer, at a recent meeting of the American Psychiatric Society, called psychiatry "critical common sense." Dr. Benton has used judgment in studying and treating his cases. He has taken the best from Freud, Adler and Jung and mixed it with critical common sense. We cannot regard a man as a series of organs or think of his difficulties as being caused alone by syphilis, congenital or acquired, or other subtle organic lesions; but, having exhausted all means of physical diagnosis, must go forward, as does Dr. Benton, and treat the personality. In treating the personality, one must adjust the individual to life in such a way that he can lead a healthy existence. As Robert Louis Stephenson so well expresses it: "We cannot cut the Gordian knots of life, but each must be smilingly unraveled."

DR. WILLIAM HOUSE, Portland Ore.: The men who spent a few weeks in camp, met with minor accidents and now want the government to support them as long as they live are creating a great pension problem. Extreme care must be exercised to avoid injustice to any person who really served, and the benefit of the doubt should always be given the claimant. Most of the men I have in mind suffer from constitutional psychopathic inferiority. Sanatorium care, because of the present public attitude, is often necessary though dangerous in that it may serve to perpetuate illnesses we aim to cure. The United States Public Health Service expects us to estimate the degree of disability from which they suffer. How can one estimate the degree of disability of a neurasthenic when on every side we see neurasthenics successfully conducting large businesses and others, apparently no worse, giving up and doing nothing? I predict that in time large corporations will require neurologic examinations of all employees who are to engage in dangerous occupations, as a consequence of which better results will be obtained from state industrial compensation and similar acts.

DR. EDWIN W. HIRSCH, Chicago: The trouble with the public health service is that they try to "mill" men in and out and not handle them as individuals. It has been asked of what use it was to win the war if we lost the world. Of what use is it if we make a diagnosis and lose the patient? The eye, ear, nose and throat man sees only his division, and the heart man sees cardiograms, but it is only the specialist in nervous and mental diseases who sees the man, and if we treat the man and not the disease, I am sure there would be many recoveries. I have had the opportunity of seeing the work Dr. Benton has done at Waukesha.

Many men cured thereby are being sent out to dig a ditch or split a log. Dr. Benton puts confidence in them and before long they are cured. By making the treatment individual, he gets results.

DR. FRANK R. STARKEY, Detroit: We have had neuroses dating from the Civil War, and there have been other events in the lives of individuals that have produced profound impressions. I used to meet an old man who had been in the Civil War; when he was asked what his business was, he would reply that he was a medal of honor man. He had performed an unusually heroic action at the battle of Gettysburg, and for this he was given by congress the highest military award, and that even changed the man's personality. Previous to that he was industrious, a good provider to his family, and a useful citizen. Since then he has been "a medal of honor man," and he has not earned his living for the last fifty years. In many individuals who have met with an accident, their whole life revolves about that. A profound psychic shock can produce a complete change in personality. I think it is incumbent on the medical profession to try to erase these impressions from the minds of the men who have experienced these changes in continuity, especially those who have been disturbed by the great event of the World War, and direct them back into normal channels of thinking. Try to give them a more nearly reasonable sense of proportion so that they may again take up their regular field of activity and become useful citizens rather than a burden to the government.

DR. CHARLES R. BALL, St. Paul: The method of dispensing compensation in the war neuroses is at present in a deplorable condition and seems to be getting worse rather than better. The experience of other countries where compensation in industrial injuries has been paid as long as the patients continue with their symptoms and claim disability has been most unsatisfactory. Nonne says that this plan of paying compensation in Germany in injuries occurring in industry is making the German working man a neurotic. It is not good for either the physical or moral well being of the individual receiving it. If our conception of compensation neurosis is correct, which is, that behind the symptoms is the motive, and that the symptoms stand in the service of the motive, and the motive is consciously or unconsciously compensation, we are doing the worst possible thing for our neurotic soldiers. Endeavoring to bring about a recovery in such cases under present conditions is comparable to attempting to cure a case of poisoning by administering more poison. This would be regarded as rather an absurd and impossible procedure.

DR. C. R. WOODSON, St. Joseph, Mo.: I think a mistake has been made by the government in not examining these men before accepting them for service in the army. Men were inducted into the war who had been treated for epilepsy, those who were feeble-minded, and those in whom there was a strong ancestral taint. They are now demanding compensation, and if they are passed on by a war risk board as not deserving, they will pass to the Red Cross and come on again and get before two, three, our and five war risk boards with the possibility of finally being found eligible to compensation. Many of them are not properly fed; too many of them do not want to get well. If you talk about their getting better, or being not suitable cases for compensation, that is not satisfactory. It is the same with the old soldier coming up for his pension; he limps, has a long face and an air of profound misery, but after he receives the pension, he may be observed to be very much better.

DR. JOHN F. HERRICK, Ottumwa, Iowa: A man was blown up on the battlefield by a shell explosion, thrown about 30 feet, and was covered by dirt. He was brought into the hospital suffering from nerve shock and with a marked general tremor. This continued, although the man had not been injured physically beyond a shaking up. Remembering some experiences in civil life, I told him his injury was purely mental; he had seen the shell coming and had believed he was going to be killed, and this profound impression had sunk into the subconscious and was causing the symptoms from which he was suffering. I told him that if he could get rid of that impression he would get bodily relief; if he could make himself realize that he really was not injured,

his tremor, etc., would disappear. He stopped shaking and went about his work. On the other hand, when I saw an officer tell a man, "There is nothing the matter with you; get out and go to work," it made him worse. These men have received a profound impression on the subconscious memory, and it is necessary to show them how the impression is implanted; and by analyzing that with common sense, the thing clears up.

DR. GEORGE H. BENTON, Waukesha, Wis.: Our experience is a common one, for these patients are very similar all over the United States. The difficulties under which we labor are pretty well understood. Many unfortunate and many perplexing things come up. Congress has not the slightest idea of the facts of the situation and is influenced by individual political interests. Many stories are going about of the abused ex-service men standing on the streets without home or provisions. The psychoneurotic enjoys being in the center of the field, getting attention and sympathy. Many things could be done that would help these patients and the men attempting to help them. We have little or nothing to do with the so-called shell shocked man. I have always maintained that the man actually shocked from concussion got well or succumbed. Any little unusual experience was termed shell shock during the war by the man wanting to be eased of the responsibilities of life. Dr. Ball referred to the thing I called popular hysteria, which has added to the troubles of those handling the war risk benefits. In Waukesha we give attention to all somatic factors; we give the most thought and spend the most amount of work in treating the man's personality.

QUANTITATIVE ESTIMATION OF THE TOTAL PROTEIN IN THE CEREBROSPINAL FLUID*

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Increase in protein is probably the earliest and most constant abnormality noted in the cerebrospinal fluid under pathologic conditions. Not only does protein accompany even the most sluggish meningeal inflammatory process, but venous congestions are also accompanied by the appearance of protein in the cerebrospinal fluid in excess of normal. Protein excess may then be an index not only of an exudative meningeal process, but also of the degree of permeability of meningeal vessels under pathologic or abnormal physiologic states. In the one case the protein is of exudative, in the other of transudative origin.

With its diverse sources of origin, then, protein determination becomes of fundamental importance as a nondifferential test. No other test wholly supersedes it, and certainly no differential protein test wholly displaces it. And yet for years we have been satisfied with performing rough qualitative tests, the results of which were frequently construed as "positive" by one observer, "negative" by another, varying with the degree of experience, shades of light, size of test tubes, and other factors, more or less uncontrolled. It was the desire to place protein determinations in figures which led us to seek the aid of a chemist, and Dr.

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Denis¹ elaborated a method which has proved satisfactory and not too difficult of application. Briefly, the method consists of precipitating the fluid protein in a colloidal state by means of sulphosalicylic acid, and reading by means of a colorimeter against a standard prepared at the same time from a blood serum solution of known protein content. The percentage of error by this method was found to be less than five.

This technic has been carried out exclusively by one of us (H. E. F.) during the last year, and approximately 2,100 readings have been made. The method has, we feel, abundantly justified the extra amount of time consumed; in many ways the figures obtained have been of value.

First, and obviously, the quantitative method has served to control the quicker and less accurate methods. Time and again preliminary estimations of protein said to be "normal" have been changed to a definite "increase," and occasionally the reverse has been the case. While the borderline between normal and pathologic will always exist, we feel that by means of quantitation the line is more closely drawn.

Second, we have found a value in following the protein content of the fluids from patients under treatment for neurosyphilis. While much has been written concerning the cell count, colloidal gold test and Wassermann reaction under treatment, little has been said with reference to protein. By this method it is indicated that protein begins to fall early under treatment in all forms except paresis; in the latter it may even increase, although the cell count is dropping.

It was our interest in studying fluids from different loci of the subarachnoid space which made a more exact method of protein determination imperative, especially in the early diagnosis of spinal subarachnoid block by tumors and other pathologic states. Not infrequently a fluid is obtained by lumbar puncture which is slightly abnormal in protein content, but which might, and frequently does, pass as of no significance. When, by means of cistern puncture, we begin to compare the fluid above with that below, a difference of more than the slightest degree is found to be of importance. We have found such comparative readings of great value in the diagnosis of cord tumor, as significant as, and of more practical value than, the dramatic xanthochromic fluid with massive coagulation.

While protein values in different pathologic states are of only relative worth, certain disease entities or conditions do appear to give fairly constant readings. A preliminary table has already been published from this laboratory,¹ the averages in which we now believe to have been too high. The accompanying table, based on a much larger number of tests, supersedes the previous one.

COMMENTS ON TABLE

From more than 2,100 quantitations from approximately 800 patients, we have used 429 of these from as many patients in making up the table. They were not chosen to conform to any preconceived idea, but only if the history, symptoms and laboratory findings permitted of a fairly definite and accurate diagnosis. Only one reading from each patient has been used, although many have had from six to twenty readings.

I. *Normal*.—The average is within the limits set by other observers, but somewhat wider range has been

found in our series than most workers record. There are so many physiologic and non-neurologic pathologic conditions which exert a greater or lesser influence on the normal content of the spinal fluid that it is hard to draw a sharp line. However, we feel very strongly that any total protein quantitation above 40 mg. per hundred c.c. is distinctly pathologic.

TOTAL PROTEIN IN CEREBROSPINAL FLUID

	Num- ber of Cases	High, Mg. per 100 C.c.	Low, Mg. per 100 C.c.	Aver., Mg. per 100 C.c.
I. Normal (no affection of central nervous system demonstrable).....	48	38	16	25
II. Syphilis of the Central Nervous System:				
Tabes:				
1. Active, untreated.....	31	150	22	78
2. Active, treated (tests still positive).....	24	174	29	54
3. Active, with general paresis gold solution curve (untreated and treated).....	18	129*	38	74
4. Inactive (symptoms stationary; tests essentially negative).....	10	45	17	30
Paresis (untreated and treated).....	7	153	50	89
Optic atrophy (untreated and treated).....	18	238	19	74
Cerebrospinal Syphilis:				
1. Meningitic type (average, 253 cells).....	4	118	89	99
2. Active (average, 26 cells).....	12	218	28	73
3. Inactive (average, 3.5 cells).....	6	56	26	43
Latent syphilis.....	3	114	37	65
III. Non-neurologic Syphilis:				
1. Primary, active (blood positive).....	3	45	31	38
2. Secondary, active (blood positive).....	11	60	20	31
3. Tertiary, active (blood positive).....	10	51	18	35
4. Inactive (blood negative).....	13	56	20	34
IV. Vascular Hypertension:				
1. With symptoms of old cerebral lesions (hemiplegia, etc.).....	13	150	20	63
2. With symptoms denoting recent cerebrospinal lesions.....	12	95	20	51
3. Without evidence of cerebral lesions (uremia, etc.).....	14	133	22	61
Vascular Disease with Hypotension:				
1. Chronic myocardial insufficiency.....	1	...	..	40
2. Stokes-Adams syndrome (old cerebral infarction—necropsy).....	1	...	..	77
V. Epidemic Encephalitis:				
1. Active stage.....	27	274	21	67
2. Convalescent.....	6	50	20	36
VI. Poliomyelitis:				
1. Acute.....	3	81	67	75
2. Inactive.....	1	...	..	23
VII. Meningitis:				
Tuberculous.....	10	252	68	150
Acute forms (streptococci and pneumococci).....	5	923	64†	364
"Serous".....	2	87	67	77
VIII. Degenerations of Central Nervous System:				
Paralysis agitans.....	5	74	20	43
Multiple Sclerosis:				
1. Progressive.....	15	108	15	48
2. Inactive.....	4	93	21	48
Infection (?) of spinal cord (diffuse myelitic type).....	3	247	42	119
Friedreich's ataxia.....	1	...	..	19
IX. Brain tumor, with increased intracranial pressure.....	3	160	25	64
X. Brain abscess.....	1	...	..	100
XI. Miscellaneous:				
Epilepsy (no pathologic lesion known).....	11	50	17	29
Myasthenia gravis.....	1	...	..	19
Toxic amblyopia.....	3	89	26	49
Retrolubar optic neuritis.....	1	...	..	20
Scorbutus.....	2	67	34	51
Hydrocephalus (communicating).....	2	24	15	20
Acute systemic infections (typhoid and pneumonia).....	2	21	19	20
XII. Combined Cistern and Lumbar: ²				
1. Normal:				
Cistern.....	7	36	19	23
Lumbar.....	7	42	19	29
2. Block, with Hydrodynamic Evidence:				
Cistern.....	11	83	20	39
Lumbar.....	11	1112	85	341
3. Block, without Hydrodynamic Evidence:				
Cistern.....	6	160	19	52
Lumbar.....	6	860	62	296
4. Progressive myelitides:				
Cistern.....	4	100	24	59
Lumbar.....	4	160	50	96

* One case presumably belonging to this group but undoubtedly complicated, gave 523 mg.
† Only one case so low; next lowest, 125.

II. *Syphilis of the Central Nervous System*.—*Tabes*: Although both the upper and lower limits in the treated active cases exceeds those of the untreated active cases, it will be noted that the average in the former is markedly lower. The average of the active

1. Denis, W., and Ayer, J. B.: A Method for the Quantitative Determination of Protein in Cerebrospinal Fluid, Arch. Int. Med. 36: 436 (Oct.) 1920.

cases presenting paretic colloidal gold curves—untreated and treated—seems to confirm the contention of many writers that Lange's test is more or less of a quantitative protein test. To this we cannot accede, as the same curve is given in conditions other than general paresis, especially multiple sclerosis, in which disease the protein readings are more nearly normal. The inactive cases show some variation, the average being within normal limits.

Paresis, Untreated and Treated: The striking feature of these figures is that while the high limit is not as high as in some other central nervous system syphilitic conditions, the low is the highest of the entire syphilitic groups, excepting the meningitic type, and the average is also the highest of the infectious disease encountered except the meningitides.

Optic Atrophy, Untreated and Treated: The wide variation here is due to the inclusion of both early untreated and treated cases, some of which have been quiescent for years. In patients favorably responding to treatment, the protein decrease is the first sign usually noted, and the quantitation here is especially valuable in prognosis.

Cerebrospinal Syphilis (clinically and from laboratory findings, progressive and nonprogressive types); The meningitic type with an average cell count of 253 gives the highest average, although the range is much less than Group 2, with an average of 26 cells. Both of these types usually have positive spinal fluid Wassermann reactions. The inactive type with low normal cell count and usually negative fluid Wassermann reaction, nevertheless, gives a protein average over 50 per cent. higher than normal.

Latent Syphilis of the Nervous System: Patients never having had any neurologic symptoms, but with positive laboratory findings, are included in this group. The average number of cells of the three patients was 18; while a wide protein range is seen, the average is over two and one-half times the normal average.

III. Non-Neurologic Syphilis (no sign of symptoms of neurologic syphilis).—the patients in the three classical stages all had positive blood Wassermann reactions. The inactive cases had received enough treatment to give negative blood Wassermann reactions. The spinal fluids gave a normal cell count and negative Wassermann reactions, and no globulin ring was recorded. It is of interest to note that while the average total protein of each of the four subdivisions was within our normal, the cases presenting a primary lesion had the highest average. The greatest variation was found to be in the secondary stage of the disease.

IV. Vascular Hypertension.—With symptoms of old cerebral lesions, such as hemiplegia and internal ophthalmoplegia, cases range from low normal to six times normal, averaging over two and one-half average normal.

With symptoms denoting recent cerebrospinal lesions, a shorter range is given with a somewhat lower average.

The fourteen patients without evidence of cerebral lesions (uremia, cardiorenal vascular, etc.) had an average systolic blood pressure of 179, average diastolic of 105. In these cases the protein range is wide and the average over twice normal.

Of the thirty-nine cases in these hypertension groups, only nine gave normal readings.

Vascular Disease with Hypotension.—One of these patients had chronic myocardial insufficiency and one

Stokes-Adams syndrome with cerebral ischemia. The former had increased proteins, which may have been caused by former arterial hypertension or damage. The latter at necropsy showed a cerebral infarction undoubtedly following a slowly forming thrombus. His symptoms had been noted for a year and a half with remissions.

V. Epidemic Encephalitis.—The wide extremes in the active stage are worthy of passing note. The average here is two and one-half times the normal. In the convalescent patients the average is high normal.

VI. Poliomyelitis.—The three acute cases give a fairly uniform high total protein content, with average three times normal.

VII. Meningitis.—Tuberculous: These fluids were taken from early and late cases, but even in the early cases showing slight pleocytosis the lowest recorded protein was double a high normal, the average being six times average normal.

Acute Forms: Protein regularly increased, giving as a group the second highest average of the entire series. The one patient with the low protein content had a proved streptococcic meningitis. Three protein determinations made on this patient within eight days were all low. But for this case the average of the other four would have been 524 mg. per hundred c.c.

So-called "serous meningitis" includes those cases with meningitic symptoms but without a corresponding pleocytosis or positive cultures, in which recovery took place. It is assumed that in these cases the protein increase is of transudative rather than exudative origin.

VIII. Degenerations of the Central Nervous System.—Paralysis Agitans: While the average in these patients is not high, it is sufficiently high not to be ignored. Some of the patients were advanced in years, and a cardiorenal vascular condition may partially account for the high readings.

Multiple Sclerosis: The variations in both the progressive and the inactive cases are similarly marked, and the two averages coincide. In seven of the nineteen cases the content was within normal limits.

Infection (?) of the Spinal Cord: These were cases showing a rapidly progressive, diffuse and extensive—myelitic process of unknown etiology.

Friedreich's Ataxia: The one case shows a low normal protein reading.

IX and X. Brain Tumor and Brain Abscess.—To these groups we desire to add more determinations before making any definite statements. However, from the brief series we are led to surmise that tumors and abscesses located in or very near the cortex will give an increased total protein.

XI. Miscellaneous.—Epilepsy: All cases of known or demonstrable pathologic lesion were omitted, the so-called "idiopathic" epilepsies alone being chosen. An average only slightly higher than our normal average is given. It would be interesting to know what variation exists in the individual cases immediately following an attack and at some later period. Unfortunately, the time relation of rachicentesis is unknown to us in this series.

The remaining cases of this group need no comment.

XII. Combined Cistern and Lumbar.²—These patients presented clinical signs and symptoms which might have been interpreted in the light of cord compression, partial or complete. Included in the "nor-

2. Ayer, J. B.: Puncture of the Cisterna Magna, Arch. Neurol. & Psychiat. 4: 529 (Nov.) 1920.

mal" are cases which later were diagnosed syringomyelia, multiple sclerosis, etc. A normal difference in protein content between ventricular and lumbar fluids has been known to exist. We found very constantly a normal difference between cisterna magna and cisterna terminalis fluids to be from 4 to 8 mg. per hundred c.c. In the second subdivision of this group the extreme differences are found. These patients frequently had had a previous rachicentesis with a marked increase of total protein present. The combined punctures were made to determine the relative difference hydrodynamically and chemically. Several patients with cord compression operated on during the past year did not have the combined puncture for the reason that the lumbar fluid alone—showing in some cases the complete syndrome of Froin, with a total protein of from 2,100 to 2,400 mg. per hundred c.c.—made, in view of the clinical findings, an evident diagnosis.

In the cases without hydrodynamic evidence of block, protein, quantitation plays a most important part. The clinical evidence, coupled with the marked differences in protein from the two loci, completed the picture on which operation was advised.

COMMENT

What is the value of careful quantitative protein estimation? We believe that in many neurologic diseases the appearance of abnormal amounts of protein in the spinal fluid is one of the earliest detectable signs of pathology or altered physiology, and that it constitutes a nondifferential reaction of fundamental importance. If this is so it becomes necessary to know the normal amounts, and if possible, the amounts to be expected in different pathologic states. It is therefore obvious that an estimation of protein by an accurate quantitative method becomes essential.

For some years the French, pioneers in cerebrospinal fluid pathology, have expressed their protein determinations in figures, using for the most part the Mestrezat trichloroacetic acid method, and more recently that advocated by Ravaut and Boyer,³ in which silver chlorid is used as standard. While we have not used these methods, if it is felt that our method, elaborated by Dr. Denis, should be even more accurate than these, in that the standard employed is a protein, and that an unknown protein precipitate is compared with a known protein precipitate prepared at the same time.

While all who examine spinal fluid form a rough conception of the amount of protein to be expected in normal fluids, and some authors give figures, it is well known that the normal variation is considerable. To one only slightly familiar with such examinations the estimation of normal and pathologic amounts of protein is bewildering. It was with the hope of establishing normal and pathologic groups that this method has been followed by us for the last year and a half. Can we establish normal, and separate pathologic states according to protein content? To a certain extent we believe that we can, as is apparent in the accompanying table, of which a few of the most significant figures will be discussed.

Normal.—We find to lie between 38 and 16 mg. per hundred c.c. Perhaps a larger number of cases would make the limits a little greater, but it appears safe to say that more than 40 mg. is always suspicious of an

underlying pathologic process. True, many figures below this occur in the different pathologic groups, but for the most part these low readings are found in convalescence or in inactive stages of chronic diseases.

Pathologic.—In considering pathologic states, we must admit at least two sources of spinal fluid protein: that which accompanies exudative processes, and that which comes from the blood by transudation or increased permeability of the membranes. The purest example of the former is an acute pyogenic meningitis, and of the latter the fluid below a cord tumor. In the milder inflammations, such as syphilitic meningitis, an amount of protein will be expected less than in the acute meningitides, and this is usually the case; but within the syphilitic group itself there are subgroups which show slight cell reaction and relatively great protein content. It is reasonable to suppose that this considerable protein output is not all the product of meningeal irritation, but is also a product of transudation, and perhaps a manifestation of deep-seated parenchymatous disease. Thus, we find the higher readings in the syphilitic group are either associated with acute meningitic types (exudative in origin) or with the more profound degenerative types, such as paresis (transudative in origin). We have, then, within the syphilitic group a valuable guide as to diagnosis and consequently prognosis in a careful correlation of cell count and protein determination. Similarly, the persistence of excess of protein in the spinal fluid in syphilitics during treatment is of prognostic significance.

Of especial note are several groups of cases in which the spinal fluid is generally said to be "negative," but which are shown to be abnormal on careful protein determination. Of the group of cases presenting vascular hypertension, thirty out of thirty-nine presented hyperalbuminosis. Some of these patients had evidence of cerebral vascular accidents, and some did not. It is not too much to say that in these cases there is usually to be found protein excess which, because of lack of cells, is of transudative origin. This is a point but seldom emphasized, and one of considerable diagnostic significance. Presumably in a similar manner a limited number of cases of purely degenerative character, such as multiple sclerosis and paralysis agitans, have presented increased protein. The fluids from brain tumors and abscesses also are not necessarily "negative," but may present considerable protein excess. French writers have for several years paid considerable attention to this isolated protein reaction, but in America its significance appears to have been generally overlooked. With the quantitative method, a moderate but distinct protein increase is brought to the attention and cannot be discarded as of no significance.

As is well known, the acute forms of meningitis yield a very great amount of protein, but it was not realized by us until the present method was employed that a typical acute meningitis might be associated with a comparatively slight protein output, even in the advanced stages of the disease. The amount of protein obtained in tuberculous meningitis agrees with preconceived ideas that the protein is moderately increased, but less than in the pyogenic forms. Comment on the serous meningitic types must be withheld until more cases have been investigated.

3. Ravaut, P., and Boyer, L.: Nouveau procédé de dosage rapide de l'albumine dans le liquide céphalo-rachidien, *Presse méd.* 28:42 (Jan. 17) 1920.

Since first called to attention by Froin⁴ in 1903, the syndrome which bears his name (the chief characteristic of which is excessive protein) has been considered almost pathognomonic of spinal cord compression. But it is only recently that the importance of lesser amounts of protein in the spinal fluid below cord tumors has been emphasized. For more than a year, cases suspected of having cord tumor have been systematically studied by combined cistern and lumbar puncture in this clinic, an opportunity being thereby given to compare the spinal fluid above and below the obstruction. It has been found normally that the cistern fluid shows slightly less protein than that obtained from the lumbar sac. In almost every case in which tumor has been demonstrated there has been a distinct difference in the protein content of the two fluids. Further, when it was possible by means of manometric readings to demonstrate a block in the spinal meninges, the protein content from a lumbar puncture was usually found increased to a marked degree, in some cases presenting the complete syndrome of Froin. It is our belief that even slight increase in protein in suspected cord tumor is an almost constant finding and a sign of great value. Another paper will deal with this subject.

A point of interest, but one not brought out in the table, is the effect of repeated lumbar puncture on subsequent protein determination. In a number of cases it was clearly demonstrated that in cases in which spinal fluid was withdrawn at an interval of a few days, the second fluid regularly presented lower readings. If the interval was increased to a week or more, this was not the case. This fact suggests a hypothetic hydrorrhea and an interesting correlation with so-called lumbar puncture headache.

CONCLUSIONS

While we do not pretend that quantitative protein determination is a necessity in the hands of a competent and experienced observer, there is no question but that accurate estimation gives results in more certain and intelligent form, that slighter degrees of abnormality tend to assume unsuspected significance, and that in consequence diagnosis is rendered more acute.

ABSTRACT OF DISCUSSION

DR. DAVID J. KALISKI, New York: What figures were obtained in xanthochromic fluids, and what was the difference in the cistern fluid and the spinal fluid? Were any studies made in cases of tumor of the cord, in tuberculosis, or other meningitides, or in cases of encephalitis? If there is often an increase in noninflammatory diseases, like hypertension cases with no nervous changes, how can the globulin content be used in differential diagnosis or prognosis in syphilis?

DR. JAMES B. AYER, Boston: This method is nothing new. For several years the French have expressed these protein determinations in figures. This method is more accurate than the determination of the quantitative protein for the purpose of showing that the increase in the protein is one of the early manifestations that occur in the nervous system. It is an attempt to express in figures a reaction which we believe is important. This test seems to get most of the proteins, and we believe it is of use in conjunction with other tests.

DR. JOSEPH B. NEAL, New York: In connection with the work in the meningitis division of the Research Laboratory of the New York Department of Health, we have examined many spinal fluids—about 8,000, especially in acute conditions. We realize the importance of the quantitative estimation of the protein content. We are forced, however, to rely on the

qualitative methods, which are not wholly satisfactory, because we have not a sufficient force to do the quantitative work. The method we use is the nitric acid ring test for albumin and the Noguchi test for globulin. During the epidemic of poliomyelitis in 1916, when we were able to have a physiologic chemist capable of carrying on the quantitative work, we found that our qualitative readings of normal fluids corresponded very well with the normal quantitative results, and that our readings in pathologic conditions corresponded very well also. I think, however, that unless much of this work is passing through the hands of the same group of people, there is a tendency to read albumin and globulin as normal when they are increased. I should like to ask whether any effort has been made to determine whether there is a difference in the protein present when increase is due to transudate and when it is an exudate. According to Anglada, the protein present in normal spinal fluid is serum globulin, and that in pathologic fluid is serum albumin. As to the syndrome of Froin, I have seen two very typical cases occurring in poliencephalitis.

DR. HAROLD E. FOSTER, Boston: We have examined and compared the xanthochromic fluid in cord compression with the cistern fluid and found the cistern fluid protein content to be within normal limits while the lumbar quantitative test gave 1,800, 2,100 and up to 2,400 mg. per hundred cubic centimeters. In fact, we have examined xanthochromic fluid from below a cord tumor, an apparently Froin syndrome, fluid from immediately above the tumor, and a cistern fluid from the same patient. The fluid from the middle locus gave a lower quantitative result than that from the lower lumbar region, while the cistern fluid was within normal limits. The word "marked" is a relative term, and naming it with the hypertension group I meant that in many long continued cases of cardiorenal vascular disease the content was double or even more than double a normal average. In interpreting transudative and exudative fluids, one must always keep the whole picture in mind as well as the total protein content, the pleocytosis being found in the latter. In the nonsyphilitic groups we have seen fluids without a globulin ring which gave an increase of two or three times double the normal average protein content.

MESENTERIC VASCULAR OCCLUSION

WITH REPORT OF NINE CASES IN WHICH
OPERATION WAS PERFORMED *

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The first instance of occlusion of the mesenteric vessels appears to have been reported by Tiedeman, in 1843, while four years later Virchow described its pathology. During the following half century a scanty literature, chiefly continental, was contributed. In 1904, Jackson, Porter and Quinby¹ made what remains perhaps the most important American contribution, in which they collected and reviewed 184 cases from the literature and added thirty new cases from various sources. Trotter² in 1913, published a monograph which is the most comprehensive study of the subject in English. This is based on six original cases, in one of which the patient recovered without operation, thus throwing considerable doubt on the accuracy of the diagnosis, and on 360 cases collected from the literature. These, with other small groups of cases, make it safe to assume that about 500 cases are now on record.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Jackson, J. M.; Porter, C. A., and Quinby, W. C.: Mesenteric Embolism and Thrombosis, *J. A. M. A.* 43: 25 (July 2); 110 (July 9); 183 (July 16) 1914.

2. Trotter, L. B. C.: Embolism and Thrombosis of the Mesenteric Vessels, Cambridge, Cambridge University Press, 1913.

4. Froin: *Gaz. d. hôp.* 76: 1005, 1903.

The purposes of this paper forbid a further review of what has gone before other than to state that it gives one the impression that mesenteric vascular occlusion is a very rare condition, a medical curiosity, and that it has an exceedingly high mortality. With the latter view, I am in full accord. The death rate is bound to be practically 100 per cent. unless prompt and proper treatment is instituted and probably must remain distressingly high in any event. But as to its rarity, I take issue. It is my conviction that these cases frequently pass unrecognized, and that deaths from this condition are often ascribed to postoperative ileus, peritonitis and the like. Neither do I find in the literature emphasis on what appear to me to be some of its most characteristic features, both pathologic and clinical. On the contrary, I hold that certain symptoms, usually mentioned, are no part of this disease per se, but are those of a secondary peritonitis.

It is my purpose to report nine original cases of mesenteric vascular occlusion, with my own analysis and deductions, in the hope that I may aid in the construction of a composite picture of this condition which may make preoperative diagnosis possible or at least give us the melancholy satisfaction of recognition at operation.

Three years ago, I recognized my first case of mesenteric vascular occlusion—at operation. Since then I have encountered eight others in which this lesion was the deciding factor, and I am sure I have met with many similar cases in the past without identifying them. All of these cases have presented a pathologic picture so characteristic as to be unmistakable, and, in addition, a syndrome so uniform as to suggest a definite disease entity, on the recognition of which alone, rational treatment must be based. I must admit at once that I have as yet hesitated to make a positive diagnosis of this condition before operation; but in the latter cases of this series, I have listed mesenteric vascular occlusion among the two or three possibilities.

REPORT OF CASES

CASE 1.—A man, aged 29, admitted to Arnot-Ogden Hospital, Jan. 28, 1918, in a dying condition, had been suddenly seized on the street with agonizing abdominal pain and vomiting, seventy-two hours before. Vomiting, persistent at first, had diminished in frequency after the first eight hours. The bowels had moved several times without relieving the pain. The temperature was subnormal, the pulse infrequent but irregular and small. The skin was cold. The abdomen was very tender and full but not distended; there was no marked muscle spasm. Borborygmus was heard throughout the abdomen. Operation was decided on without definite diagnosis. Through a right rectus incision, a large quantity of clear, odorless and slightly blood tinged serum was evacuated. The appendix, slightly congested, was removed, but its appearance failed to explain the symptoms. Further exploration disclosed several coils of dark red, edematous, dilated small intestine. They did not tend to crowd out of the incision and seemed to be held down by a considerable weight of fluid within their lumen, which poured from one coil to the next as they were manipulated. About 4 feet of the intestine was thus involved. Some small oval areas were very dark, but no gangrene was seen. In addition, a heavy, doughy mass, the size of my wrist, was found dragging down over the pelvic brim, apparently adherent at either end; but as my fingers were insinuated about and under it, the lower end was brought up from the depths of the pelvis. It proved to be the mesentery with its attached intestine, which was more cyanotic than that first seen.

While uncertain as to the cause, resection of the intestine was indicated, but the patient's condition forbade. Enterostomy was performed and huge quantities of fluid drained,

but the patient survived only twelve hours. Necropsy was not allowed.

CASE 2.—A retired business man, aged 56, was admitted to Arnot-Ogden Hospital, May 12, 1918, with a diagnosis of acute appendicitis. He had serious cardiovascular-renal disease, with casts, albumin and a systolic pressure of 260. He had been ill for three days with vague, moderately severe abdominal pain and occasional vomiting. The pain had now localized in the right lower quadrant. There was no distention of the abdomen and only doubtful rigidity of the right rectus. His bowels had moved daily, and the pain tended to be paroxysmal and colicky in character. While it was considered an atypical case, a diagnosis of appendicitis had been made some years before, and operation seemed indicated. A considerable amount of amber fluid came from the incision and the intestine, as far as examined, was dusky, heavy and dilated, *not distended*, and contained a large amount of fluid and very little gas. The appendix was sclerosed and stricture at the tip, while its middle and proximal portions were definitely inflamed. It seemed a reasonable explanation of his symptoms, but the significance of the plum colored, soggy intestine was not appreciated at the time.

After operation, the colicky pain continued much as before, with occasional vomiting. His bowels moved reasonably well, but his abdomen gradually became more full, ~~was~~ dull on percussion, but lacked muscle spasm. On the fourth day after operation and the seventh of his illness, it became evident that he was not doing well, that something was radically wrong, and a second operation was decided on. A midline incision brought forth a quantity of amber fluid, slightly blood tinged. The appendicular region showed no abscess or adhesions, but we soon came on several coils of dark, lifeless intestine containing but little gas and much fluid. They lay inert in the cavity, held down by their fluid contents, which slushed about as they were handled. The peritoneum was glistening, but the intestinal walls were thick and edematous. About 4 feet was thus affected. The similarity of this condition to the one first described was noted at once, but when the exploring finger encountered a tense, heavy, thick mass hanging down into the pelvis, the identity of the two was striking. Thrombosed vessels and subperitoneal hemorrhages were found in the mesentery in this case, and the true diagnosis was established.

Intestinal resection was out of the question here and the case was managed in the same manner and with the same result as was the first reported.

CASE 3.—A school teacher, aged 35, seen, July 5, 1918, at the Arnot-Ogden Hospital, had been operated on for suppurative appendicitis, June 23, preceding, and up to July 4 had done well. Drainage had ceased, and the wound looked healthy. July 4, she had complained of flatulency and general abdominal unrest. Her appetite failed, and she appeared to be seriously ill. Fairly satisfactory bowel movements gave her no relief. The abdomen was full but not distended, and was dull on percussion, except over the stomach. There was no elevation of pulse rate or temperature. Further enemas and pituitary extract were used; but although there were fair results from the bowels, the patient felt no relief.

July 6, I opened the abdomen in the median line, after exploring the original appendectomy wound with negative results. Considerable free, amber fluid poured out of the incision, and about 5 feet of cyanosed, dilated intestine was found, part of which was on the verge of gangrene. The mesentery was found as in the preceding cases. Intestinal resection, with side-to-side anastomosis, was performed. The patient did well for about a week when a fecal fistula developed, probably from an extension of the thrombosis. This leak was evidently so high in the intestinal tract that it seriously impaired her nutrition, and she died about two weeks after the second operation.

CASE 4.—A woman, aged 47, seen Aug. 21, 1918, had been seized with violent abdominal pain and vomiting about an hour after her evening meal. Repeated doses of morphin had given her but little relief. She was in shock when I saw her at the ninth hour. The abdomen was flaccid, dull on percussion, with generalized pain and tenderness. The temperature was subnormal. I advised immediate operation

on the diagnosis of mesenteric vascular occlusion, ruptured viscus or acute pancreatitis, in the order named. Permission was not granted at this time, but she was removed to the Arnot-Ogden Hospital. The bowels responded to enemas several times, and the vomiting became less frequent. Pain was not relieved, however, and she continued to be in a state of shock. At the twenty-first hour, operation was undertaken. Eight feet of small intestine was found involved as before described, the same free fluid and the thick, heavy mesentery dragging down over the sacral promontory. Resection was performed, and the patient survived twelve hours.

CASE 5.—A retired farmer, aged 63, with marked vascular degeneration, was admitted to Arnot-Ogden Hospital, June 27, 1919, eighteen hours after a sudden, violent onset of general abdominal pain and vomiting. The bowels had not moved, although enemas had been used. He had singultus, general boardlike rigidity, and was in shock. Percussion was dull. Operation revealed a large amount of free, bloody, odorless, sticky fluid and about 10 inches of dark, dilated intestine, at the upper limit of which was a tight constricting band, above which the intestine was normal. The mesentery of the involved intestine hung like a tense rope over the pelvic brim, and its vessels were thrombosed. Division of the band and resection were performed.

The patient did well for nine days, the bowels moving well. Then complete anorexia developed, he became depressed, vomiting now and then, and he died on the tenth day, either from an extension of the thrombosis, or as I believe, from the intense heat then prevailing.

CASE 6.—A woman, aged 46, stout, plethoric, with high blood pressure, but in general good health, had experienced sudden, violent onset of abdominal pain but without vomiting and was admitted to the Arnot-Ogden Hospital, Sept. 23, 1919, seven hours after seizure. The bowels did not respond to enemas. There was exquisite tenderness throughout the abdomen, but there was neither distention or rigidity. During the examination, a large uterine fibroid was found. Torsion of this tumor or mesenteric occlusion was considered. Operation revealed a quantity of free fluid, 18 inches of dark, plum colored intestine and the characteristic condition of the mesentery. Resection and anastomosis were performed and her recovery was rapid and complete. I have since removed the fibroid and could not positively locate the site of resection.

CASE 7.—A woman, aged 64, with pipe-stem arteries and a long-standing, symptomless femoral hernia, was seen Jan. 24, 1920. Three days before she had experienced sharp, paroxysmal pain in the hernia for a few hours. After this she vomited at intervals, had vague abdominal unrest and occasional disseminated abdominal colic. She entered the hospital with a diagnosis of appendicitis, but I advised exploration of the hernia. A small knuckle of bowel, not involving its entire lumen, was found strangulated and gangrenous in the femoral canal. There was a gush of bloody fluid from the abdomen and above the strangulation, the intestine was dark, soggy and dilated, with a greatly thickened, heavy mesentery. On account of her age, only the gangrenous portion was brought out of the incision, and enterostomy was performed the next day, with an unqualifiedly bad prognosis. The enterostomy drained well, and she reacted satisfactorily; but she began to fail after the fourth day and died on the seventh from exhaustion and sepsis.

CASE 8.—A man, aged 35, admitted to Arnot-Ogden Hospital, Sept. 7, 1920, had previously been in good health except for an attack of appendicitis twelve years before, for which operation was not performed. He was taken with violent general abdominal pain and vomiting while at work. Five hours later he was seen by the family physician, who advised immediate operation on a diagnosis of appendicitis. Two hours later, the pain becoming intolerable, this advice was accepted, and he was admitted to the hospital. Vomiting had now ceased, his pain was still severe despite large doses of morphin and he was in shock. The abdomen was flat, dull on percussion, and there was no muscle spasm.

A midline incision brought a free flow of amber fluid and the small intestine, from just below its emergence through

the mesocolon to within 15 inches of the ileocecal valve, was found dilated, dark and lifeless and contained a large amount of fluid which poured from coil to coil as it was handled. The entire mesentery was doughy and thrombosed, strangled by a single loop of intestine which had become twisted about its root. On releasing this coil, a faint pulsation could be discerned at some points along the intestine, and we had a half-hearted hope that the circulation might reestablish itself. Enterostomy was performed and the patient survived four days, during which time the bowels moved fairly well. Singultus, tympany and distention developed on the third day, and he died in a convulsive attack on the fourth.

CASE 9.—A man, aged 20, seen Oct. 15, 1920, three years before had gone twelve days without a bowel movement, but had suffered no acute symptoms. About a week before he noticed abdominal soreness when riding in an automobile. The next night he had a few hours of abdominal pain and vomited. He remained home from this time, with poor appetite and increasing difficulty in causing the bowels to move. For four days, they had not acted at all. He had very little pain, no distention, and he vomited only after taking nourishment. He lay in bed in an attitude of rest and with no expression of suffering. There was no disturbance of pulse or temperature and no muscle spasm. Loud intestinal gurgling could be heard as one sat near his bedside. All efforts to cause the bowels to move had been unsuccessful. From his history and present condition, I suspected fecal impaction and advised further enemas, insisting on the necessity of fluoroscopy should he recover by these measures.

About twenty-four hours later, he was suddenly seized with agonizing abdominal pain, vomiting which soon became stercoraceous, and shock. He was sent to the hospital, and immediate operation was undertaken. Dulness had replaced the modified tympany of the previous day, but there was no muscle spasm. We found a large amount of free, amber fluid and about 6 feet of cyanosed, lifeless, dilated intestine. The mesentery was as before described, but on tracing it down into the pelvis, we came on a large elastic mass which proved to be a cyst of the mesentery which had become twisted three complete turns, thus strangling the circulation. The torsion was relieved, and enterostomy performed, but he died twelve hours later.

My interpretation of the events in this case is that three years ago when he had the twelve day period of obstipation, the cyst rotated sufficiently to obstruct the bowel, finally righting itself. It then remained symptomless until one week before I saw him, when the first turn occurred. The night he had his first pain and vomiting, a second rotation occurred. And the third and final twist, which caused the thrombosis, occurred the day before operation.

COMMENT

A study of these cases shows a pathologic picture which is strikingly uniform and characteristic, unlike that found in any other disease, and which, so far as my reading goes, has not been hitherto described in a way to enable the surgeon positively to recognize his first case. The salient features in order of their importance are: (1) the transparent, sticky peritoneal fluid, amber or blood tinged in color, odorless and without coagulated lymph, which was present in copious amount in every instance; (2) the cyanosed, plum colored, soggy, edematous intestine, with glistening peritoneum, free from adhesions, its lumen relaxed—not distended—to large caliber, lying inert within the abdominal cavity, with no tendency to crowd out of the incision, held down by a weight of fluid within its lumen, but containing little gas. The intestine may be mottled and may be on the verge of gangrene in small areas, but no gross gangrene was seen in any of these cases. Except for the absence of gas distention, it resembles the congested bowel often seen in large strangulated hernias, and one might readily enough expect it to come to life as the latter frequently does.

(3) Most characteristic is the mesentery. In all of these cases it formed a thick, doughy mass, dragging down over the pelvic brim as though adherent. But this is not the case. Sufficient force will bring it up with its attached bowel. There are no adhesions. Only the force of gravity and of negative pressure must be overcome, yet it comes up from the depths of the pelvis with much the sensation experienced by the swimmer in a heavy bathing suit when he lifts himself from the water. Once delivered, thrombosed vessels may often be seen or felt, and subperitoneal hemorrhages are occasionally observed. It is a mechanical and not an inflammatory condition. Peritonitis and gangrene, if found, are secondary and rather late changes. They were not seen in this series, though some of the patients were operated on several days after the onset.

Pathologically these cases fall into two general forms: (1) In primary occlusion, the lesions found and the symptoms produced are due to the mesenteric obstruction alone. (2) In the secondary form, occlusion of the mesenteric vessels occurs as a complication of such preexistent lesions as mesenteric cysts, strangulated hernias, suppurative processes within the abdominal cavity and the usual causes of intestinal obstruction.

Symptomatically, two types of manifestations are likewise clearly marked: (1) the fulminating and (2) the phlegmatic. These correspond to the acute and chronic forms mentioned by some writers, but they appear to me to be more descriptive terms. Either the primary or secondary forms may appear with fulminating or phlegmatic symptoms. The fulminating type comes on with sudden, violent symptoms which are sufficiently characteristic in my opinion to make, with greater familiarity, preoperative diagnosis possible. The phlegmatic type is so insidious in its development, and in its secondary form so interwoven with the signs of the preceding disease, as to make diagnosis before operation difficult or impossible. But the pathologic condition produced is identical in the two types.

Based on this small series of cases, two prevailing ideas concerning this disease must be unlearned: (1) Extensive gangrene of the bowel is not seen unless it is a very late case, much later than these cases would ordinarily come to operation. (2) Complete intestinal obstruction is seen only in those cases in which some of its usual causes are present as the primary disease.

The striking symptoms are these: 1. There is disturbed function of the bowels. This may rarely express itself as a diarrhea, but, as a rule, there is difficulty in getting the bowels to move and the passage of flatus and feces fails to give the patient the relief ordinarily expected. Complete obstruction, as rare as diarrhea, is usually due to some coexisting cause. The presence of blood in the stools is mentioned by most writers but was observed only twice in this series.

2. Vomiting usually occurs early—coincident with the pain in the fulminating cases—and may be almost continuous during the first hours. It may become stercoraceous, and blood is occasionally seen. The notable feature of the vomiting in this series is that it tends to diminish or cease after the first six or eight hours. I explain this by the fact that after the stomach and intestine above the lesion are emptied, there remains only the natural secretions to irritate as they accumulate. Peristalsis is reversed only above the lesion. In the involved area there is no activity in either direction.

3. Pain, sudden, violent and agonizing, marks the onset of the fulminating cases. It resembles that seen in acute pancreatitis or rupture of a viscus. It tends to be paroxysmal or colicky, and is more or less general. In several of these cases it seemed to be worse over the left lower half of the abdomen, possibly being referred to the root of the mesentery. In the phlegmatic cases, it is rather vague and fugitive and is not localized. It is not influenced by bowel movements.

4. Shock is marked in the fulminating cases and its degree is to an extent an index of the amount of bowel involved.

Of almost equal value in diagnosis are the absence of certain symptoms, often mentioned in descriptions of this disease and ordinarily seen in the "acute abdomen," namely (1) It is essentially an afebrile disease, the temperature rarely rising above 100 F., and often being subnormal. The pulse is infrequent but may be small, irregular and thready, according to the degree of shock. (2) There is little or no muscle spasm. The flaccidity of the abdominal muscles is a very striking feature in a patient almost crazed with abdominal pain. (3) The abdomen is not distended. Neither is it scaphoid. It may best be described as rotund but not under tension. (4) The percussion note is dull or flat—not tympanitic. This is as one would expect, having in mind the conditions within, free fluid and a relaxed bowel partly filled with fluid. Such symptoms as rigidity, tympany and singultus are those of peritonitis and are seen, if at all, only late in the course.

To summarize, the fulminating cases of this group showed this characteristic syndrome: sudden, violent abdominal pain, not markedly localized; persistent vomiting, usually diminishing after the first few hours; slight or moderate fulness of the abdomen without muscle spasm, and a dull percussion note. The phlegmatic cases are much less clear in their evolution. There is vague abdominal unrest with occasional vomiting, unrelieved by fairly satisfactory bowel movements, and without localized tenderness. This is as definite as I can draw the picture. This type, if secondary, is so insidious that it is difficult to say when the primary disease becomes complicated.

But if we are unable to comply with the demands of ideal surgery to the extent of preoperative diagnosis, the pathology is so characteristic that no error should be made when, in conformity with the demands of "practical" surgery, we recognize an "acute" or "surgical" abdomen and open for exploratory purposes. Too often, I fear, has such an abdomen been drained or closed with a diagnosis of peritonitis of unknown origin, self-reduced volvulus, or intussusception, or similar diagnosis, unhappily with a favorable prognosis, the patient deprived of his only chance for recovery, and the surgeon placed in an embarrassing position, when had the real condition been recognized, enterostomy or enterectomy and an unfavorable prognosis were indicated.

The prognosis and treatment can be briefly stated. My mortality has been 88 per cent.—one recovery in nine cases—and I find but few writers who estimate the mortality below from 70 to 75 per cent. A very limited involvement, in a patient seen early and treated rationally, may yield a lower mortality, but with the ever present danger of extension, the prognosis must remain exceedingly grave.

Rational treatment is based on the fact that the bowel deprived of its blood supply can not recover.

Elimination of the involved portion, be it large or small, by the quickest possible means is the only treatment, and the fate of the patient then rests on the further extension of the process and the possibility of slow starvation if the drainage is high in the intestinal tract.

359 Main Street.

ABSTRACT OF DISCUSSION

DR. GEORGE M. SHEAHAN, Quincy, Mass.: All of us have suffered bad results from accidents of this nature. I use the word accident advisedly as progress in prevention and treatment has been so slow—in spite of the importance of the subject—that these cases are rarely forecasted and, as a rule, are unsuccessfully treated. The startling suddenness of development and the fatal outcome make postoperative embolism, mesenteric or otherwise, a sort of surgical sword of Damocles. Early diagnosis appears to be the important point, and it seems to me that Dr. Loop has drawn a better and more helpful picture of the condition than any other we have had up to the present time. As to frequency, Dr. Loop stated that the condition is less of a rarity than supposed. This, of course, is a relative matter—it certainly is true that vascular pluggings and infarcts are common pathologic findings; nevertheless, it must be admitted that mesenteric vascular occlusion is rather rare. At the Massachusetts General Hospital, where they have about 4,000 surgical cases yearly, there were only thirteen cases of this condition in twelve years. Nor do I agree entirely that any considerable number of cases are overlooked. The pathologic records do not substantiate this view. It is the severity of the condition, not its frequency, which makes it so important. As to diagnosis, it would seem well to confine our attention in large part to the phlegmatic type, as for obvious reasons nice distinctions in the fulminating type are difficult. What hope we have of a better prognosis seems to be in better treatment of this type; and, in the diagnosis, I am thoroughly convinced that an accurate history is the important factor. These cardinal points should prove most helpful: (1) suddenly disturbed function of the bowels; (2) vomiting, and (3) pain, violent and agonizing, not influenced by bowel movements. The similarity of this description to Clubbe's description of early intussusception is striking. There are other points of similarity between the two conditions. The presence of circulatory disease, advanced or middle age, cirrhosis of the liver, or sepsis, may help in the diagnosis, but they are by no means constant and are practically of no negative value. Among the more recent cases at the Massachusetts General Hospital are three in which the patients are in the neighborhood of 30 years of age, two of them having absolutely normal circulatory apparatus. Of course, the explanation is that this condition may be due to various causes, among them being sepsis, trauma, slowed circulation and disease of the circulatory organs. The evidence seems to be fairly strong—not absolute—that the majority of these occlusions are in the superior mesenteric artery. If this is the case, it is simply another strong argument against rough handling of the intestine. Only two of Dr. Loop's patients showed bloody intestinal discharges. This is not what one would expect from the pathologic findings, nor do I think it agrees with the majority of the clinical findings, for, if I remember correctly, Dr. Bottomley has several times called attention to the importance of this symptom. A possible explanation is that in some cases it is terminal in nature. Treatment must depend on surgical judgment in the individual case.

DR. W. D. JOHNSON, Batavia, N. Y.: Among the features that are outstanding is the absolute accuracy of description of cases by Dr. Loop. In actual practice we need to recognize the nature of our cases before we operate, and we need to recognize them at the time we are operating. I do not think the condition is quite as rare as Dr. Sheahan believes. I have seen six cases in five years. The last case was confirmed by a postmortem. We had removed an exophthalmic goiter, and in the subsequent period of low blood pressure mesenteric vascular occlusion occurred. The essential thing

to recognize early in these cases is that it is a case of "acute abdomen" and that an immediate operation is needed. In the only case in which I had a chance to operate, the remainder of the bowel turned black during the resection, and all I could do was to close the abdomen.

DR. J. L. BLISS, Holyoke, Mass.: I have seen one case of occlusion of the mesenteric artery. The man was a wool sorter. He was suddenly seized with crampy pain in the abdomen and vomited. His abdomen was soft; the temperature, 96.5 F.; pulse, 60. The temperature rose to 98.6, and pulse, 104, on the following day. Some abdominal distress was present, but no vomiting and no movement. An enema turned some fecal matter. After the enema he vomited a glass of malted milk. During the evening his stomach was washed and a high ox gall enema given. The enema was returned with small particles of fecal matter. Stomach washing returned fecal material and some castor oil given the night before. There had been no bowel movement, and there was very little abdominal pain. He termed it a disagreeable feeling. The abdomen was distended to a moderate degree but soft. He appeared anxious and somewhat restless. Operation was performed that afternoon. The intestines, though somewhat distended, did not enter the opening as usual, but lay an inert soggy mass, a mahogany red with darker gangrenous spots. The intestine contained considerable fluid. Death occurred a few hours later. With the exception of the upper portion of the duodenum, the entire small intestine was dark, almost black, and gangrenous. The cecum was somewhat reddened; the mesentery was dark and edematous. The large intestine was pale and empty.

DR. ROSS G. LOOP, Elmira, N. Y.: The main point I wish to make is that this is a mechanical, as contrasted with an infective, process. My mortality has been eight cases out of nine, although but one patient in the series could have been reasonably expected to recover. Two of them survived for about two weeks; one died on the tenth day, I believe, of heat prostration, for his bowels were moving well and he had no vomiting. The treatment consists of elimination of the involved intestine by the quickest possible method, usually by enterostomy. Resection requires too much time, as a rule.

THE MEDICAL SIGNIFICANCE OF THE DISORDERS OF SPEECH*

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WAUKESHA, WIS.

The speech area has not been demonstrated in the brain at birth, and the development of speech is not inevitable. An intact auditory apparatus, the presence of intelligence, and an intact nervous and muscle system are required for its proper development, plus certain emotional and social demands and situations under the stimulus of which it is organized.

Speech disorders, then, are early and invaluable symptoms of anomalies of intellectual and emotional growth as well as organic difficulties of the nervous system.

I shall not touch on the organic aphasia, but shall confine the discussion to the four tentative groups: (1) delayed speech; (2) letter substitution; (3) oral inactivities of the articulatory organs, and (4) stuttering, which includes the disorder of stammering. These disorders should be regarded as symptom complexes rather than as disease entities. These types are rarely simple and clear cut.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

DELAYED SPEECH

Delayed speech has both its organic and its functional form. The organic form is due to poor intelligence or defective hearing. The functional form is due, in some cases, to faulty family attitude.

A second type of functional form may be classified as an infantile neurosis, and is a fundamental lack of adaptation to the necessities of life, and speech is simply one, and the most pronounced, symptom of the beginning disorder.

LETTER SUBSTITUTION

This is commonly called lisp and lalling, and is the substitution of one letter sound for another, such as *th* and *sh* for *s* and *z*, and *w* for *r*. This disorder is most often supposed to be caused by faulty occlusion of the teeth and malformed palatal arch. We have been convinced that this is only a slight causative factor, through several group studies, one with the feeble-minded, where the relationship between general intelligence and letter position was much greater than the relationship between arch and occlusion and good speech. The second group study was made on 1,100 incoming freshmen *men* at the University of Wisconsin. Ten of these men had good arch and occlusion, and letter substitution; fifty had poor arch and occlusion, and letter substitution, but 265 had poor arch and occlusion, and good speech.

There is a second type, which is apparently a simple hangover of early childish habits.

There is a third type, in which the intelligence is good, but in which the personality as a whole is infantile and is somewhat shut in.

ORAL INACTIVITY

The third type of disorder, which we have called oral inactivity, has been relatively unclassified and unstudied. It is known under the names of ideoglossia and "baby talk," "nigger boy talk," etc. It has been much neglected, and relegated to the field of the elocutionist. It is the common history, in the majority of these cases, that the parents of children so affected have been told that the child will outgrow this disorder. That this is not so is demonstrated by twenty-nine of these cases, of either medium or severe degree, noted in 1,400 university freshmen, whom we examined. This type of disorder, of course, occurs as a prominent symptom in such organic conditions as general paresis, and in brain lesions caused by hemorrhage; it is seen in the very toxic states in acute infections, in fatigue states; it is found in the stuporous and drowsy state of lethargic encephalitis. A second type of this disorder is due to faulty hearing during the time when speech sounds are being learned.

The third type is found in chronic states of fright, and in general timidity states.

The fourth form, on which we hope to report in detail later, we feel to be of great interest to the profession in general and to neuropsychiatrists and endocrinologists in particular. This severe oral inactivity and faulty construction, especially of the final consonant sounds, we have classed as an endocrine-vitamin disorder group. The factors that stand out most clearly are: (1) a marked similarity of the speech symptom; (2) uniform vitamin deficiencies of water soluble B; (3) a history in a large percentage of the cases of dys-thyroid condition in the mother, and (4) history of marked food disorders in infancy.

STUTTERING

Stuttering, under which we include stammering, may be described as a break in the rhythm of speech, due to a blocking or inhibiting of the muscular coordinations. It may not be considered as a disease entity, but rather as a symptom of any of a number of underlying conditions.

A tentative grouping of stuttering according to apparent causes can be made under the four following heads:

1. Type 1 is the organic type, occasionally seen in paresis and other brain lesions. We have observed recently a case of general paresis, in which there was a stutter, in no way different from the functional stutter. Bastian¹ mentions a patient who on beginning to talk, "began after the fashion of the stutterer." He diagnosed this case as complete aphemia due to a small lesion in the course of the internuclear fibers of the left hemisphere. He also mentions its resemblance to the true functional disorders. We have seen a case recently, with a slight hemiplegia of the right side, due to hemorrhage, in which there is as a result a marked stutter. There is also in this case a perseveration of the muscle movement in writing as well as in speech.

2. Type 2, which we have called paratonia, and which is probably akin to the endocrine-vitamin group of the oral inactivities, is certainly closely related to epilepsy and to tetany and catatonic states.

3. Type 3 is the psychoneurotic, under which we have (a) the hysterical, in the sense the word is used by Babinski,² as meaning "caused by suggestion and cured by suggestion." The symptom in this case is caught in the school or, in the case of the war neuroses, in the hospital where the men were confined with others already so affected, or who had heard that this was a common consequence of war experience. This symptom in many cases would tend to become prolonged by an hysterical mechanism after the immediate situation was relieved. (b) The anxiety type, usually accompanied by "tics" closely resembling the somatic insufficiency tics, with which individuals, inadequate for some reason or other, meet situations that are too difficult for them to meet adequately.

4. Type 4 is the hypomanic type. The marked swings of mood in the true hypomanic stutterer are very typical. The stuttering usually occurs in the depressive phase. Under this fourth type also comes the stuttering seen in children just beginning to talk. In fact, with the temperamental, high-strung, over-emotional type of child, stuttering is very likely to occur in which the severity of the symptom bears no relation to the distress of the patient.

Much light has been thrown on the problem of stuttering by the study of the war neurosis cases. At Base Hospital No. 117, which was a receiving hospital near the front, probably 50 per cent. of the men had some sort of disturbance of the speech, either a complete loss of speech, or a break in the rhythm, or the type of speech which Roussy and Lhermitte³ called "nigger-boy" speech, and which we classify as oral inactivity.

SPEECH CLINIC, U. S. P. H. S. HOSPITAL NO. 37

We have had opportunity of making intensive study of the postwar neurosis cases suffering from speech disorder.

1. Bastian: *Aphasia and Other Defects of Speech*, London, p. 75.
2. Babinski, J., and Froment, J.: *Hysteria or Pithiatism*, University of London Press, p. 17.
3. Roussy and Lhermitte: *The Psychoneurosis of War*, University of London Press, 1918, p. 92.

ders at the speech clinic of the United States Public Health Service Hospital No. 37, organized at the request of Dr. Lawrence Kolb, director of the hospital, in January, 1920. Fifty-two cases have passed through this clinic. Statistics were gathered from forty of these cases in which intensive studies have been made.

Before concluding that most of the soldier speech cases were caused by psychoneurotic mechanisms, a complete study of the physical condition was made, as well as psychologic tests for intelligence and mental imagery.

The patients in the clinic, beside having the benefit of the general staff of the hospital, are given individual training by the speech clinic staff. Only a small part of the treatment deals with the speech *per se* but concerns itself with general muscle training and emotional adjustment.

The sending of these cases to the neuropsychiatric hospital was justified by the classification and diagnosis of the conditions under which the patients were laboring. Fifty-seven and five-tenths were found to be suffering from hysteria; 5 per cent. neurasthenic; 30 per cent. were cases of anxiety neurosis; 2.5 per cent. had dementia praecox; 2.5 per cent. were suffering from marked psychopathic states, and 2.5 per cent. had marked hyperthyroid conditions. With such a diagnosis, the futility of sending these men for treatment in the so-called "stuttering schools" or by elocutionists or phonologists becomes apparent.

Some writers have maintained that the neurasthenia and other troubles were caused by the stuttering, and not the cause of stuttering. This we feel to be a fallacy, owing to several factors which I will present. Since the war stuttering has been studied, the fact has been brought out that the same type of temperament was present before the stuttering was developed as was shown after, and that the temperament and the hereditary factors are virtually the same in those individuals who stuttered, but who never experienced war, and in those who stuttered owing to strain in service, but who saw no active service under fire at the front, and in those who stuttered previous to service, but relapsed under the strain, and in those who did not stutter previous to experience under shell fire and in fighting.

In the comparison of forty soldiers with 200 schoolchildren from 1 to 18 years of age, some interesting facts are brought to light. A comparison of the personality showed that 13 per cent. of the children, and 9 per cent. of the soldiers were classed as showing no marked variation; 52 per cent. of the children showed marked inferiority feelings, showing themselves either in timidity or in overcompensations by extreme boldness; 54 per cent. of the soldiers came in this class; 35 per cent. of the children and 34 per cent. of the soldiers were markedly moody, either of the temper, sulky, depression, or of the hypomanic types. In addition, 5 per cent. of the soldiers were apathetic and dull; none of the children were so classed. Whether this is a true variation or a mistake in classification in the group of schoolchildren would probably be demonstrated in a study of a larger group.

A study of the variation shown in the symptom of stuttering itself is indicative of its functional etiology. Of the children, twenty-two were worse at school than at home; two were worse in town than in the country; one was worse on vacations; five varied with their physical conditions; sixteen were given to complete

remissions in stuttering; one stutters only in school; one stutters only in Polish; one stutters only in speaking to his father; one never stutters while at play; one never stutters with members of his own sex; one gets worse at intervals of three or four days; one is markedly worse after sleep, even a short nap; one is worse after an operation for adenoids and tonsils (undertaken to cure the stutter); one stuttered for three weeks only, and so on with such variations for virtually the entire group. Among the soldiers, six began to stutter with service at the front (five of these began with aphonia); seven were stutterers who relapsed with service at the front; one who had stuttered severely had a complete remission while at the front, until he got up into Germany and became homesick; six who had stuttered previously relapsed with service in this country (such as a fight, a runaway horse, and a close shave with an explosion); one relapsed with the draft, and one relapsed with influenza. Many of these men have trouble at the telephone, although they do not have any trouble if the receiver is closed, but begin to stutter immediately when it is opened.

If brain congestion or defective auditory imagery or malocclusion of the arch or infected tonsils were the primary cause of stuttering, rather than results or merely accompanying disorders, what part is played by the movement of the hand of a second person in the connecting of the telephone? The only real change is the knowledge of a third person listening over the wire.

We must ask, then, why every one with this type of temperament and personality, when placed in a situation similar to these described, does not break down into faulty rhythm, an over or under motivation of the speech muscle group. We believe that there is some fundamental weakness in the motor mechanism, but that whether stuttering results depends not only on the degree of this weakness in the mechanism, but also on the ability of the individual to protect this mechanism from undue strain. It is of interest, and quite significant, that of the stuttering schoolchildren studied, 51 per cent. were found possessed of other speech difficulties, as well, either substituting one sound for another, or initiating the movement with too little tension, or with under or over motivation of the diaphragm or vocal cords, resulting in so-called vocal difficulties. Often more than one of these difficulties were present in addition to stuttering. Among the soldier group only 30 per cent. had additional speech disorders, and we feel that the presence of stuttering in spite of a stronger speech mechanism may be due to the infinitely greater strain put on the adaptive faculties and the endocrine system by the conditions of the war and service.

Another factor which contributes to our belief that there is an underlying weakness of the motor system is the relatively high percentage of stutterers who have been changed from left to right handedness. Ballard⁴ says that the generally conceded percentage of left handed people in the population is about 3 per cent. In the 200 schoolchildren we found 12.5 per cent. who were left handed, 11.5 per cent. of whom were changed for writing; and among the soldiers 17.5 per cent., all of whom were changed for writing.

There is also the problem of hereditary tendency. There seems to be a marked predisposition in the families of these individuals toward defects of speech—not only of stuttering, but also the other defects. In the

4. Ballard: *Handword as an Educational Medium*, New York, the Macmillan Company, p. 138.

families of 72.5 per cent of these cases there were defects of speech. In 52 per cent. of the families there was stuttering, and in 22 per cent. there were both stuttering and other defects. That this is not primarily a problem of imitation or faulty learning is shown by the fact that many of these patients had never seen the person so affected, for example, the grandparent stuttered, but died before the child was born, etc.

And back of this also is the problem of family adaptation to environment, a most complicated problem to handle and tabulate. The behavior of such families may be divided into several groups. A small percentage are of low grade mentality, and in this group we have the usual amount of conduct disorder, syphilis and psychopathic conditions. There was also 1.5 per cent. of insanity. But 13 per cent. of the families showed neurosis, and 25 per cent. nervous instability. Of the 47 per cent. remaining, 15 per cent. were unaccounted for, but in 32 per cent. the behavior was above average. They showed such family groups as contained musicianship of a high order, poets and people of scientific attainments, financiers, etc.; in other words, where nervous instability had been made to count in favor of society rather than against. In the patients themselves the same variation is shown, for in contrast to many of the social failures among them, we have a high percentage at the University of Wisconsin (125 in the freshman class), and many exceptionally talented people. These people have adapted partially to their speech difficulty, and adjust well in most respects, but show the typical anxiety states, and the hypomanic temperaments.

There is very little relationship between poor health and the severity of the stuttering, but an exact and surprising correlation between social adaptation and the severity of the symptom.

The treatment and reeducation of stutterers is in a chaotic condition generally, the work, where it includes drill on particular letter position being actually pernicious, and accomplishing results only where the personality of the worker instills courage or sustains the patient. Treatment is usually aimed at the symptom itself, and where relief is given to that, the underlying temperamental disability is left untouched. That results can be gotten with these patients, when the treatment is directed toward general muscle training plus the adjustment of the individual to his environment, we feel to be shown by the work of Miss Pauline Camp in Grand Rapids, Mich., who was able to dismiss 43 per cent. of her cases as arrested, and of my own clinic at United States Public Service Hospital No. 37, where 39 per cent were arrested, 17 per cent. greatly improved, 17 per cent. somewhat improved, 2 per cent. unimproved, and 25 per cent. still under treatment.

SUMMARY

We believe the disorders of speech to be due to the lack of ability to adapt emotionally to social situations, or to a faulty motor mechanism, either hereditary or acquired. We believe that the most worth-while results which are obtained at present are those which aim at the underlying cause and general hygiene, and muscle training; and that training aimed at the alleviation of the symptom alone is pernicious because it obscures the issue and in hysterical cases actually "sets" the disorder.

We feel that this problem, for so many years left in the hands of quacks and charlatans and untrained people, is most distinctly a medical problem, and that neuro-

psychiatric training is necessary for the diagnosis and treatment of these patients. Nor can we too strongly urge the necessity for training medical students in the value of speech disorders as a significant symptom.

ABSTRACT OF DISCUSSION

DR. WALTER TIMME, New York: Speech is one of the most complex of the higher attributes of man; and proper speech, in order to be proper, must be under the control of the high centers for praxia and gnosis in the cerebral cortex, functioning through the different motor and tension tracts involving pathways and ganglions of every level down to the peripheral end-organs. In any one of these organs and pathways a lesion, whether an actual physical one or a psychogenic one affecting the cortex and its activities, must result in stuttering. Hence, only a small percentage of stuttering is due to a disturbance in the peripheral organ of speech, the large majority being in the central or the communicating pathways. Dr. Blanton stated there was frequently an endocrine factor. From the researches of Crile it was found that the electrical conductivity of tissue is increased in hyperthyroidism. Hence there is in a certain number of cases stammering with hyperthyroidism, too rapid an interchange between cortex and peripheral end-organs, with a resulting noncoordination of thought and speech; and in those with hypothyroidism too slow an interchange for the flow of thought, both giving rise to disturbances in articulate speech.

DR. WALTER B. SWIFT, Boston: Dr. Blanton is one of the authorities in speech correction of the Middle West, and anything he says deserves consideration. He has definitely located in the cortex the etiology of stammering by saying it is a "motor weakness." Up to today, stammering has been located in almost every nerve and brain center connected with speech, and has been chased even to the subconscious and located there. Therefore, to have it put definitely as a weakness of the motor side of our speech apparatus is a new point in this field and must be looked on with due consideration. It deserves investigation. I think, however, if one characteristic of these stammerers be considered, stammering can be ruled out entirely of the motor side of speech. They can sing without the least trouble, therefore, it cannot be "motor weakness." There is another factor which leads us to locate it in the sensorium. It is the stammerer's marked lack in visual capacity. In proportion as this is corrected, in that proportion do the stammerers recover. Dr. Blanton should not waste time considering psychoses and other conditions that accompany stammering, but steady the stammering itself and the visual function behind it. If he scientifically repeated our psychologic tests, he would come to the conclusion that normal visual processes are lacking in cases of stammering. No research to date has disproved this. As to endocrine therapy in these cases, I think that this is in the experimental stage and we are not justified in making any claim for its success. We should go slow until investigators have found out whether it is any good or not. There has been much said about the subconscious etiology of stammering, and what some Freudians have "read into" this condition is entirely uncalled for—mere misinterpretation and rot. We tabu, decry and do not tolerate Freudianism in speech correction. We find no need of that form of mental masturbation.

DR. MARCUS NEUSTAEDTER, New York: I should like to have Dr. Blanton explain how it is that stammering stops while singing. All patients with hypothyroidism that I have seen in twenty-five years are sluggish in their mentality and general motor behavior, and never stammered. The quick talker, the fast eater, the lightening thinker is the usual stammerer. It would be possible to explain stammering by a functional or organic lesion in the synapse, and therefore there is inability for the impulses to produce synchronous reactions into the motor path, and the result is a sort of block and sudden discharge of many impulses simultaneously.

DR. CHARLES R. BALL, St. Paul: I am sure that stammering may be of psychogenic origin. In October, 1918, I visited the La Fauche special hospital in France for shell shock

cases. One of the doughboys was at the station, having come down to see the train go by, and I asked him the way to the hospital. He started to sputter and choke and stammer, but finally brought out the statement that he was going there himself and would show me the way. When I got there I found that about two thirds of the patients were stammerers. After I had stayed there two or three days, I began to get the sensation of wanting to stammer myself. The thing was infectious. It seemed as if a wave of hysterical stammering had swept over the whole institution and was beginning to affect me. I firmly believe I escaped this affliction only by leaving.

DR. SMILEY BLANTON, Madison, Wis.: I have given special attention to Dr. Swift's visual image theory for two or three years, and I do not feel that he has proved his point. All our patients were given imagery tests, and we found no visual imagery defect at all in most of them. Any one who has had experience with the war neuroses and the speech disorders occurring in these cases could not but admit that speech disorders might be caused by mental shock or conflict—an hysterical mechanism. In saying that there was a motor weakness back of stammering I was merely drawing logical conclusions from the facts found in the study of my cases. The fact that a large percentage of stuttering children have stuttering in the family, or that many stutterers have other speech defects, seems to show that there is some constitutional weakness in the speech mechanism of these cases. It may be true, as Dr. Neustaedter says, that stuttering is due to difficulty at the synapse: I feel, however, that the synopsis trouble may be due to emotional strain or conflict, and that if we cultivate mental poise in the patient the synapses will function properly.

Clinical Notes, Suggestions, and New Instruments

UNUSUAL OCCURRENCE OF RECURRENT MEASLES DURING CONVALESCENCE AND IN THE COURSE OF AN ATTACK OF SCARLET FEVER

JOSE C. CARBALLEIRA, M.D., FORT SILL, OKLA.
Captain, Medical Corps, U. S. Army

That it is possible for a patient suffering from one of the exanthems to develop another of the same group has long been known. Although not of daily occurrence, the phenomenon occasionally happens. But the recurrence of one of these exanthems from which the patient is convalescing, and during an intercurrent of another one of the group, is certainly a novelty.

REPORT OF CASE

Private J. S., aged 21, white, was admitted to the Station Hospital, March 23, 1921, with a diagnosis of scarlet fever which was confirmed on examination of the patient. He had not suffered from any of the childhood diseases except chickenpox. He was isolated, and proper treatment was instituted. During the first three weeks of his illness nothing abnormal occurred; he began to desquamate at the end of the first week, and the case seemed to be of a rather benign type. The temperature fell down to normal and remained so three days after admission. April 14, exactly three weeks after admission, the patient had a rise of temperature, the conjunctivae became injected, and he developed a coryza and a frontal headache. Two days later a maculopapular rash appeared over his chest, abdomen and face, which later extended to his arms and entire body. Koplik spots were present, and a diagnosis of intercurrent measles was made.

Two weeks afterward the measles rash had entirely disappeared and the patient had a second desquamation of the entire skin; still he was kept isolated and was also kept in bed on account of a rapid pulse (from 112 to 124) which now superseded the rather slow pulse that had prevailed during the acute stages of both exanthems. The urine, examined at different intervals during his illness, was negative in all respects. He had no other complications and felt perfectly

comfortable with the exception of the naturally expected weakness from a protracted illness.

May 21, nine days after the measles rash had entirely disappeared and when there were no signs or symptoms of this disease present, the patient had another rise of temperature and all the common initial symptoms of measles—injected conjunctivae, coryza, photophobia, lacrimation, Koplik spots and two days later the typical maculopapular rash over the face, neck, chest and arms—made its appearance. With the advent of all these symptoms the pulse of the patient returned to the characteristic slowness of toxicity found in exanthems.

At the time this article is written, May 27, the rash is fading out from the face and chest, but still persists over both arms and forearms. The patient's temperature is normal and the pulse rate is increasing steadily; desquamation at the soles of his feet still persists, and the patient, though weak, feels comfortable.

COMMENT

So far as I know, this is the first instance in which a patient, after having passed the acute stage of an exanthem, has had a recurrence with all the characteristics of a new invasion.

The nature of the rash in this case in both instances, together with the absence of involvement of the posterior cervical glands, eliminates any possibility of German measles. How, then, could this reinfection take place under the most rigid isolation?

NICOTIN POISONING, WITH RECOVERY *

WILLIAM D. McNALLY, A.B., CHICAGO

Nicotin is one of the most fatal and rapid of poisons, its rapidity being equaled only by that of hydrocyanic acid. The commercial preparations, containing from 8 to 43 per cent. of the alkaloid nicotin, are used in very dilute solutions as insecticides. To the more frequent use as an insecticide in recent years can be attributed the increased number of accidental and suicidal deaths from nicotin. The lethal dose of nicotin is given as 60 mg.; a much larger quantity has always been found in material submitted to me for examination.

The case which I have to report is of special interest owing to the large amount of nicotin taken.

REPORT OF CASE

C. C., a farmer, aged 75, was brought to the service of Dr. J. A. Carr, Ward 53 of Cook County Hospital, at 9:05 a. m., Aug. 20, 1920, in an unconscious condition, with a slow, stertorous breathing and a gurgling sound in the throat at each inspiration. The systolic blood pressure was 110, and the diastolic 74. The temperature was 97 and the pulse 56. The hemoglobin was 90 per cent.; the red blood cells, 5,000,000; the white blood cells, 10,600.

The pupils were equal and contracted; the throat failed to show evidence of corrosive poisons; the face was slightly flushed; there was no cyanosis, the color returning well after pressure. The breathing was shallow and the excursions were equal. The reflexes were present and bilaterally symmetrical.

The stomach was washed with water and tannic acid. The lavage with plain water was continued until the washings returned clear, and the combined washings of about 1 liter were submitted to me for examination. Tests for heavy metals were negative. A steam distillation gave a small amount of grain alcohol and an alkaloid identified as nicotin. Using the silicotungstic acid method¹ for the quantitative determination of the nicotin, I found 0.0355 gm. of the alkaloid.

A whisky flask, found in the possession of the patient, held a liquid containing 42.40 per cent. of nicotin. The brown colored liquid has been mistaken for whisky and he undoubtedly had taken a swallow of it, or enough nicotin to kill several persons.

The patient had an uneventful recovery, regaining consciousness shortly after the stomach had been washed. His recovery was unquestionably due to early and copious vomiting, and the efficient washing out of the stomach.

* From the Department of Materia Medica and Toxicology, Rush Medical College.

1. McNally: J. Lab. & Clin. Med. 5:213 (Jan.) 1920.

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SATURDAY, JULY 30, 1921

RECENT STUDIES IN METABOLISM

As a nation, the United States may justly feel some pride in the contemplation of the progress which the study of the problems of nutrition and allied topics has made in this country in recent years. It is not long since the medical workers among us were accustomed to turn to European literature as the source of most that was novel and promising in current science; and likewise the younger investigators were wont to find their way across the Atlantic in a search for inspiration to research and scientific wisdom. The symposium of papers on metabolism that were presented at the Boston session of the American Medical Association, published in part in *THE JOURNAL* last week and completed in this issue,¹ indicate in a most complimentary way how virile, productive and progressive are the scientific forces which have become established on American soil. Every practitioner will receive a stimulus to better work as well as a fund of helpful suggestion from the reading of these meritorious papers.

After all, the intensive study of metabolism in American laboratories is not as new as it may seem to many whose experience does not antedate the last decade. The fundamental work of Atwater and Benedict and their associates in the development of the respiration calorimeter—an apparatus to which the late physicist Dr. E. B. Rosa also made substantial contributions—began a quarter century ago at Wesleyan University. It resulted in the splendid demonstration of the applicability of the law of the conservation of energy to the transformations that proceed in the human body as well as to the inanimate world about us. Today the practitioner speaks glibly of "basal metabolism" or "metabolic rates," scarcely recognizing how new is the knowledge with which he thus deals and how much of it scientific medicine owes to our own institutions.

What governs these mysterious changes which are designated as metabolism? How does an appreciation

of their nature and variation concern the physician as well as the physiologist? As Benedict forcefully points out:

That a strenuously active man, engaged in severe muscular work, gives off heat is not surprising to any one, but it is seldom fully realized that, even with a man in complete muscular repose, such as a bedridden patient, the end-results of all the internal glandular and muscular activities incidental to the maintenance of life is *heat*. So truly is the heat output determined by the intensity of vital processes that, conversely, it may be stated that the level of vital activity may be inferred from the amount of heat produced.

It is at length an established fact that the mass of the body cells—the active protoplasm of the organism—and their capacity to oxidize materials determines the intensity of the metabolism. To measure this has necessitated measuring the heat produced. The exact estimation of this in the human calorimeter is formidable enough for even the specially trained scientist, no to mention the less skilled clinical worker. It is fortunate, therefore, that the technic of indirect calorimetry has been developed so successfully, as Benedict has indicated. If one can measure accurately the carbon dioxid production—or, still better, the oxygen consumption—a very close estimate of the total heat production can be secured. To this end much effort has been expended in recent years with the consequent development of various forms of apparatus, good and bad, intended to measure metabolism by the principles of indirect calorimetry.

Obviously, the basal metabolism, which has been the subject of numerous comments in *THE JOURNAL*,² will vary with such factors as size and age. Hence there has arisen the need of a unit or standard of measurement. That body weight is not the real criterion has long been appreciated. In his admirable review of the fundamental ideas regarding basal metabolism, Lusk¹ has summarized the conflicting views and given evidence for the applicability of Du Bois' height-weight formula at present generally made the basis for determining surface area as the practical unit in the measure of basal metabolism. For normal persons between the ages of 20 and 40 the basal metabolism is now predictable with considerable accuracy. Variations from the expected normal give indications in many cases of disease conditions, so that the pioneer establishment of trustworthy standards, so largely a contribution of American investigators, has in turn furnished a method now widely accepted throughout the world for a closer diagnosis of several pathologic conditions. Clinically it has thus far found its most important application in the accurate recognition of the presence or absence of that hyperthyroidism which has been defined as an increase in the rate of heat formation due to the presence of an excess of the thyroid hormone in the body. Boothby¹ has pointed out that, with dependable information regard-

1. Plummer, H. S.: Interrelationship of Function of the Thyroid Gland, *J. A. M. A.* **77**:243 (July 23) 1921. Benedict, F. G.: The Measurement and Standards of Basal Metabolism, p. 247. Lusk, Graham: Fundamental Ideas Regarding Basal Metabolism, p. 250. Boothby, W. M.: The Basal Metabolic Rate in Hyperthyroidism, p. 252. Means, J. A.: Determination of the Basal Metabolism as a Method of Diagnosis and as a Guide to Treatment, this issue, p. 347. Du Bois, E. F.: The Basal Metabolism in Fever, p. 352.

2. Basal Metabolism, Current Comment, *J. A. M. A.* **71**:198 (July 20) 1918; The Measure of Metabolism, editorial, *ibid.* **73**:110 (July 12) 1919; Applications of Clinical Calorimetry, *ibid.* **74**:806 (March 20) 1920; Science in the Medical Clinic, *ibid.* **75**:248 (July 24) 1920.

ing the basal metabolic rate of the patients, very sharp distinction can be drawn between mild cases of exophthalmic goiter and those conditions described as "effort syndrome," "disordered action of the heart," cardiac neurosis," "neurocirculatory asthenia," etc., which on superficial examination present some of the signs of mild exophthalmic goiter, but in which the basal metabolic rate is normal and which on close analysis can be shown not to be dependent on an excess of the thyroid secretion in the body.

Fever is one of the conditions attended with increased basal metabolic rate. At the Boston symposium Du Bois¹ showed that this increase in febrile diseases follows van't Hoff's law of velocity of chemical reactions with temperature changes; it is about doubled for an increase of 10 degrees Centigrade. The law of the conservation of energy has been demonstrated by Du Bois to hold good in fever patients in whom we now know the metabolism to respond to a rise in temperature in a manner which closely resembles the chemical reactions in a test tube suspended in a water-bath. A rational basis for the fever dietary is now at hand. Predicting the normal basal metabolism according to surface area standards we should add, in the words of Du Bois, about 13 per cent. for each degree Centigrade above the normal temperature (7.2 per cent. for each degree Fahrenheit). This should be increased by 10 per cent. in the case of toxic patients with great destruction of body protein, and by approximately 10 per cent. in all other febrile patients who are receiving much food, with a further allowance of from 10 to 30 per cent. for muscular activity if the patients are restless.

The study of the respiratory quotient in various fevers indicates that there are no significant changes in the metabolism of fats and carbohydrates. The destruction of protein has long been known to be high in such cases. The increased protein catabolism is not, however, in every instance merely a consequence of the increased temperature. According to Du Bois it seems to be proportional to the toxemia, since it is excessive in patients seriously ill with typhoid and erysipelas, and comparatively insignificant in chronic tuberculosis patients with the same degree of fever.

The widespread interest in the latest contributions to clinical calorimetry was attested by the exceptionally large audience which gathered to hear the papers at the Boston session. It must be tempered by the fear, expressed by several of the speakers, lest the promising new technic be made the plaything of uneducated "experts" or the tool of the quack. "It is far better," Means¹ said, "to make no metabolism tests than to make them inaccurately." Remembering that the interpretation of metabolism "tests" now exceeds in complexity the actual laboratory technic, those who are interested in the sound advancement of clinical medicine should educate themselves first of all in the fundamental significance of the gaseous metabolism.

ANEMIA, IRON, AND BLOOD REGENERATION

The use of iron compounds in the treatment of anemia was common long before the date when the element was discovered, in 1746, to be a constituent of the red blood corpuscles. This early iron therapy was essentially empiric. The practice gave rise to traditional methods of prescribing iron which have persisted to the present day. It would be rash to deny the possible value of iron therapy in anemia even in the absence of convincing scientific experiments to justify the procedure; for long established practices of this sort which have survived the changes of therapeutic customs from decade to decade are more than likely to be found to have some feature of justification when knowledge grows to the extent of disclosing the true situation. Empiricism should never be hastily condemned nor its dictates rashly discarded. Scientific research may properly demand, however, that even empiric procedures shall stand the test of experimental investigation directed toward justifying them.

During the latter years the views of pharmacologists regarding the function of administered iron have undergone repeated changes while the therapeutic practice has continued. The once popular view of the physiologist Bunge, who recently died in Basle, Switzerland, has been abandoned. He argued that organic iron compounds are most serviceable in therapy. Animal and plant products which serve as foods contain compounds of iron in organic combination. These were assumed to be the really assimilable forms of iron, inorganic salts of the element serving merely to protect the "food iron," which was alleged to be converted readily into insoluble sulphid in the intestine by the action of hydrogen sulphid arising there through putrefactive changes. The Pharmacology of Useful Drugs,¹ issued by the American Medical Association, gives a logical statement of the present day view. The theory of Bunge, it reminds us, is no longer held by physicians or pharmacologists, but it is still urged by certain interested manufacturers as the basis for their claims for the value of their preparations. On this basis is urged the use of preparations of manganese which are employed in anemia, as it is claimed that the manganese unites with the hydrogen sulphid, thus sparing the iron of the foods for absorption. One need only remember that iron is absorbed mainly in the duodenum and that there is no hydrogen sulphid in that part of the intestine, to recognize that administration of manganese cannot affect the absorption of iron. It is unnecessary to review the literature of a long controversy. Today we need no longer argue that iron is assimilable alike from its organic or from its inorganic combinations. It is more than likely that in either case ionized iron appears in the intestinal lumen and is absorbed as such.

The use of iron in anemia was long justified on the assumption that a shortage of the element occurred in

1. Hatcher, R. A., and Wilbert, M. I.: *Pharmacology of Useful Drugs*, Chicago, American Medical Association, 1915, p. 362.

the body when the blood lost some of its iron-containing hemoglobin. It may be admitted frankly that if there were an actual deficit of iron, that is, if the dietary intake were too small to permit the restitution of the ferruginous blood constituents, administration of the element in assimilable form would seem rational. But ordinary human dietaries are rarely highly deficient in iron; and, furthermore, the usual therapeutic doses are large out of all proportion to even the theoretical shortage. If, then, the iron is not actually needed as such, and if it can no longer be argued to act as a protective agent in Bunge's sense, some other justification for iron therapy in anemia must be sought. Hence has arisen the theory that iron salts stimulate the hematopoietic organs in some specific way quite apart from their possible function as structural units in the genesis of red corpuscles. The seat of the stimulating activity is ordinarily located in the bone marrow by writers on this subject.² Müller's investigations³ are often referred to in defense of this view. It is further regarded as likely that iron salts promote growth and metabolic changes in other tissues, the improvement in nutritive conditions in chlorotic patients being cited as an illustration.

Until recently, most investigators in this difficult field have overlooked the possible rôle of dietary factors in blood regeneration. In an elaborate research at the George Williams Hooper Foundation for Medical Research in the University of California Medical School, Whipple and Robscheit⁴ have studied the possible influence of iron salts and other substances supposedly stimulating regeneration under carefully controlled conditions of feeding. The outcome will be disappointing to the empiricists. It shows that iron in the form of Bland's pills is inert when given under controlled conditions in anemia periods under the conditions of these experiments. Ferric citrate and the organic "ovoferrin" give no better results. Hemoglobin seems to bring about somewhat more favorable responses, but this result need not be attributable to the iron in the compound. Again, two other "favorites"—arsenic in the form of sodium cacodylate or of liquor potassii arsenitis (Fowler's solution)—were tested and found inert. In fact, no drug tested could compare with suitable dietary factors in stimulating a rapid regeneration of hemoglobin during these anemia periods induced by simple hemorrhage. One can consequently scarcely disagree with the California investigators that many of the iron preparations commonly prescribed are inert, or, at least, much less potent than simple diet factors. As they say, their carefully controlled experiments give no support to the time-honored custom of administering iron and certain other drugs in conditions of simple anemia. The burden of proof now rests with those who claim that any given drug is potent

under such conditions. There will be something constructive as well as destructively critical in these new researches if they teach a more wholesome respect for the interrelations of dietary factors and the capacity of regenerating the blood.

OXYGEN AND MUSCULAR FITNESS

It is a matter of common physiologic knowledge that there are places in which the oxygen supply may be entirely inadequate for well being, and likewise circumstances under which, even in an ordinary atmospheric environment, respiratory distress due to a deficiency of oxygen may arise. At high altitudes or low barometric pressures the functions of the human mechanism may be interfered with. The essential cause of the disturbances thus arising is lack of oxygen, and the consequent imperfect aeration of the arterial blood with this gas. This explanation has become a permanent acquisition of science since the classic work of Paul Bert published in 1878. The call for oxygen comes from the active cells of the tissues in which oxidation takes place. Hence, to insure well being, the oxygen pressure in the blood must be sufficiently high to supply the needs of the cell in the brief interval of time that the blood is passing through the capillaries.

The physiologic observations made on men and animals living at high altitudes or under reduced atmospheric pressures show clearly that a very marked process of adaptation occurs which renders the mechanism capable of meeting the call of the tissues for oxygen. The Manual of the Division of Military Aeronautics of the War Department¹ further states that an aviator must be able to adapt himself physiologically to altitude changes. The aviator does not remain at high altitudes long enough to benefit from slow adaptive physiologic changes; therefore his body must be capable of making rapid compensatory changes which will provide the oxygen needed by the tissues. He must be able to bear abrupt and great changes in atmospheric pressure. Without the occurrence of some one or more definite adaptive physiologic responses to provide for his oxygen needs as he ascends, his life and aeroplane become more and more jeopardized as he continues to ascend.

It is conceivable, however, that in some instances when the person cannot adapt himself to new needs for oxygen, the supply of the latter can be enriched by outside sources. To what extent this is possible has often been the subject of discussion. When hard muscular work is being done, the consumption of oxygen may rise to many times the resting value. As a recent writer has pointed out anew, in the muscles at work there must be a much greater proportional increase of consumption, and such an increase can be secured only by an enormous addition to the blood circulation through

2. Meyer, H. H., and Gottlieb, R.: *Die experimentelle Pharmakologie*, Berlin and Vienna, 1921, p. 499.

3. Müller, F.: *Virchows Arch. f. path. Anat.* **164**, 1901.

4. Whipple, G. H., and Robscheit, F. S.: Iron and Arsenic as Influencing Blood Regeneration Following Simple Anemia, VI, Negative Influence of Familiar Drugs on the Curve of Hemoglobin Regeneration Following Hemorrhage, *Arch. Int. Med.* **27**: 591 (May) 1921.

1. Manual of Medical Research Laboratory, War Department, Air Service, Division of Military Aeronautics, Washington, 1918.

those muscles. Failure to supply the additional blood, whether due to defects in blood distribution or to cardiac efficiency, must, therefore, bring about local anoxemia in the muscles, resulting in a cessation or reduction of the exertion.

Accordingly, Briggs,² conducting experiments for the Mine Rescue Apparatus Research Committee in Great Britain on fitness during exertion, has attempted to furnish oxygenated air to persons engaged in heavy tasks. It appears that physical work is found by experience to be easier to unfit men when oxygenated air is breathed than when normal air is breathed, but no such difference is to be observed with fit men. On an overload, even the fittest man derives benefit from breathing enriched air. The benefit of breathing enriched air when doing physical work is limited to air containing about 60 per cent. of oxygen. Enrichment above that proportion has no effect during exertion, even on very unfit persons.

Since Briggs' investigations indicate that in contrast with the unfit man, a fit person derives less benefit from addition of oxygen to the air inspired during severe muscular exertion, one naturally assumes some compensatory mechanism in the worker trained for efficiency. Pointing out that the lungs of the fit man seem to absorb oxygen more readily from normal alveolar air during exertion, Briggs assumes that this might be due either to some anatomic change which makes simple diffusion occur more readily through the lung epithelium of the fit man, or to active secretion of oxygen inward by the lung epithelium. The latter assumption is a revival of the secretion hypothesis championed by Haldane and dismissed by others as untenable. For the present, the exact nature of the adaptation produced by physical training and by certain vocations—that is, the nature of physical fitness—remains a physiologic mystery.

MORE ABOUT WAR GASES AND INFLUENZA

The cause of death in acute gas poisoning has usually been assigned to pulmonary edema. An accumulation of fluid in the lungs is a common manifestation of the acute effects of the lethal war gases, for example; but the elaborate studies of Underhill³ and his associates have directed attention to other attendant phenomena which unquestionably deserve serious consideration. The first stage of the acute gas poisoning is associated with a notable decrease in the concentration of the blood. This is quickly followed by the second stage, which is characterized by a rapid concentration of the blood far above the normal level. Most of the fatalities occur in this period. From a large amount of experimental data it may be concluded that in acute gas

poisoning the prominent features include edema of the lungs, a highly concentrated blood and an evident need of oxygen in the tissues. In the later stages of gas poisoning the picture presented resembles strongly that characteristic of a pneumonic process.

The importance of establishing these claims beyond peradventure lies in the fact that they point the way to the most likely therapeutic procedures. As blood concentration means a failing circulation, an inefficient oxygen carrier, oxygen starvation of the tissues, fall of temperature and, finally, suspension of vital activities, it has been proposed that the blood concentration should be maintained as near the normal level as possible by venesection and fluid introduction under carefully controlled conditions. Such evidence as was accumulated in experimental therapy by the Chemical Warfare Service of this country before the end of the World War seemed to justify the conclusions just expressed.

It now appears that investigations conducted by the German military medical service have substantiated the American findings in several respects. Thus, Laqueur and Magnus,⁴ who conducted their studies in Berlin, report, in writing of the effects of the characteristic gas phosgen, that the loss of blood plasma diverted to the lungs brings about a very marked concentration of the formed elements of the blood, accompanied by an augmented viscosity of the medium and a retardation of circulation. The German investigators specifically point out that the subsequent discharge of tissue fluids into the blood stream is inadequate to produce the requisite dilution. As a sequence of all these undesirable features, the tissues experience a lack of oxygen. Many organs consequently suffer.

In view of this information, the European workers also have directed attention to the restoration of better blood conditions as an aid in therapy. Thus, Laqueur and Magnus⁵ discuss the value of saline infusion, but place venesection in the forefront of the effective measures. They regard bloodletting as the "sovereign procedure" in combating blood concentration, since they have found it to be followed by prompt dilution of the fluid. Even the possible aids of water drinking and rectal instillation are not overlooked in the swiftly arising emergencies of acute gas poisoning. Laqueur and Magnus⁵ have also recommended the subcutaneous injection of solutions of salts of calcium on the hypothesis—assuredly still debatable—that this element has an effect in rendering capillaries less permeable and consequently retarding the genesis of pulmonary edema. Finally, the use of suitable drugs to facilitate the impaired work of the heart and prevent fatal anoxemia is not forgotten.

These experiences in the field of the experimental therapy of conditions brought on by the novel weapons

2. Briggs, H.: Physical Exertion, Fitness and Breathing, *J. Physiol.* 54:292 (Dec.) 1920; Second Report of the Mine Rescue Apparatus Research Committee, 1920.

3. Underhill, F. P.: The Physiology and Experimental Treatment of Poisoning with the Lethal War Gases, *Arch. Int. Med.* 23:753 (June) 1919; Harvey Lectures, 1917-1919, Philadelphia, J. B. Lippincott Company; Lethal War Gases, New Haven, Conn., Yale University Press.

4. Laqueur, E., and Magnus, R.: Ueber Kampfgasvergiftungen, III, Experimentelle Pathologie der Phosgenvergiftung, *Ztschr. f. d. ges. exper. Med.* 13:31, 1921.

5. Laqueur, E., and Magnus, R.: Ueber Kampfgasvergiftungen, V, Experimentelle und theoretische Grundlagen zur Therapie der Phosgenerkrankung, *Ztschr. f. d. ges. exper. Med.* 13:200, 1921.

of modern warfare would scarcely warrant such detailed reference in the days of peace were the essential facts not related to some of the diseases of everyday life. The similarity between the respiratory complications produced by the lethal war gases chlorin, phosgen and chlorpicrin and those of influenza have been emphasized in particular by Winternitz⁶ and his co-workers. In each, pulmonary edema is a prominent feature. Underhill and Ringer⁷ have shown further that in influenza also the blood becomes greatly concentrated. This constitutes a factor of the greatest importance in the fatal outcome. Perhaps greater progress can be made in the treatment of influenza hereafter if the lessons of the related conditions just discussed—lessons now learned on two continents—are kept in mind in the future management of the reactions induced by the disease.

Current Comment

THE POLLUTION OF WATER

At the meeting of the American Public Health Association in San Francisco, an experienced biologist made the startling statement that if present conditions continue, the greater part of the eastern United States will be cradled in a septic tank.⁸ The growing sewage pollution of our rivers and seashore has long been recognized as a problem of serious moment. There is one aspect of the subject, however, that is not generally understood. House sewage, which represents human wastes, may, of course, contain the micro-organisms of infectious disease and thus represent a potential menace to those who drink water or eat food that have been contaminated by it. But domestic sewage ordinarily contains nothing detrimental to the growth of the aquatic organisms, which help to complete the disintegration of the excreta and which thrive on it. Sewage, indeed, supplies a source of plant and animal nutriment in the water as truly as on the soil. Nelson reminds us that under favorable conditions a small stream may dispose of the sewage of a relatively large population, and the stream in turn be supplied with a constant source of animal and plant nutriment. There is a true fertilizing action on the water, with a resultant large increase in the number of the organisms present. Since fish and shellfish utilize these plant and animal organisms as food, it follows that the addition of domestic sewage to a body of water will result ultimately in an increase in the amount of human food, in the form of fish and shellfish derived from it, as truly as though the sewage were employed in fertilizing land crops. The danger of eating shellfish removed from grossly polluted water thus lies in the presence of pathogenic bacteria, rather than in the inert organic matter present in the medium. The problem of purification of such products as oysters primarily becomes

one of sanitary bacteriology. It can be met by avoiding the pollutions; or, if this is not entirely feasible, the food can still be conserved by disinfection procedures. But of late the oyster itself is becoming threatened with extinction because of an added kind of contamination represented by the great industries which discharge effluents into the streams reaching the coast. Oils, acids and alkalis, metallic poisons and other chemical compounds may interfere with all forms of life, whether micro-organisms which themselves aid in the self-purification of our natural waters, or the animals and plants which normally thrive and develop in them. In other words, the disposal of industrial wastes has complicated the disposal of human waste, and incidentally an important source of delectable human food is likely to be impaired. Something remedial must be done, and soon.

FLORIDA'S NEW PRACTICE ACT

After several years of effort a new medical practice law has finally been secured in Florida, clearing away the obsolete multiple board arrangement which for many years has caused much confusion in medical licensure in that state. The new law establishes a composite board which has full authority to refuse or revoke licenses, to refuse recognition to low grade medical colleges and to protect the public against incompetent physicians. The personnel of those appointed on this board promises assurance that the provisions of the new law will be enforced. The people of Florida are to be congratulated on the successful passage of this law, and it is hoped that they will appreciate its importance and support its vigorous enforcement. The only flaw in the act is that osteopaths and chiropractors are exempted from the requirements of the medical practice act since, for the time being, their practice is regulated by separate boards. In time, however, when public opinion has been awakened to the injustice and unwisdom of providing an inferior standard of qualifications for any group of healers, these special boards may be abolished, as they were this year in New Jersey. Public opinion will not long uphold an evident injustice, once attention has been clearly called to it.

THE DIAGNOSIS OF INTESTINAL OBSTRUCTION

The threatening character of the constitutional symptoms associated with acute intestinal obstruction makes the condition one of unusual gravity for the patient. The differential diagnosis is often difficult in the early stages; yet, as surgical intervention often offers the most promising prospect of successful treatment, the early recognition of intestinal obstruction as such becomes highly important. Delay long beyond the inception of the symptoms may be fatal. The somewhat lively debate that has been provoked among American investigators by the various hypotheses as to the etiology of the peculiarly severe constitutional manifestations of intestinal obstruction or ileus need not be entered on here. It has now been well established that when acute obstruction is produced experi-

6. Winternitz, Wason and McNamara: *The Pathology of Influenza*, New Haven, Conn., Yale University Press, 1920.

7. Underhill, F. P., and Ringer, Michael: *Blood Concentration Changes in Influenza*, J. A. M. A. **75**: 1531 (Dec. 4) 1920.

8. Nelson, T. C.: *Some Aspects of Pollution as Affecting Oyster Propagation*, Am. J. Pub. Health **9**: 498 (June) 1921.

mentally on animals there is in the majority of instances a definite increase in the noncoagulable nitrogen which is likely to be more striking and constant in the cases associated with symptoms of acute intoxication.¹ The toxemia appears to be attended with a definite impairment of the excretory function of the kidney, as shown by a decrease in the ratio of urea and sodium chlorid excretion and a decrease in the percentage output of phenolsulphonephthalein in functional tests. The validity of some of these findings in the clinic of human disease has been indicated by the studies of several investigators. Applying the methods of microchemical analysis of the blood to a series of cases in the Presbyterian Hospital, New York, Louria² has found a distinct increase in the urea content of the blood. The highest figure reached 170 mg. of urea nitrogen in one instance. All of the seven carefully selected cases studied were free from any evidence of chronic renal disease; hence Louria believes it fair to assume that the elevation in the blood urea nitrogen was the result of the acute intestinal obstruction. Now that chemical blood analysis has become a common procedure in well organized hospital routine, the prospect of its aid in the earlier recognition of acute intestinal obstruction deserves consideration.

VITAMIN A AND RICKETS

In a recent issue of *THE JOURNAL*,³ attention was directed to the unwisdom of regarding rickets as a disease bound up solely with one dietary factor which may be deficient in the ration. Fortunately for the attack on the problems of this malady, which has a widespread incidence, it has become evident of late that some, if not all, of the pathologic characters of rickets can be induced in experimental animals by special conditions imposed by the investigators. The discovery of the true etiology of the disease is thus brought nearer. One effect of recent studies is to negative the idea at present widely prevalent, owing to the contentions of Mellanby as the results of his experiments on dogs, that the ultimate cause is a deficiency in the diet of "antirachitic factor," a substance which he thinks is probably identical with fat-soluble vitamin A. The numerous comparable observations of rats cannot be explained by such a simple hypothesis. Furthermore, the researches of Mackay⁴ at the Lister Institute in London on growing kittens corroborate on a new species of experimental animal what American workers have already asserted.³ When kittens are fed on a diet deficient in vitamin A, but otherwise theoretically adequate, they become emaciated and finally cease growing. Mackay's animals suffered from diarrhea and abdominal distention. They gave evidence of unquestionable malnutrition, as might be expected from the deficient character of the diet. In fact, the observers regarded the appearance presented as extremely like the clinical picture of

celiac disease in children. Nevertheless, no evidence of rickets was found in any case postmortem, according to Tozer,⁵ who made the examinations. The enthusiasm for the modern vitamin deficiency disorders must not be allowed to obscure the complexity of diseases which are at most only in part explained thereby.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Physicians' Office Building.—As an outcome of the purchase of the Tucson-Arizona Sanatorium by a coalition of physicians, the entire building now occupied by the Arizona Hospital will be used as offices for physicians. A first-aid operating laboratory for handling emergency cases will be maintained in the building. All cases not emergency will be transferred to the new hospital quarters.

CALIFORNIA

Chiropractor Convicted.—A news report states that L. D. Treseder, chiropractor of San Jose, was recently convicted of violation of the state medical law, on the charge that he was practicing without a license.

Anesthesiology Required for Physician and Surgeon's Certificate.—The governor has signed Senate Bill 401 which adds "anesthesiology hours 32" to the minimum requirements of a physician and surgeon's certificate. California is the first state in the Union to make anesthesia a required subject in the medical curriculum.

Personal.—Surg.-Gen. Merritte W. Ireland conducted the graduation exercises of the nurses at Letterman Hospital, San Francisco. A reception was given by the officers and women of Letterman Hospital at Red Cross House, July 14, for General Ireland, and a complimentary dinner was given for him at Tates-at-the-Beach by five graduates of the Army Medical School at Washington, class of 1910, who are now stationed at Letterman.—Dr. F. W. Hatch, state superintendent of state hospitals and asylums, after being employed by the state for twenty-four years, has resigned, the resignation to become effective, July 29, when the government reorganization laws, placing all state institutions under one head and department, also become effective.—Dr. Donald R. Smith has been appointed superintendent of the Mendocino State Hospital, Talmage, to succeed Dr. Robert L. Richards.

DISTRICT OF COLUMBIA

Legislation for Control of Midwives.—Senator Ball has introduced a bill into the Senate providing for the regulation of the practice of medicine and midwifery in the District of Columbia. The measure provides for the appointment of a board composed of six physicians and three citizens. The board is empowered to issue licenses, and the practice of medicine or midwifery is prohibited except under this license. A fee of \$90 is charged by the board for each license. The measure was referred to the Senate Committee on the District of Columbia.

GEORGIA

Chattahoochee Valley Medical and Surgical Association.—The annual meeting of the association was held, July 13-15, at Warm Springs, under the presidency of Dr. William C. Gwin, Birmingham. Dr. John J. Pemberton of the Mayo Clinic, Rochester, Minn., and Dr. Roy C. Long, Asheville, N. C., were among the speakers. An old-fashioned barbecue was served, July 13. The following officers were elected for the coming year: Dr. Frank K. Boland, Atlanta, president; Dr. Marcus M. Skinner, Selma, Ala., vice president; Dr. William J. Love, Opelika, Ala., secretary-treasurer, reelected.

5. Tozer, F. M.: The Effect of a Diet Deficient in Animal Fat on the Bone Tissue (Rib Junctions) of Kittens, *Biochem. J.* **15**: 28, 1921.

1. Cooke, J. V.; Rodenpau, F. H., and Whipple, G. H.: *J. Exper. Med.* **23**: 717 (June) 1916.

2. Louria, H. W.: The Blood Urea Nitrogen in Acute Intestinal Obstruction, *Arch. Int. Med.* **27**: 620 (May) 1921.

3. Further Facts About Rickets, editorial, *J. A. M. A.* **76**: 1844 (June 25) 1921.

4. Mackay, H. M. M.: The Effect on Kittens of a Diet Deficient in Animal Fat, *Biochem. J.* **15**: 19, 1921.

IOWA

Personal.—Dr. Henry C. Eschbach, Albia, has been appointed a member of the state board of health to succeed Dr. Walter L. Bierring, Des Moines, whose term expired, July 1.

LOUISIANA

Injunction Made Permanent.—Recently the Louisiana State Board of Medical Examiners secured an injunction restraining Otis E. Cronk, a chiropractor of Alexandria, from practicing in Louisiana without a license. A rehearing later, given before the district court at Alexandria, has made the injunction permanent.

MAINE

Public Health Meeting.—The Maine Public Health Association met, July 13, at Augusta, under the presidency of Dr. Elmer D. Merrill, Foxcroft, and adopted new by-laws which provide for a definite plan of affiliation of the local associations with the state organization and specify that the local association shall elect representatives to the board of directors of the state association. The new by-laws also make it possible for posts of the American Legion, labor unions and fraternal organizations to become affiliated with the public health association by the payment of a certain fee, and to have representatives in the association.

MARYLAND

Personal.—Dr. Moses M. Savage, Baltimore, a member of the staff of the Hebrew Hospital, will sail shortly for Europe and will visit Hamburg, Berlin and Vienna during his stay abroad.

Joint Meeting.—A joint meeting of the Baltimore County Medical Association, the Carroll County Medical Society, and the Maryland Psychiatric Society was held, July 20, at the Springfield State Hospital, Sykesville, at which time recommendations for the future care of the mentally defective of the state were made by Dr. Thomas H. Haines, of the National Committee for Mental Hygiene, who is in charge of a survey of the mentally defective in Maryland.

MISSOURI

North Missouri Medical Association.—The association will hold its next annual meeting at Chillicothe, June 19, 1922. Dr. Morgan L. Clint, Meadville, is president and Dr. Edward S. Smith, Macon, is corresponding secretary.

Hospital News.—The Callaway County Hospital was opened, June 30, at Fulton. It is the second hospital to be erected and in operation under the new law permitting counties to issue bonds for the erection of general hospitals in the counties.

New Director of Bureau of Child Hygiene.—Dr. I. D. Krauss, of the U. S. Public Health Service Hospital at St. Louis, has been appointed director of the bureau of child hygiene of the state board of health. This bureau was established several years ago through the cooperation of the U. S. Public Health Service and Dr. Carlisle P. Knight was detailed by the service to act as director. Under Dr. Knight's guidance the bureau has grown to be one of the most effective divisions of the state board of health, and at the last session of the legislature an appropriation was made that enables the board of health to conduct the bureau under its own auspices. Dr. Knight has been released from service in the bureau and transferred to another field. Dr. Krauss assumed charge of the work, July 1.

MONTANA

New Officers of Montana Association.—At the recent meeting of the Medical Association of Montana, the following officers were elected for the ensuing year: president, Dr. Wyman F. Andrus, Miles City; vice presidents, Drs. Charles F. Watkins, Billings; Aloysius N. Dolan, Great Falls, and Percy S. Rennick, Stevensville; secretary-treasurer (reelected), Elmer G. Balsam, Billings.

NEW MEXICO

Personal.—Dr. Royal B. Tracy, formerly neuropsychiatrist for the public health service of New Mexico, has been appointed by the board of the State Hospital for the Insane, Las Vegas, N. M., as medical director of the institution, to succeed Dr. William R. Tipton.—Dr. Alfred A. Strauss, surgeon, Michael Reese Hospital, Chicago, delivered an address on stomach surgery, July 14, before the Bernalillo County Medical Society, at Albuquerque.

NEW YORK

New Research Laboratory.—The Cosmopolitan Cancer Research Society has recently been formed in Brooklyn to study cancer and disseminate information as to the nature of the disease, its causes, methods of prevention and treatment. The society will cooperate with federal, state and municipal health departments, hospitals, medical societies and all organizations through which education and service to the people may be extended. It is establishing a complete laboratory for its research work, which will be the nucleus for a much larger institution and the establishment of branches in various cities.

New York City

Hospital News.—The preliminary campaign to raise \$1,000,000 for the Broad Street Hospital began with a luncheon at the Hardware Club, July 22. It was decided to begin the active campaign, August 1. One half the sum will be used to complete the new building, and the remainder will go into the hospital fund.

Governor Inspects State Hospital.—Owing to criticisms alleging that ex-soldiers who were inmates of the Manhattan State Hospital were not receiving proper care, Governor Miller has inspected the institution. He reports that he has found the criticisms absolutely groundless. On the contrary, he finds that the men are being well cared for and are receiving all reasonable comforts.

New York Association for Medical Education.—According to an announcement made by its secretary, Dr. Otto von Huffman, the Carnegie Foundation has offered to make a donation of \$12,000 to the association on condition that the medical profession shall raise \$3,000. The raising of this sum will enable the association to continue its activities which have been curtailed of late because of lack of funds. This association was organized two years ago to collect information in regard to postgraduate medical instruction and to develop such courses in New York.

Intensive Study of Rickets.—A special committee has recently been formed, composed of representatives of the bureau of child hygiene of the New York City Department of Health and the Association for Improving the Condition of the Poor, for the purpose of formulating a program for the prevention of rickets. The study is to be carried on in the Mulberry Health Center, located in the Italian district, Broadway, the Bowery, Canal and Houston streets. The committee consists of: Prof. H. C. Sherman, Prof. Mary S. Rose, Prof. Graham Lusk, Dr. Alfred F. Hess, Dr. Charles Hendee Smith, Dr. Louis C. Schroeder, Dr. Jules M. Blumenthal, Dr. Jacob Sobel, Mr. Bailey B. Burritt and Mr. John C. Gebhart. The purposes of the study are: (1) to ascertain the prevalence of rickets among the children born of Italian parentage, in those nursed exclusively, and in those fed artificially; (2) to prevent rickets by various measures, such as the use of cod liver oil, sunlight and fresh air, diet, hygiene, etc.; (3) by the use of cod liver oil to cure the condition after it has appeared.

OHIO

Gift to Medical School.—It is reported that Western Reserve University has received \$500,000 from Mr. Samuel Mather to be used in the construction of the new medical college building.

OREGON

State Deputy Health Officers.—As the result of an agreement which has recently been signed by the Oregon state health officer and the district forester, forest supervisors in charge of national forests have been appointed to serve, without pay, as deputy state health officers. The duties of these supervisors are to report on sanitary conditions and violation of the Oregon health laws occurring within the national forests, to advise violators as to the health laws; if violations are continued, the matter is referred to the state health officer.

New Medical School Building.—The board of regents of the University of Oregon has finally accepted and approved the finished plans for the second new University of Oregon medical school building on the campus on Marquam Hill in Portland. The building will cost about \$250,000, nearly one half of which has been provided in a gift from the general education board of the Rockefeller Foundation. The building will be of reinforced concrete and brick. It will be three stories high and will house the administration offices, the library and extension of the laboratory departments and portions of the clinical departments of the school. Completion of this building will enable the enrolment of larger

classes which are now limited to sixty each. Construction will begin at once, and it is expected that the building will be completed in time for the opening of the school year in the fall of 1922.

PENNSYLVANIA

Hospital News.—The board of directors of the Grand View Hospital, Sellersville, announce that that public institution is clear of debt. The hospital is conducting a campaign to raise \$75,000.

Cancer Clinic.—Under the auspices of a committee on cancer of the Medical Society of the State of Pennsylvania, a cancer clinic was held at the Geisinger Hospital, Danville. The main address was given by Dr. Joseph C. Bloodgood, Baltimore, on "Demonstrations and Diagnostic Clinic." Dr. Jonathan Wainwright, Moses Taylor Hospital, Scranton, who is in charge of the cancer research work of the Pennsylvania state department of health, was also among the speakers.

County Medical Directors.—Dr. Edward Martin, state commissioner of health, has appointed the following county medical directors, effective July 15: Dr. John A. Levens, Woodlawn, Beaver County; Dr. Carlyle Haines, Sayre, Bradford County; Dr. Harold Bruce Boring, Richlandtown, Bucks County; Dr. Ray L. Stackpole, Butler, Butler County; Dr. Alexander H. Stewart, Indiana, Indiana County; Dr. William D. Martin, Dunns Station, Washington County; Dr. Robert E. Lee McCormick, Irwin, Westmoreland County, and Dr. Richard O. Miller, Erie, Erie County.

Philadelphia

Personal.—Dr. Antoinette Russell, who has been doing relief work for the American Friends' Service Committee in Serbia, has returned home.

To Study Tuberculosis Cure.—One hundred Philadelphia physicians made a visit to the tuberculosis sanatorium at Eagleville, July 21, to study at first hand the most modern treatment for tuberculosis. The treatment was explained by Dr. Abraham J. Cohen, director of the sanatorium, who has used it successfully since 1909. In that year the sanatorium was established and of the 3,000 cases it has handled since that year, 82 per cent. of those in the early stages have been cured.

Improvements on City Hospitals.—Construction and supply contracts totaling more than \$120,000 for the city's hospitals were signed by Mayor Moore, June 20, and include much additional work on the Philadelphia General Hospital at Thirty-Fourth and Pine streets. Nearly \$1,000,000 worth of work on the three big city hospitals for general cases, contagious and mental diseases will be started this summer by Dr. C. Lincoln Furbush, director of the department of public health, as part of his modernization program. The money is provided out of the \$33,000,000 loan voted by the people last November and contracts are rapidly being placed for the execution of the work.

VERMONT

Compensation for Reporting Communicable Diseases.—Under an amendment to section 3820 of the general laws passed at the last session of the legislature, physicians will receive from the town 25 cents for each report of a communicable disease made to the district or city health officer. However in the case of venereal diseases or tuberculosis, the reports are submitted to the secretary of the state board of health. Only one report of a communicable disease during a given period of illness in a family will be paid for. Reports must be made as complete as possible on forms furnished by the state board of health.

VIRGINIA

Personal.—Dr. Walter C. Klotz, Charlottesville, has resigned as medical director of the Blue Ridge Sanatorium to accept an appointment to take charge of the National Sanatorium, Johnson City, Tenn.

WASHINGTON

Personal.—Dr. Frank P. Witter, Spokane, has been appointed to the medical license examining board in place of Dr. George W. Ingham, Olympia, who declined the office because he could not spare the time from his practice.—Dr. B. E. Elvin, Spokane, was appointed to the state board of health.—Dr. George Thomas Palmer, president of the Illinois Tuberculosis Association and member of the board of directors of the National Association was the principal speaker at the annual meeting of the Washington Tuberculosis Association, held at Aberdeen, July 28-30.

CANADA

Personal.—Dr. George W. Graham, Toronto, has been appointed temporarily to the office of chief coroner for that city. The names of some other medical men, four in number, have been mentioned as associates but these have not been confirmed, as there are to be several changes in connection with the holding of inquests and the appointing of coroners in the near future.

GENERAL

Willis-Campbell Antibeer Bill Delayed.—The Willis-Campbell antibeer bill, which has passed the House and is now before the Senate, will not come up for final vote at once. An effort of Senator Sterling in charge of the measure in the Senate to fix a definite date upon which a vote should be taken was defeated.

Accept Appointments as Consultants.—Drs. George Dock, St. Louis; Otto Folin, Boston, and Ludvig Hektoen, Chicago, have accepted appointments as consultants to the National Pathological Laboratories to advise on methods used, interpretation of results and ethical policies.

A Grant for Research.—The American Pharmaceutical Association will have available, after Oct. 1, 1921, a sum amounting to about \$360, which will be expended for the encouragement of research. Investigators desiring financial aid in their work should communicate, before September 1, with Prof. H. V. Arny, chairman, American Pharmaceutical Association Research Committee, 115 West Sixty-Eighth Street, New York, giving their past record and outlining the particular line of work for which the grant is desired.

Sweet Bill Passed by Senate.—The Sweet bill providing for the establishment of a Veterans' Bureau in the Treasury Department consolidating the War Risk Insurance Bureau, the Vocational Rehabilitation Board, and agencies of the U. S. Public Health Service dealing with former service men, passed the Senate, July 20. The measure had already passed the House in June. Several amendments dealing with minor changes in the bill were added by the Senate Finance Committee. The proposed act now goes to conference between the two houses and later to the White House for the President's signature.

Increase in Pellagra in the South.—The U. S. Public Health Service has issued statistics on the alarming increase of pellagra in the South. The figures show that there may be double the number during the present year as compared with last year and that in some parts of the South the increase will triple previous records. In one state where the figures are at hand, 1,817 cases developed in May, 1921, in comparison with 677 cases in May, 1920. The situation is said to be due to the failure of the cotton crop making it necessary for the small farmers to resort to salt pork, cornbread and molasses as their daily diet without alteration.

First Aid Classes in Postoffices.—Lee K. Frankel, director of public welfare of the Postoffice Department, has arranged with the American Red Cross to organize classes in first aid in the postoffices of the country. First aid kits at cost will be provided for postoffices and throughout the railway mail service. Instructors will be sent around the country to give instruction to postal employees in their use. It is also proposed to have classes in home hygiene and care of the sick organized for the benefit of the women employees of the Postoffice Department. Postmaster-General Hays has approved these plans of public welfare in the department.

American Roentgen-Ray Society Appoints Committee of Safety.—At the last annual meeting of the American Roentgen-Ray Society a committee of safety was appointed to give consideration and correct data regarding injuries due to the operation of roentgen-ray apparatus. This material will be utilized to determine the cause of accidents and the best means of preventing them. Communications relative to such accidents may be addressed to any member of the committee, which includes Drs. W. D. Coolidge, Schenectady, N. Y.; Preston M. Hickey, Detroit; Henry K. Pancoast, Philadelphia; George W. Holmes, Boston; J. S. Shearer, Ithaca, N. Y.; or the secretary, Miss Doris Keeler, Rockefeller Hall, Ithaca, N. Y. Special outlines have been prepared for recording injuries due to electric shock and those due to roentgen rays.

Medical Associations to Advise on Care of Disabled Ex-Soldiers.—The Senate Committee, headed by Senator Sutherland, investigating agencies dealing with care, treatment and hospitalization of former service men, has invited the American Medical Association, the Anti-Tuberculosis Association and the Association of Medical Hygiene, to

appoint committees to assist in the solution of the various questions relating to hospitalization and make reports to the committee. The committee has also decided to accept the services of Myron Adams of Chicago and Dr. Thomas W. Salmon of New York, as assistants to Col. Cornelius W. Wickersham, who is acting as adviser. Mr. Adams recently conducted an investigation at the hospital at Fort Sheridan, Ill., and will examine into the numerous individual complaints reaching the committee. Dr. Salmon, who is a member of the American Legion committee on hospitalization and vocational education and an expert in the treatment of mental diseases, will be assigned the task of making an examination of conditions in various hospitals.

Sheppard-Towner Bill Passes Senate.—The Sheppard-Towner Bill for the protection of maternity and infancy was passed by the Senate, July 22. As has been heretofore stated in THE JOURNAL, the bill provides for cooperation between the federal government and the states and authorizes the expenditure of \$1,480,000 in establishing centers of information on the subject of infant hygiene and maternity. The bill is declared by its proponents to be a large humanitarian step and by its foes to be paternalistic and an unwarranted expense to the federal government which will increase from year to year. The bill passed the Senate at the last session but failed in the House of Representatives. Extended hearings have been held in the House Committee on Interstate Commerce relative to the merits of this bill during the past two weeks, and several physicians have given their views to the committee. Those appearing before the House Committee were:

FOR THE BILL

Hon. H. M. Towner, House of Representatives. Dr. S. Josephine Baker, Director, Bureau of Child Hygiene, Department of Health, N. Y., Dr. Philip Van Ingen, Clinical Professor, Diseases of Children, College of Physicians and Surgeons, New York. Dr. Ellen Potter, Director of Division of Hygiene, Department of Health, Harrisburg, Pa. Dr. John A. Ryan, Director of one Department of the National Catholic Welfare University, Washington, D. C. Mr. Edward McGrady, National Legislative Representative, National Federation of Labor, Washington, D. C. Dr. John A. Foote, Professor Diseases of Children, Georgetown University, Washington, D. C. Maj.-Gen. Charles E. Sawyer.

AGAINST THE BILL

Mrs. Albert T. Leatherbee, Massachusetts Anti-Suffrage Association, Boston. Dr. Charles F. Humiston, President, Illinois State Medical Society, Chicago. Dr. George W. Kosmak, Representing American Gynecological Society, New York. Mr. H. B. Anderson, Representing the Citizens' Medical Reference Bureau, New York. Dr. A. H. Quessy, Fitchburg, Mass. Dr. Charles E. Mongan, Representing Somerville Medical Society, Somerville, Mass.

LATIN AMERICA

Trinidad Requests Chaulmoogra Oil.—The state department has received a request from the surgeon-general of the Trinidad government for a quantity of the chaulmoogra oil preparation used by the U. S. Public Health Service in the treatment of leprosy. The request came through the American consul at Trinidad and also asked for information on the methods of administering the chaulmoogra oil treatment. The request was referred to the treasury department and the state department was advised that the Surgeon-General of the U. S. P. H. S. will arrange to have oil sufficient for 500 treatments sent to Trinidad together with information for its use.

Organization of the Profession in Uruguay.—The Sindicato Médico del Uruguay, recently organized to promote the material interests of the profession, ethics, and the welfare generally of the profession and of the public is already busily at work. The officers of the consejo arbitral are Drs. A. Turenne, M. Quintela, A. Vidal y Fuentes, E. Regules, L. Morquio, A. Lussich and J. de Salterain. As the *Revista Médica del Uruguay* remarks, "This list of names needs no commentary." An official bulletin is to be issued. Our exchange states that by the efforts of the Sindicato the doors of the daily press of Montevideo have been closed to the advertisements of persons illegally treating the sick. These persons have now transferred their advertisements to the country papers, but the Sindicato is on their tracks, and has inserted a notice in a daily at Salto asking all confrères everywhere to send in any advertisements of quacks they may come across. The national public health service has awakened to the evils of illegal practice of medicine, and has commissioned Drs. Bastos, Mainginou and Giribaldo to draw up a bill to regulate the practice of medicine, to be presented to the national legislature. The Sindicato Médico hails this step as promising great progress for the public health in general if the bill becomes a law.

FOREIGN

Radium Found in the Congo.—The *Scalpel* of Brussels relates that rumors have been current for a year that minerals rich in radium had been found in the Congo, and the Société de Géologie de Bruxelles now announces this to be a fact. Specimens of the minerals found at Katanga have been sold in London by a returning Belgian colonist.

Personal.—The graduating classes at the University of Palermo presented a souvenir gold medal to the professor of surgery and the professor of internal medicine, Tricomi and Giuffrè.—A French society "for encouragement du bien," recently awarded a civic crown to the Institut Pasteur at Paris, and presented it to Dr. Roux as the representative of the institute.

Association for Research on the Treatment of Nervous and Mental Diseases.—As already mentioned, June 4, the most prominent neurologists and psychiatrists of the Netherlands have started a movement for more thorough study of treatment of nervous and mental diseases now that the progress of medicine has revealed the causes of many of them. They are appealing for financial support, offering membership in the Association for Research on the Treatment of Nervous and Mental Diseases for 10 florins a year or a single sum of 250 florins, or associate membership for 5 florins a year or for life for 100 florins. The secretary is Dr. B. Brouwer, Koninginnenweg 170, Amsterdam. Dr. Ariens Kappers, Amsterdam, is the president, and the appeal is signed by ten others, including Dr. W. Storm van Leeuwen and eight professors of nervous and mental disease, from Wertheim Salomonson of Amsterdam to Winkler of Utrecht.

The Congress Week at Strasbourg.—The week including Oct. 3 to 5, 1921, is to witness at Strasbourg the meeting of the Twenty-Fifth French Congress of Medicine, the Thirtieth French Surgical Congress, the third annual meeting of the Société d'Orthopédie and the Twenty-First French Urology Congress. The *Presse Médicale* for July 6 has a special supplement devoted to Strasbourg and the data in regard to these gatherings. The medical and surgical associations hold a common session the first day to discuss antianaphylaxis as presented by Vidal in addition to reports on the heart, lungs and digestive tract. The main topics for discussion at the surgical congress are traumatic epilepsy, vaccine therapy in joint disease, and remote results of treatment of mammary cancer. The orthopedists are to discuss arthrodesis of the foot, ankylosis of the knee and nonoperative treatment of congenital luxation of the hip joint, and the urologists, anesthesia in the *urinaires*.

The American Nurses Memorial in France.—The laying of the cornerstone of this memorial, on French soil, at Bagatelle, a suburb of Bordeaux, was mentioned briefly on page 294. It is to be a model home for the nurses of the Florence Nightingale Training School for Nurses at Bordeaux. Our French exchanges comment appreciatively on it and give considerable space to the ceremony. The *Journal de Médecine de Bordeaux* gives illustrations and the long list of American and French notabilities present, Admiral Magruder and the staff of a gunboat in the harbor, the French government, the city, the navy, etc., being represented by special delegates. A French and an American military band assisted in the ceremonies, and the bugles gave the *Salut suprême*. The memorial is dedicated to the 284 American nurses that fell on the field of honor. Our exchange quotes the final dedication of the message from Miss Clara D. Noyes, president of the American Nurses Association, saying it should be placed over the door of the school. It is quoted as follows: "En souvenir de nos camarades tombées au champ d'honneur, nous, gardes-malades des Etats-Unis d'Amérique, dédions ce monument commémoratif—l'Ecole Florence Nightingale, destinée à élever le niveau de l'éducation des gardes-malades—à la France, à l'humanité." The money was collected by the efforts of the three organizations of nurses in the United States. The land was presented to the Protestant Hospital for the purpose by Mlle. Elisabeth Bosc.

Deaths in Other Countries

The *Wiener klinische Wochenschrift* brings word of the death of Dr. Otto Zuckerkandl, professor of urologic surgery at Vienna. His "Atlas and Epitome of Operative Surgery" is a familiar textbook, and he is one of the group of six urologists that publish the *Zeitschrift für urologische Chirurgie*, now in its sixth year as the continuation of the *Folia Urologica*.—The death is also reported of Dr. von Schjerning, surgeon-general of the medical department of the German army, aged 68, a leading figure for many years in military and medical gatherings, and writer on public health

matters from the military standpoint.—Dr. A. Chervin, director of the Institute for Speech Defects, at Paris; he died while on a mission to Spain.—Dr. J. L. Martin, honorary inspector-general of the services d'hygiène of the city of Paris, and for many years the editor of the *Bulletin de l'Académie de Médecine* although he was not a member of the académie.—Dr. Rouby, senator from la Corrèze and Dr. G. Chapuis, senator from Meurthe, France.—Dr. Secheyron, a leading surgeon of Toulouse.

Government Services

Medal Awarded Lieutenant-Colonel Gilchrist

The distinguished service medal has been awarded to Lieut.-Col. Harry L. Gilchrist, Medical Corps, at present a medical officer in the office of the chief of chemical warfare service, for exceptionally meritorious and distinguished service while colonel of the Medical Corps, serving as chief of the delousing and bathing services of the American Expeditionary Forces. By superior administration and efficiency he contributed materially to the success achieved by the Army at the ports of Brest, Bordeaux and St. Nazaire, in the return of the American Expeditionary Forces to the United States. Lieutenant-Colonel Gilchrist delivered a series of lectures during the week ending July 16, on the results of chemical warfare on personnel, from a medical officer's standpoint, before the students of the Medical Field Service School at Carlisle, Pa.

Medical Reserve Officers and Care of Disabled

Information has been given out at the office of the Surgeon-General of the Army that no medical reserve officers will be called into active service in the near future to take care of War Risk Insurance Bureau patients. The forty-four reserve officers already on duty with the regular medical officers are sufficient to supply the present demand. An allotment of funds from the War Risk Insurance Bureau to the War Department has been made, however, and the money is to be used for the pay of officers and nurses that may later be called into active service. Unless, however, the hospitals under the control of the War Department are called upon to care and treat additional former service patients, no change will be made in the present situation as regards medical reserve officers.

Improvements at Dawson Springs Sanatorium

Awards of contract for the construction of thirteen additional buildings of fireproof material at the Dawson Springs Sanatorium, Dawson Springs, Ky., have been made by the Secretary of the Treasury. Algernon Blair of Montgomery, Ala., received a contract for \$800,000 and the Forbes Manufacturing Company, Hopkinsville, Ky., was given a contract for \$196,225. The sanatorium at Dawson Springs is expected to cost the government over \$2,100,000. It will be a complete tuberculosis sanatorium with accommodations for 500 patients. Completion is guaranteed by the contractors within six months.

Retirement of Colonel Wadhams

The War Department has placed Lieut.-Col. Sanford H. Wadhams, M. C., U. S. Army, on the retired list on account of disability incident to the service. Colonel Wadhams recently has been stationed at the general staff college, Washington Barracks. He is from Connecticut and entered the Army as an assistant surgeon in October, 1900. During the World War he served as a colonel, Medical Corps, of the National Army, and was awarded a distinguished service medal for exceptionally meritorious services.

Transfer of Training School

The Naval Hospital Corps Training School, formerly conducted at Great Lakes, Ill., has been transferred and merged with the school which has been maintained at the Naval Training Station, San Francisco. About 300 men were transferred with the school. Capt. Charles St. J. Butler has been transferred from the Naval Hospital, Great Lakes, to command the Navy Medical School at Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 4, 1921.

The Protection of Roentgen-Ray Workers

As stated in THE JOURNAL, April 21, p. 1181, on the death from aplastic anemia of Dr. Ironsides Bruce, roentgenologist to Charing Cross Hospital, a committee was formed to consider the dangers of roentgen-ray workers and how to avoid them. This consisted of Sir Henry Rolleston, chairman; Sir Archibald Reid, St. Thomas' Hospital; Dr. Knox; Dr. Harrison Orton, St. Mary's Hospital; Dr. Gilbert Scott, London Hospital; Dr. Mottram, Radium Institute; Dr. Kaye, National Physical Laboratory, and Mr. Cuthbert Andrewes. The honorary secretaries are Dr. Stanley Melville, St. George's Hospital, and Professor Russ, Middlesex Hospital. The report has now been issued. It lays stress on the danger of overexposure to roentgen rays and radium, but states that these can be avoided by efficient protection and suitable working conditions. The effects to be guarded against so far as known at present are: (1) visible injuries to the superficial tissues (skin, etc.) which may result in permanent damage, and (2) derangements of internal organs and changes in the blood. These are especially important, as their early manifestation is often unrecognized. As general precautions, it is recommended that not more than seven working hours a day should be undertaken. Sunday and two half days off duty each week should be spent, as far as possible, outdoors. An annual holiday of one month or two separate fortnights is also advised. Sisters and nurses employed as whole-time workers in roentgen-ray and radium departments should not be called on for any other hospital service. A primary precaution in all roentgen-ray work is to surround the roentgen-ray bulb as completely as possible with adequate protective material, except for an aperture as small as possible for the work in hand. In screen examinations, as in examinations for broken bones, it is advised that an equivalent of 2 mm. of lead should surround the bulb. The fluorescent screen should be fitted with lead glass equivalent to not less than 1 mm. of lead. Practical difficulties militate against the recommendation of a greater degree of protection. Between the operator and the roentgen-ray box there should be a traveling screen of material equivalent to not less than 2 mm. of lead, and protective gloves of lead rubber, lined with leather, ought to be worn. Even so, all manipulations should be reduced to a minimum. A minimum output of radiation should be used with the bulb set as far from the screen as is consistent with efficiency, and screen work should be as expeditious as possible.

Similar precautions are suggested for roentgenographic examinations. In cases in which cubicles are used for the work, these should be well lighted and ventilated, preferably by means of an exhaust electric fan in an outside wall or ventilation shaft. The controls of the roentgen-ray apparatus should be outside the cubicle. The walls of the cubicle should be of material equivalent to not less than 2 mm. of lead, and its windows to lead glass of equivalent thickness. In the case of apparatus to be used for deep therapy, giving voltages greater than 100,000, small cubicles are not recommended. A large, lofty, well ventilated and lighted room is to be provided. The bulb should have not less than 3 mm. of lead surrounding it, and a separate enclosure is required for the operator, situated as far as possible from the roentgen-ray bulb. All controls should be inside this enclosure, the walls and windows of which ought to be of material equivalent to not less than 3 mm. of lead. These recom-

mendations hold good also for roentgen rays used for industrial and research purposes. The floors of the rooms should be of wood, cork or rubber, and existing concrete floors should be recovered with one or another of these materials. Stout metal rods should replace wires. All metal parts of the apparatus and room should be efficiently earthed. Ventilation is regarded as of great importance. The roentgen-ray room should not be below ground level. Artificial ventilation is necessary in most instances, for, with very high potentials, so-called coronal discharges are difficult to avoid, and these produce ozone, and nitrous fumes, both of which are prejudicial to the operator. Dark rooms should be capable of being opened up to sunshine and fresh air when not in use. The walls and ceilings of these rooms "are best painted some more cheerful hue than black."

Radium in quantities up to 1 grain, in whatever form, should always be handled with forceps and not with fingers. It should be carried from place to place in long-handled boxes lined on all sides with 1 cm. of lead. Manipulations should be as rapid as possible. Radium should be stored in an enclosure, the wall thickness of which should be equivalent to not less than 8 cm. of lead. In the preparation of radium emanations, rubber gloves should be worn and care taken against the escape of the emanations. The room ought to have an exhaust electric fan. In view of the varying susceptibilities of workers, blood tests should be carried out every three months, so that any tendency to anemia may be noted.

A New Roentgen-Ray Apparatus

The West London Hospital announces the possession of a new roentgen-ray apparatus, the design of a Bavarian roentgenologist and the only one in England which makes use of rays of a wave length not hitherto employed. The current is of a voltage greater than 200,000. It is expected that with this new apparatus double the number of cures of cancer possible in the past will be obtained. The tube gives the highest penetration yet achieved.

Anthrax and Disinfection of Horsehair

The departmental committee which has been inquiring into the disinfection of horsehair has reported to the home office that there is danger of anthrax infection from Russian, Chinese, Siberian and Asiatic horsehair generally. Large quantities of drawn hair (partly manufactured hair) are now imported from China, and consignments of shaving brushes made from infected hair are arriving in this country. The satisfactory disinfection of such prepared hair and of shaving brushes is impracticable, while the danger to users is great. Only two courses are possible: (1) total prohibition of the import into this country of any manufactured or partly manufactured hair, and of goods composed or partly composed of foreign horsehair or goat hair; or (2) the establishment in the countries from which such goods are imported, of disinfecting stations under the control of a central authority invested with power to enforce disinfection of the raw hair before manufacture. This is a matter of international concern. Materials similar to those which cause anthrax in this country are, however, used in other countries, and it is impossible to believe that the people of this country alone are susceptible to the disease. The committee has unofficial information of outbreaks of anthrax among human beings in China, India, Constantinople and elsewhere. The committee states that the process devised for disinfection of wool is suitable as a method for the compulsory disinfection of horsehair.

Professional Secrecy

The case of a physician who attended a patient at a venereal disease clinic and was compelled, by order of the judge,

to give evidence in a court, thus violating both the general obligation of professional secrecy and the regulations of the clinic, was reported in a previous letter. The matter has come before the council of the British Medical Association, which has passed a resolution that it "has learned with great regret of the position created by the recent decision of a judge that the medical officer of a venereal disease clinic must give evidence in a civil case as to the medical condition of a patient under his care, thus violating the confidence between physician and patient and the direct undertaking given by the Local Government Board that all proceedings at such clinics should be absolutely secret and confidential." In drawing the attention of the ministry of health to these facts the council urged that such legislative steps be taken as would render such an occurrence impossible in the future. It has also asked the minister of health to receive a deputation to discuss the whole question.

Filariasis Expedition to British Guiana

An expedition sent to British Guiana by the London School of Tropical Medicine to investigate filariasis has been working there since the middle of April. Prof. R. T. Leiper, the well-known helminthologist, director of the helminthology department of the London School of Tropical Medicine, is in charge of the expedition, and the members include native physicians of the Egyptian government service. As there is evidence that filariasis is a house infection, the expedition has engaged in a house-to-house visitation in Demerara, the capital of British Guiana. A kind of mosquito census is being taken to ascertain the proportion infected. Another object of the expedition is to ascertain what species act as host to the filariae. It was originally arranged that the expedition should last six months. At the suggestion of Sir Patrick Manson, it is proposed to visit certain West Indian islands, taking one such as Barbados, in which the attack rate is high, and another, such as Grenada, in which it is low. By comparing the circumstances in the two islands, it is hoped to throw light on the conditions that favor the disease.

The Color Bar

Though it would be going too far to say that racial prejudices do not exist in England, there certainly is no color bar. However, in South Africa, the Trained Nurses' Association has decided to exclude a colored woman who is trained and holds a certificate qualifying her for membership, and to amend its constitution so as definitely to exclude colored and native nurses. The *Hospital* (a nurses' journal published in London) "regrets to learn this decision."

Art as a Solace in the Ward

It seems incongruous, perhaps, that the Arts League of Service, which stands for modern movements in art, should give its entertainment in a hospital ward to patients who, being classed as incurable, are out of the current of life's progress. The action is, however, quite in accordance with the aim of the league—to "bring art into everyday life"—and this could hardly be better carried out than in solacing sufferers. Believing that art is the joy of life, the Arts League of Service has taken it to the cancer ward of the Middlesex Hospital, to cheer the clouded lives of its incurable inmates. Science has done all it can do for them. Art steps in and takes them away for a while from their hopeless groove to a happy world of color and sweet sound and joyous movement. It was interesting to hear from their own lips how much they liked the fine old folk songs and dainty Elizabethan ditties sung and acted in picturesque costumes (designed by artists), and the graceful Greek expressionist dancing. "It was so happy and so restful, just what we could enjoy" was the verdict. The entertainment was one

of a weekly series arranged by the Dowager Lady Brassey for the patients in the Middlesex Hospital. Its success suggests new possibilities for art, whose place in the life of the nation is now being greatly discussed. Why should it not take a definite part in the work of the hospital?

PARIS

(From Our Regular Correspondent)

June 24, 1921.

Death of Prof. Jean Fabre

Dr. Jean Fabre, professor of clinical obstetrics at the school of medicine of the University of Lyons, died recently in Paris at the age of 55. Fabre was born in Lyons in 1866; was appointed obstetric surgeon to the hospitals in 1901, and three years later succeeded Fochier to the chair of clinical obstetrics. We are indebted to him for his *Atlas of Normal Anatomy and the Pathology of Pregnancy*, a compendium on obstetrics; also for a series of works on the innervation of the uterus, albuminuria in pregnancy, etc. He was a supporter of the institution in Lyons called the *Gouttes de lait* and also devoted his time and energy to consultations for nurslings in the tenement quarters of his native city. Since 1919 Fabre had been a corresponding member of the Academy of Medicine.

Mental Derangement and Divorce

Two deputies, Georges Simond and André Tardieu, have presented the draft of a law giving certain courts authority to pronounce the dissolution of marriage contracts in cases of mental derangement in the husband or wife. They mention the fact that insanity constituted a cause for divorce in the law of 1792. They believe that it is a benefit to society to dissolve such unions as are inevitably destined to remain unfruitful, and thus to make possible new marriages from which good results may be anticipated as regards the repopling of France. However, since divorce suggests the idea of some offense having been committed, the dissolution of marriage and not divorce is entailed by mental derangement of husband or wife, for the reason that one or the other is incapable of performing the obligations of marriage, which is a contract. The dissolution of the marriage contract should not, however, occur unless it is an established fact that the spouse afflicted with mental derangement is incurable. That is why serious justification must be required of any one who demands of a court the dissolution of marriage: an internment of the patient for more than three consecutive years in a hospital for the insane, certified by the superintendent of the hospital for insane, and a certificate of the medical director stating that mental derangement seems incurable. On the other hand, the proposed bill includes a number of paragraphs inserted with a view to safe-guarding the interests of the insane person and to determining the manner in which the dissolution of the marriage contract shall affect the disposition of the property of the husband and wife concerned.

Social Hygiene in the Liberated Regions

Various features of social hygiene (female inspectors, visiting nurses, dispensaries, vacation colonies) have been organized in nine departments by the minister of liberated regions. On account of a lack of financial appropriations, these services are threatened with failure. The Commission d'hygiène sociale de la ligue civique, of which Dr. Roux, director of the Pasteur Institute, is president, expresses the wish that, instead of being abolished, these services may be strengthened and their usefulness extended by the diversion to their needs of the \$2,000,000 donation made by an American citizen, Mr. Frank H. Bull. The Ligue civique hopes that, instead of a new society being formed to handle these funds, an auton-

omous bureau of social hygiene may be organized having judicial authority to accept this donation and others of a similar nature that are sure to be received from France and foreign countries, and controlling also the disposition of subsidies granted by the central government, the departments and the communes. Such a bureau would insure the continuation of services that are indispensable in order to repair the damage done to the health of the inhabitants of the liberated regions, and to offset the injuries inflicted on the children who have been the victims of the consequences of a long foreign occupation.

BELGIUM

(From Our Regular Correspondent)

LIÉGE, June 22, 1921.

Justice and Legal Medicine

The sixth congress of *Médecine légale de langue française* was held, May 23-26, at Liège and Brussels, under the presidency of Messieurs Héger-Gilbert and Stockis. As one important result accomplished, attention was called to the important influence that the activities of medicolegal experts and criminologists have had on legislators and legislation. In fact, even the magistrates present at this congress acknowledged the incompleteness of existing laws, which recognize only two classes of delinquents, the normal and the insane. Holvoet, the royal solicitor, chose for the subject of his address: *The Criminal Code in Relation to Abnormal Subjects*. He proposed adding three new articles to the criminal code: one dealing with delinquents under 25 years of age, whom a judge would be permitted to turn over to the care of a governmental prison-school; the other two articles dealing with abnormal subjects who constitute a social danger and who may be placed in a special establishment until such time as there shall be reason to believe that their criminal tendencies have been overcome. This report, which is well worked out, proposes the introduction of the indeterminate sentence for abnormal subjects.

Prisons and Anthropology

At the same congress, Dr. Vervaeck presented an interesting report on the work of the superior council of prisons and the anthropologic service, in which he expressed the conviction that the individualization of penalties would be established sooner or later, and that, as he and his co-worker, Dr. Héger-Gilbert have proposed, the organization of prison labor would, in the near future, come to be regarded as the best means of bringing about a normal regeneration of delinquents. By a process of selective examination, which could be carried out in the psychiatric annex, the bad elements incapable of adaptation to social conditions would be separated from those more susceptible of regeneration. The usefulness of psychiatric annexes was unanimously accepted. In these "prison retreats" the psychiatrist will be able to ferret out the abnormal subject and to give him the needed treatment. Prisons for abnormal subjects will doubtless furnish a solution of the vexatious problem of lessened responsibility due to abnormal mental states.

New Law Concerning Abnormal Children

The recent enactment of a law having for its purpose the suppression of the abuse of home detention of abnormal children is worthy of note. All abnormal children who are capable of being educated but who are not adapted for the special courses of instruction for backward children organized by the communes will be admitted to special schools for the period of their education, all the expense of which will be borne by the government. To prevent abuses arising from this extension of the privilege of the use of public funds, the legislature has established in each province an

administrative board of supervision and control composed of psychiatrists and pedagogic specialists. It will be the duty of this board of supervision to inquire: (1) whether home detention is necessary; (2) whether detention at home is feasible, that is, whether the family is able to give the sub-normal child necessary care and supervision, and (3) whether detention as actually carried out is effective; that is, whether he is properly cared for and watched over.

Psychiatric Clinics in Universities

In spite of repeated demands presented more particularly at the bar of the Société de médecine mentale, not a single suitable psychiatric clinic has been established at any of our universities. A committee on organization has been created for the purpose of promoting the establishment of an inter-communal psychiatric clinic in Brussels. We may hope that the labors of this committee will bear fruit, owing to the influence and the organizing ability of Prof. A. Ley. Unfortunately, there is no prospect as yet of similar institutions being established in the state universities.

International League Against Tuberculosis

By virtue of a resolution passed by the Belgian National League Against Tuberculosis, a prize of 500 francs will be offered each year for the best work submitted on the subject of tuberculosis.

PRAGUE

(From Our Regular Correspondent)

July 8, 1921.

Strike of Health Insurance Physicians

The strike of the medical officers of the insurance associations is still progressing. The central organization of Czechoslovak physicians has declared that the strike is complete throughout the whole republic. They state that the physicians are well pleased because they are not so overburdened as they used to be, and that they make more money. The associations have offered an increase of 50 per cent. in fees beginning July 1. It seems that the physicians would be satisfied with this increase in case it should be granted to them beginning Jan. 1, 1921. It is probable that the strike must be settled soon in some way or another, because the special funds for strike purposes of the associations are exhausted.

Child Welfare Clinics

The American Red Cross, through its representative, Dr. H. O. Eversole of Los Angeles, is organizing medical and social child welfare clinics in Czechoslovakia. A central committee including the representatives of both the ministries of public health and social welfare and all private organizations working in the field of child welfare has been created. This committee will advise Dr. Eversole in carrying out his program and will finally take over the work. Twenty-two child welfare centers in each of the governmental districts are being considered. The center will be highly organized, including a laboratory with a physician in charge and social workers and public health nurses attached. The centers will be operated for the first few months by Americans, who will train local workers to take them over later on. Dr. H. O. Eversole has spent two and a half years with the Czechoslovakian legions in Siberia as the representative of the American Red Cross and has many good friends among the leaders of the new republic.

Conference on Venereal Diseases

In the fall of 1921 a mid-European regional conference on venereal diseases will be held in Prague. It will be one of the series of regional conferences which are being organized through the League of Red Cross Societies all over the world

and of which the Pan-American conference in Washington, D. C., last fall was the first. Poland, Austria, Roumania, Yugoslavia, Greece and probably Hungary will send representatives to Prague, where the Czechoslovak Red Cross will be the host of the delegates. It will be the first international after-war congress in which all the nations of this war-stricken corner of the world will take part.

Quinin as a Prophylactic Against Puerperal Infection

In the *Journal* of Czechic physicians, Dr. Chmelar publishes a summary of his experience in rural practice during a period of twelve years. During that time he attended 351 confinements, some of them under conditions conducive to sepsis. Among all these cases no serious puerperal infection developed when he gave 4 or 5 grains of quinin in the first period of labor, and for the five following days the same dose two or three times a day. He believes that this treatment represents a very reliable prophylactic measure against puerperal infection, and recommends it especially for country practice, in which the physician has to work sometimes under very difficult conditions.

BERLIN

(From Our Regular Correspondent)

June 12, 1921.

Treatment of Diabetes

At the recent Wiesbaden Congress of Internal Medicine, a very interesting discussion occurred on the treatment of diabetes, during which some of the more important experiences gained in the war came up for consideration. The fact that the two prominent diabetes investigators, von Noorden of Frankfurt-on-the-Main and Minkowski of Breslau, presented the opening papers on the subject lent particular interest to the discussion. In the opinion of von Noorden, all diabetics who have never received systematic treatment or who have been treated by half-way measures should be subjected to a spare diet, after a period of which they may be gradually accustomed to a more liberal permanent diet, which, however, should be interrupted by short periods of a highly restricted diet. The period of strict diet takes the place of the yearly trip to Carlsbad or other resorts. The strict, carbohydrate-free diet is now never employed as a permanent diet. It should, however, still be used as a form of conservation treatment, but with further limitation of the protein content. This feature finds its expression on the so-called vegetable days. Von Noorden thinks that many investigators have too great a fear of an excessive fat intake, especially when the other substances are likewise present in the food. Von Noorden distinguishes between a strict diet that is rich in protein and one that is poor in protein. The strict diet that is poor in protein should not be recommended for more than five or six days at a time. To prevent injury to the patient, additional protein will then be necessary; but the protein may be increased only in the absence of carbohydrates. Especially in mild cases, strict diet is to be recommended. Once a week a carbohydrate day (preferably fruit) can be introduced, which should be followed by a vegetable day. In this manner we shall prevent protein metabolism from becoming excessive. In the more severe cases, oatmeal days or something of that nature should be interposed. In dealing with emaciated diabetics with cardiovascular symptoms, the change from a strict diet poor in protein to a strict but protein-rich diet may have a very salutary effect and may even save a life. In all cases characterized by acidosis, an interposition of fast days ("Sundays for the organs," as he terms them) is desirable. The Allen procedure was discussed and the opinion seemed to be that it had brought us nothing essentially new. It is important, during the fast days, to keep the patient in bed with nothing to

occupy his mind. There are some cases in which the final outcome depends to a great extent on finding a means of checking the overactivity of the sugar-forming mechanism. In such cases a strict application of Allen's procedure with its extremely limited diet (4 calories per kilogram of body weight) is advisable. Kolisch proposes and defends the following hypotheses: (1) Carbohydrate tolerance increases in proportion as the protein content decreases; (2) animal protein is particularly harmful, and (3) the diabetic cannot handle as many calories of food as a normal person. Though it may not as yet have been proved, it is at least correct that all overfeeding is injurious. The various carbohydrate "cures" that are based on von Noorden's oatmeal days were discussed. The use of burnt sugar (caramel) denotes progress. Falta's "flour-fruit cure" has certain advantages in connection with prolonged carbohydrate "cures." We must use the old regimen in connection with these "cures," and vegetable days must be introduced before and after. The effect of carbohydrate days is not the same on all diabetics. It will be determined to a certain extent by the relative amount of protein in the diet. The interrelationship between the protein and the carbohydrates in the diet of the diabetic must be the subject for further study. Also, with reference to the permanent diet, the same principle holds true, that an excess of protein in the diet has a bad effect on carbohydrate tolerance.

The advocacy of a permanent diet worked out on the basis of averages has been clearly shown to be unwarranted and must be replaced by a regimen that takes account of needed changes in the diet. Von Noorden is inclined to doubt the wisdom of continued protein-poor diet, and thinks that the strength of the patient and his potential energy are manifestly increased by the introduction of certain days with a strict but protein-rich diet. This does not hold if coma threatens. Finally, the conditions under which carbohydrate "cures" should be employed were discussed. Von Noorden thinks that carbohydrate days are needed in all except very light cases. The condition of most diabetics has a tendency to become worse, and we can be fairly content if we can preserve the status quo. Even in severe cases the disease can sometimes be brought to a standstill for a time by the use of Falta's procedure. However, patients who are doomed to die within a very short time should not be tormented by a strict diet. A slight acidosis, in von Noorden's opinion, is not always of such bad import, and patients gradually get used to it. In such cases von Noorden introduces variations by prescribing days with ordinary strict diet; then days with an increase of carbohydrates but with only a small quantity of protein; then vegetable days and carbohydrate days. Unless the nature of the acidosis is such as to contraindicate it, a day of strict but protein-rich diet should be interposed. As a rule, the diet remains protein-poor. In this manner it is often possible to attain a satisfactory condition of metabolism. Von Noorden disapproves of using large quantities of sodium bicarbonate.

In his discussion of the subject, Minkowski emphasized the fact that, in spite of his different theoretical point of view, he did not differ materially from von Noorden in the practical aspects of the question. He is of the opinion that it is not so much new facts as it is new terminology that creates the impression that there has been an upheaval in the field of diabetes therapy. He would not attempt to deny that in certain cases good results can be secured with carbohydrate "cures" and fasting "cures." But the problems and the goals to be reached by treatment are not essentially different from what they have been: the abolition of hyperglycemia and the increase of tolerance for carbohydrates. That, along with the limitation of the carbohydrate intake, a reduction of the protein intake, and also of

the total calory content, should be brought about, has been a teaching of Naunyn and his followers for some time past. The more recent observations have only shown that, in some instances, we can go much farther with the reduction of the protein intake and the diminution of the caloric value of the food than we formerly thought was possible, and that, in this manner, a lasting improvement in the whole situation as regards metabolism can be effected in certain cases. In principle, these facts do not change anything with respect to the aim of conservation therapy, so long as we do not go beyond a certain limit in adjusting the amount of carbohydrates that may be safely added when the protein intake is restricted. That is certainly the case as regards the Falta "flour-fruit cure," for which the term "carbohydrate cure" is misleading since, in reality, a marked restriction of the protein intake is the principal feature. Carbohydrate "cures" in which neither the injurious effect of hyperglycemia nor the conservation of the damaged function is considered are reprehensible.

Dietaries which, through restriction of the protein intake, make possible the ingestion of a certain quantity of carbohydrates are principally needed in severe cases with acidosis, in which the use of oatmeal has proved efficacious in that it prevents the formation of ketones in the urine. We do not need to ascribe a specific effect to the oatmeal in this connection. In moderate cases, by alternating between periods of protein-poor diet, with a certain amount of carbohydrates, and periods with carbohydrate-free and protein-rich diet, often more can be accomplished than by absolute and long continued withdrawal of carbohydrates. In the majority of mild cases, however, a restriction of the carbohydrate intake below the threshold of tolerance, together with the avoidance of an undue protein intake and adaptation of the total calory intake to the daily expenditure of energy, is to be preferred. The reduction of the protein intake must not go so far as to endanger the supply of protein in the body. Various forms of undernutrition, such as Allen's starvation treatment, constitute only an extension, although possibly, in some respects, an exaggeration, of the customary fast days. It is often surprising to find how easy it is to carry out the strict dietary recommended by Allen. The principal field of indication for this treatment is the precomatose stage in severe acidosis. There may be other cases in which it will occasionally be of advantage to begin a course of treatment with fast days if it is desired to secure promptly tangible results. However, undernutrition is fraught with danger, which can be avoided only by careful observation. Though recent departures from former therapeutic methods present nothing essentially new, they at least offer in their technical details some things that may be regarded as a reenforcement of our therapeutic armamentarium. They may prove to be of great value if they are used to afford greater opportunity for individualized treatment. Recent therapeutic observations have changed nothing with respect to the theoretical basis of the knowledge of diabetes. As formerly, we can still maintain that: 1. The disease that can be truly termed diabetes is attributable, in the main, to disturbances of pancreas function. Other organs concerned with carbohydrate metabolism affect only the intensity and the course of the glycosuria. 2. With respect to the functioning of the pancreas, we are concerned with the positive performance of the gland and not merely with a retarding mechanism or the arrest of sugar formation in the liver. Diabetes referable to the pancreas cannot be regarded simply as an unchecked glycosuria traceable to epinephrin. 3. The functioning of the pancreas is necessary for the normal utilization of carbohydrates by the organism. It is true there may be an abnormal increase in formation of sugar, but diabetic glycosuria is not explainable without disturbance of sugar metabolism.

Marriages

MICHAEL A. DAILEY, Major, M. C., U. S. Army, Marfa, Texas, to Miss Joeen Margaret O'Brien of Paris, Texas, June 25.

FRANCIS E. TIERNEY, Lieut., M. C., U. S. Navy, to Miss Alice E. Killfoile of Stockbridge, Mass., in New York, July 7.

WALTER J. PENNELL, Lieut., M. C., U. S. Navy, Washington, D. C., to Miss Mary E. Eliason, at Washington, July 6.

EUGENE HERBERT TOWNSEND, JR., La Crosse, Wis., to Miss Lillian Caroline Johnson of Canton, Minn., July 16.

CHARLES EDWARD LOCKE, JR., Manila, P. I., to Miss Jane Thompson of Pasadena, Calif., in Detroit, June 21.

FREDERICK PELHAM SUTHERLAND, Martins Ferry, Ohio, to Miss Anna Obrist of Portsmouth, Ohio, June 29.

E. LEAVENWORTH MCGILL, Petersburg, Va., to Miss Patty Radcliffe Fitts of Wilmington, N. C., June 28.

WILLIAM WIRT WADDELL, JR., Norton, Va., to Miss Barbara Belle Flock of Williamsport, Pa., June 14.

JOHN STUART HUME, Norfolk, Va., to Miss Isabel Hamilton Christian of Lexington, Va., June 4.

RICHARD HUGH WOOD, Richmond, Va., to Miss Maria Booth Robinson of King William, Va., June 18.

HENRY A. CHRISTIAN, Boston, to Miss Elizabeth Sears Seabury of Longwood, Mass., about July 3.

ALLEN TUPPER HAWTHORNE, Harrisonburg, Va., to Miss Dorothy Turner of Afton, Va., June 2.

QUINTUS HARPER BARNEY to Miss Nell Richard Files, both of Wardensville, W. Va., June 25.

CAMPBELL HARRIS to Miss Winifred Gertrude Gwynne, both of Richmond, Va., June 3.

GEORGE G. SNARR to Miss Reba Beard, both of Harrisonburg, Pa., June 29.

ROBERT MACKENZIE to Miss Ethel L. Sweet, both of Detroit, May 19.

Deaths

William J. Gallivan ☉ Boston; Medical School of Harvard University, Boston, 1892; died, July 13, from heart disease, aged 56. Dr. Gallivan was director of the division of tuberculosis of the state department of public health; director of child hygiene department, 1911-1914, and health commissioner of Boston in 1915. He was the author of a bill establishing Rutland state sanatorium for treatment of tuberculosis; of a bill for the free distribution of antitoxin, and also of a bill for creating a board of registration in medicine. For nine years he served as member of the school board.

Harry L. Arnold ☉ Omaha; College of Physicians and Surgeons, Chicago, 1897; also postgraduate work at universities in Vienna, London and Germany; served as medical examiner of draft board, M. C., U. S. Army, during the World War; visiting ophthalmologist to the Creighton University and St. Joseph's Hospital, Omaha; died, July 8, from heart disease, aged 51.

Richard Burton Robards, Harrodsburg, Ky.; Hospital College of Medicine University of Kentucky, Louisville, 1902; member of Kentucky State Medical Association; while on the way to sanatorium in Shelbyville, Ind., for treatment, he was found dead in bed at the Belvedere Hotel, Columbus, Ind., July 7, probably due to overdose of heroin, aged 45.

B. H. Rand, Golden, Texas; Memphis Hospital Medical College, Memphis, 1893; served as state penitentiary surgeon at Allen Farm, during Governor Hogg's administration; died, June 13, from acute indigestion complicating malarial infection.

John Jacob Defendorf, Ionia, Mich.; Detroit Homeopathic Medical College, Detroit, 1893; Civil War veteran; formerly attending surgeon at the Michigan Soldiers' Home, Grand Rapids, and local health officer; dropped dead, July 7, aged 71.

Archibald C. Fairbairn, Robbinsdale, Minn.; Medical Faculty Queen's University, Kingston, Ont., 1871; at one time chief surgeon, Northern Pacific Railroad; died, July 9, in the General Hospital, Minneapolis, from pneumonia, aged 78.

Ira Condict Whitehead, Philadelphia; Berkshire Medical College, Pittsfield, Mass., 1855; acting assistant surgeon in the Navy, 1861-1865, and again from 1875-1879; died, July 11, in the U. S. Naval Hospital, Philadelphia, aged 88.

George Wayland Dodge, Moravia, N. Y.; Eclectic Medical College of the city of New York, 1894; died, July 6, at Auburn City Hospital, N. Y., from internal injuries received when he fell from the porch of his home, aged 65.

William E. Kiely, Cincinnati; Medical College of Ohio, Cincinnati, 1877; member of Ohio State Medical Association; died, July 13, at the Good Samaritan Hospital, Cincinnati, from pneumonia, aged 71.

Joseph Henry Jansing, Cushing, Okla.; St. Louis College of Physicians and Surgeons, St. Louis, 1911; served as captain, M. C., U. S. Army, during the late war; died, July 10, in Oklahoma City, aged 37.

Christopher Dean Mowry, Aurora, Ill.; Rush Medical College, Chicago, 1876; practitioner in Aurora for forty years; died, July 6, in the St. Charles Hospital, Aurora, from liver trouble, aged 75.

Lucien Claude McElwee, St. Louis; Missouri Medical College, St. Louis, 1882; dean of the Homeopathic Medical College of Missouri; killed in a street car accident, July 3, aged 59.

Louis Braby Cunningham, Wampum, Pa.; University of Pennsylvania, Philadelphia, 1916; was instantly killed in a motor accident at Centre Point, W. Va., June 29, aged 29.

Phillip Erhard ☉ Syracuse, N. Y.; Syracuse University, 1902; member of the staff, Hospital of the Good Shepherd, Syracuse; died, July 7, from pneumonia, aged 44.

John Francis McGowan, Pitkin, Colo.; Louisville Medical College, Ky., 1880; died in July, at Salida, Colo., from burns received when his cabin ignited, aged 63.

Samuel T. Satterthwaite, Hendersonville, N. C.; Bellevue Hospital College, New York, 1870; died, June 24, from gastro-enteritis, aged 71.

Frederick N. Beardslee, Manchester, N. H.; Boston University, 1899; died, July 8, at Rye, N. Y., from cerebral hemorrhage, aged 51.

Lyman B. Bluit, East St. Louis, Ill.; Meharry Medical College, Nashville, Tenn., 1890; died, May 12, from cancer of the throat, aged 55.

Henri A. Blakemore, Gallatin, Tenn.; Vanderbilt University, Nashville, Tenn., 1880 and 1884; died, July 3, from senile cirrhosis, aged 80.

John Breckinridge Richardson, Louisville, Ky.; Jefferson Medical College, Philadelphia, 1865; died, July 3, from myocarditis, aged 69.

Argus B. Swisher ☉ Marysville, Ohio; Miami Medical College, Cincinnati, 1882; died, May 24, from cancer of the bladder, aged 67.

Isaac H. Magill, Corning, Kan.; University Medical College, Kansas City, Mo., 1884; died, April 12, in Lawrence, Kan., aged 60.

Frank Brother Cone, San Francisco; Medical College of Ohio, Cincinnati, 1884; died, May 12, from anemia, aged 67.

John T. Allen ☉ Brownsville, Tenn.; Bellevue Hospital Medical College, New York, 1880; died, May 9, aged 65.

Ferdinand N. Ware, Thomson, Ga.; University of Georgia, Augusta, 1888; died, June 20, from paralysis, aged 64.

A. Hampton Little, Milwaukee; Milwaukee Medical College, 1901; died, June 27, from tuberculosis, aged 42.

Harlow B. Drake ☉ Detroit; Hahnemann Medical College of Philadelphia, 1873; died, July 5, aged 73.

Charles O. Smith, Atlanta, Ga.; Atlanta Medical College, 1892; died suddenly, June 30, aged 55.

Wilmer Orla Lewis, Clay Center, Neb.; University of Nebraska, Omaha, 1920; died, June 20.

Robert Lee Guthrie, Denver; University of Colorado, Denver, 1919; died, July 2, aged 27.

Henry B. Blake, Cottonwood, Idaho (license, Idaho, 1899); died, July 2, aged 79.

Thomas L. Luna, Floyd, Miss. (license, Mississippi, 1882); died, July 2, aged 66.

Correction.—In THE JOURNAL, May 14, appeared an obituary notice relative to Dr. S. Ringolsky, San Francisco. We are informed by Dr. Ringolsky that the announcement was an error. The information was sent to THE JOURNAL by the California State Journal of Medicine and was based on an erroneous press clipping.

☉ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Nerv-Mintz.—The Earle Chemical Co., Wheeling, W. Va., in July, 1920, consigned a quantity of this product which the federal authorities declared misbranded. When analyzed by the federal chemists the preparation was found to consist of tablets containing essentially sabal, nux vomica, zinc phosphid, aloin and capsicum (red pepper). Nerv-Mintz was sold under such claims as:

"A nerve strengthener . . . soothe and quiet the nerves . . . used for the relief of Nervousness, Loss of Vigor, Energy and Ambition—Lack of Confidence, Sleeplessness, Trembling Nervelessness, Shifty Gait, Shattered Nerves, Exhausted or Weakened Vitality, Mental Depression, Numbness, Weakening Habits . . . and All Overworked and Unstrung Nerves Induced by Fast Living and Other Excesses."

" . . . exceptionally efficient in the treatment of Nervousness, Loss of Vigor, Energy and Ambition, Lack of Confidence, Sleeplessness, Shifty Gait, Shattered Nerves, Weakened or Exhausted Vitality, Mental or Physical Depression, Weakening Habits."

"Nerv-Mintz prove most wonderful rejuvenators, restoring the lost vitality you perhaps had thought was gone forever."

These claims, and others similar to them, were declared false and fraudulent and applied with a knowledge of their falsity for the purpose of defrauding purchasers. In September, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8859; issued May 18, 1921.]

Penslar Sancop Pearls.—A quantity of this preparation alleged to have been shipped in December, 1918, and January and March, 1919, by the Peninsular Chemical Company, Detroit, Mich., was declared misbranded. The Bureau of Chemistry reported that analysis showed that the contents of the capsules consisted essentially of a mixture of essential oils and resins, including oils of santal and cinnamon and copaiba and gurun balsams. The preparation was declared misbranded because the trade package contained such claims as:

"Penslar Sancop Pearls for Chronic or Sub-acute Inflammation of the Mucous Membrane of the Urethra, Chronic Discharges from the Urinary Passages."

"Penslar Sancop Pearls . . . for Chronic or Sub-acute Inflammation of the Urinary Passage, Chronic Discharges from the Urethra, etc. . . ."

These were declared false and fraudulent and in August, 1919, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8880; issued May 18, 1921.]

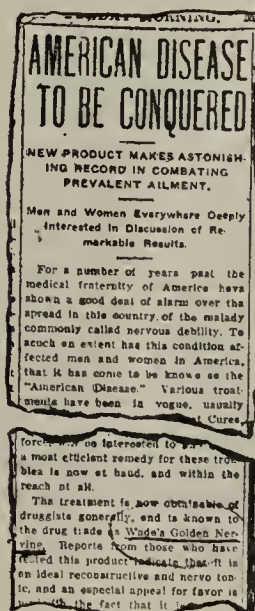
Lezajskie Lecznice Wino Elixir.—Walter Wojtasinski, who did business under the trade name of Wojtasinski Chemical Co., Boston, Mass., shipped in October, 1919, a quantity of his preparation which was declared misbranded. The Bureau of Chemistry reported that "Lezajskie Lecznice Wino Elixir" consisted of a water-alcohol solution containing rhubarb and a trace of cascara. The stuff was falsely and fraudulently represented as an effective treatment, remedy and cure for all disturbances of the stomach, pains and dizziness of the head and a purifier of the blood. It was further falsely represented that the article was approved by the federal government when it was not. In November, 1920, Wojtasinski entered a plea of *nolo contendere* and was fined \$25.—[Notice of Judgment No. 8955; issued May 24, 1921.]

Porose Pills.—The Lafayette Co., Berlin, N. H., consigned between June, 1919, and June, 1920, quantities of these pills which the federal officials declared misbranded. The Bureau of Chemistry reported that the contents of the pills consisted essentially of iron (ferrous) carbonate, nux vomica, a laxative plant drug, arsenic and unidentified plant extractives. Claims

were made on the trade package—that these pills were unequalled for "delayed or even suppressed periods" and that they were the "best of regulating tonics for all women complaints." These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8921; issued May 23, 1921.]

Gold Medal Compound Pills.—The Ashland Supply House, Chicago, is alleged to have shipped in July, 1920, a quantity of this preparation which was misbranded. The federal chemists reported that the pills consisted essentially of iron (ferrous) sulphate, aloes and oil of pennyroyal. The pills were sold under the claim that they were "a Most Effectual Emmenagogue" and that they would "Prevent Irregularities." These and similar claims were declared false and fraudulent and in December, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8918; issued May 23, 1921.]

Wade's Golden Nerve.—The Gem Medicine Company of St. Louis, Mo., were alleged to have shipped in February, 1920, a quantity of this product which the federal authorities



charged was misbranded. The Bureau of Chemistry reported that analysis showed the pills to consist essentially of iron, phosphates, strychnin, damiana and gentian. The preparation was recommended for "Nervous Debility in Men and Women . . . Weak Heart . . . Rheumatism, Neuralgia, Kidney Weakness . . . Stomach and Blood troubles generally" and similar conditions. These claims were declared false and fraudulent and in October, 1920, a decree of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8966; issued May 24, 1921.]

Allan's Star Brand Pills.—The Allan-Pfeiffer Chemical Co., St. Louis, Mo., are alleged to have shipped in August, 1920, a quantity of this product that was misbranded. The Bureau of Chemistry reported that the analysis showed the pills to consist essentially of aloes, iron (ferrous) sulphate and starch. The trade package bore such claims as:

"A Good Remedy in Suppressed or Painful Menstruation . . . to bring on the menses."

"To Prevent Irregularities Take one Pill . . . four or five days preceding the expected appearance of the menstrual period . . ."

These and similar claims were declared false and fraudulent in that the pills contained no ingredient or combination of ingredients capable of producing the effects claimed. In November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8959; issued May 24, 1921.]

Cheeseman's Pills.—A number of packages of "Dr. Cheeseman's Female Regulating Pills" were consigned by the Kells Co., Newburgh, N. Y., in February, 1920, and were declared by the federal authorities to be misbranded. The Bureau of Chemistry reported that the pills were composed essentially of aloes and iron (ferrous) sulphate. The package contained such claims as:

"Female Regulating Pills. . . . Obstruction of long standing . . . in recent cases of Obstruction. . . . When Obstruction is apprehended. . . . In cases of Impotency or Barrenness, Seminal Weakness, Gleet, Whites, and all diseases arising from a relaxed state of the genital organs, whether the result of disease, injuries or consequences of youthful indiscretion, or indulgence of the passions in ripe years . . . all sufferings connected with the womb and its dependencies, . . . a specific remedy . . . the only curatives known to the world . . . designed to check and do away with irregularities."

In December, 1920, Eugene R. Siering, trading as Chas. Meyer, appeared as claimant of the property. Judgment of

condemnation and forfeiture was entered and the court ordered that the product be released to Siering on execution of a bond in the sum of \$100 on the condition that the goods be relabeled under the supervision of the Department of Agriculture.—[*Notice of Judgment No. 8729; issued April 27, 1921.*]

Dr. Gunn's Blood and Nerve Tonic.—The United Medicine Co., Philadelphia, shipped in November, 1919, a quantity of this product which was declared misbranded. The federal chemists reported that analysis showed the preparation to consist of tablets composed essentially of aloes, phosphorus and strychnin. Such false and fraudulent therapeutic claims as those that follow appeared on or in the trade package:

"For Diseases of the Blood and Nerves Such as Dizziness, Despondency, General Debility and Weakness . . . with little strength and vigor."

"In cases where there is a weakness of the sexual organs take the tonic regularly . . . women and girls . . . for suppression of the monthly flow take the tablets regularly."

"For Diseases of the Blood and Nerves . . . Dizziness, Despondency, General Debility, Weakness . . . with little Strength and Vigor."

In August, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8857; issued May 18, 1921.*]

Hooper's Female Pills.—In May, 1920, the Horace B. Taylor Co., Philadelphia, shipped a quantity of this product which the federal officials declared misbranded. The Bureau of Chemistry reported that analysis of a sample of the article showed the pills to consist essentially of aloes and iron (ferrous) sulphate. The pills were sold under the claim that they were "a safe and sovereign remedy in female complaints" and "an emmenagogue in producing Menstruation" and to "open those obstructions which virgins are liable to" and "for the palpitations of the heart, giddiness, loathing of food, bad digestion, pains of the stomach, heating of the arteries of the neck, short breath." These claims were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8868; issued May 18, 1921.*]

Correspondence

SPIROCID AND THE INHALATION METHOD OF TREATING SYPHILIS

To the Editor:—For some time the Spiroicide Corporation, 153 West Twenty-Third Street, New York City, has been billing the medical profession with a series of pamphlets attempting to show that they have an inhalation and fumigation treatment of syphilis which is "new, safe, convenient and easily administered," to quote their terms, and that "it has no disagreeable feature to alarm or distress the patient." They claim that this preparation will remove all signs and evidence of syphilis, no matter what the stage; advising the use of one of their inhalations every day, or every other day until six have been taken. To quote from their pamphlet, "A Safe and Successful Treatment," page 5, "these six treatments are sufficient to cause all symptoms of syphilis to disappear and clear the blood and body tissues of the *treponema pallidum*." They say, further: "In from ten days to three months positive Wassermann reactions become negative and rarely return to positive."

I have several criticisms to make. Their claim, in the first place—the inhalation treatment of syphilis by mercury—is not new, but has been used since the year 1506, and has been given up by almost every well trained syphilographer for many years because of the fact that it is not only irritating to the lungs, but also dangerous and of uncertain dosage. As early as 1735, inunctions were carefully tried out by the medical authorities of the University of Paris, and Astruc tells

us that of the thirty-seven cases of fresh syphilis—all of them more or less of a mild type—that were treated at this test, four of the patients died during the course of the treatment, one of them as early as the ninth inhalation. Moreover, he tells us twelve of them, about one third, seemed to be benefited at the time; but later, even some of these showed signs of the recurrence of the disease. In other words, the inhalation treatment is not new, nor, in the second place, is it safe, so that the first two of their claims are entirely false. It is quite possible that their further claims for the remedy, that it is convenient and easily administered, are true; nevertheless, with the first two faults they amount to nothing. I wish to go on record as being unhesitatingly opposed to the inhalation treatment of syphilis, and to say that it is far from being free from danger.

I should also like to say that the Spiroicide Corporation is making a very bold statement on its published card mailed to physicians showing a blood smear from a syphilitic patient containing *Spirochaeta pallida* and *Spirochaeta refringens* in rather large numbers in comparison with the number of red cells shown. It is a well known fact that even in secondary syphilis it is almost an impossible thing to find *Spirochaeta pallida* in the blood smear; and, certainly in such numbers, it is unheard of. In my many years of work with syphilis I have yet to see the blood smear from a case of secondary syphilis in which we found any *Spirochaeta pallida* present; and why, in such a patient, *Spirochaeta refringens* should be seen, only the Spiroicide Corporation can explain. I should also be glad to have them explain to the medical profession how their inhalation treatment with mercury will remove *Spirochaeta refringens* from the blood stream as per their picture, saying nothing of their mythical *Spirochaeta pallida*.

The card with the graphic illustration of these organisms in the blood—before and after the inhalation treatment—reminds one of the hair tonic advertisement, "before and after."

H. N. COLE, M.D., Cleveland.

"ETIOLOGY OF THE COMMON COLD"

To the Editor:—Your comment on the "Etiology of the Common Cold" (THE JOURNAL, July 16, 1921, p. 206) strikes me as apt, and it should call for a discussion. I have believed for some years that common colds are due primarily to the development of bacterial growths in the accessory nasal sinuses, and that this development is caused by the obstruction of the drainage of these sinuses by the swelling of the nasal mucosa. Swelling of the mucosa is due in turn to irritation from some foreign substance, such as dust, bacteria and pollen. The bacteria are those ordinarily found in the nasal cavity and cause trouble only when the free access of air into the field is prevented by the swollen mucosa. This opinion has been strengthened by the fact that continuous treatment or spraying with a mild nonirritant astringent will in the majority of cases arrest an acute cold. When a cold holds on for as much as a week I have nearly always found cloudiness in one or more of the sinuses, and get immediate relief by washing out these sinuses with a mild alkaline solution.

G. M. MAXWELL, M.D., Roanoke, Va.

To the Editor:—Referring to your editorial comment, July 16, on the causes of common colds, I have long been convinced that "colds" in the nose and throat are not caused by bacteria but are produced "primarily by temperature changes" which may "light up the bacterial flora already present" in the nose and pharynx. Repeatedly in my own experience the sudden chilling of a part of the body that has been warm and moist, the removing of a coat and sitting momentarily in a draft, or coming in warm and perspiring and sitting in a cool room would immediately produce a "goose-flesh" feeling

locally, and simultaneously a congestion of the nasal or pharyngeal membrane. At times I had a moment's warning, a trifling local chilliness, with stuffiness of the nose, which if I heeded and got up instantly and moved about I could prevent from becoming a full fledged "cold." Even when the sneezing had begun with leakage at the nose—a sign invariably with me of developed "cold in the head"—I could as invariably abort these "colds" by (1) strenuous exercise maintained until all sensation of stuffiness of nose and throat had gone; or by (2) a short cold foot bath; or (3) a longer hot foot and leg bath; or (4) by application of an electric heating lamp; following this by quickly covering the feet and legs, keeping them warm either in shoes by motion or in bed wrapped warmly (this if retiring). Thus I have been able to abort "colds" in myself and others repeatedly and, I may even venture to say, invariably. Whenever a "cold" developed and was in a situation where I could not apply the abortive treatment mentioned, and I could not get up instantly and move, I found that lively exercising and straining the muscles below the knees to keep the blood there—to prevent the sudden contraction of the arterioles there and the simultaneous dilatation of those in the mucous membrane of nose and pharynx—would suffice.

If bacteria were the primary cause instead of congestion produced by chilling of a remote part of the body, surely I could not oust them in the incipient stage of a "cold," with sneezing and watery discharge already present, by quickly restoring normal circulation through the body.

J. W. MACMILLAN, M.D., Avon-by-the-Sea, N. J.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PROCAIN DERMATITIS

To the Editor:—A patient who consulted me has had a dermatitis of an obscure type on the forehead, involving also the eyebrows, ears, hands and thighs. This eruption is pale, macular, itching and desquamating. At times there are some itching papules, of the same color as the skin. There is troublesome burning. It was thought that metol, a photographic chemical, might be the exciting cause, but it apparently is not. This man uses procain freely and is not very careful about getting the fumes of a boiling solution, or about getting the solution on his hands. Can you refer me to any literature on this subject? Can you tell me whether any toxic effects have been observed from the use of procain? What treatment is used for dermatitis due to this cause?

FRED E. CLOW, M.D., Wolfboro, N. H.

ANSWER.—Lane (*Archives of Dermatology and Syphilology*, March, 1921) cites the cases of three patients who had dermatitis of the hands which appeared following the use of procain. When discontinuing the use of this substance or on wearing gloves, the irritation disappeared and the hands became normal. Skin tests carried out with procain indicated that it was the specific cause. Treatment is, of course, palliative, and includes removal of the etiologic factor.

REMOVAL OF SILVER STAINS

To the Editor:—Can you advise me of anything that will remove silver nitrate stains? I have heard that a preparation of sodium sulphite is used. I use silver nitrate daily and get it on my hands. Am anxious to know what will remove it.

J. P. BRANDON, M.D., Essex, Mo.

ANSWER.—Among the methods which have been suggested for the removal of such stains are: a thorough rubbing with salt grease, such as bacon grease, followed by scrubbing with soap and water, or the application of dilute solutions of mercuric chlorid. Painting silver nitrate stains with tincture of iodine will change the black stain to an almost invisible yellow silver iodid stain. Treatment of this stain with ammonia water will decolorize it further.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
FLORIDA: Jacksonville, Aug. 1. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

Ohio January Examination

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports that 37 candidates, including 1 undergraduate, were licensed by reciprocity at the meeting held Jan. 4, 1921. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University	(1919)	Dist. Colum.	
College of Physicians and Surgeons, Chicago	(1891)	Illinois	
Illinois Medical College	(1902)	Penna.	
Northwestern University	(1920, 2)	Illinois	
Rush Medical College	(1900)	Illinois	
Indiana University School of Medicine	(1916)	Indiana	
Medical College of Indiana	(1898)	Indiana	
Hospital College of Medicine, Louisville	(1901)	Indiana	
Kentucky School of Medicine	(1901)	Kentucky	
Louisville Medical College	(1904)	Washington	
Louisville National Medical College	(1911)	Kentucky	
University of Kentucky	(1901)	Indiana	
University of Louisville	(1916)	W. Virginia	
Johns Hopkins University	(1903)	Missouri	
University of Maryland	(1898)	Maryland	
Tufts Medical College	(1920)	Maryland	
University of Michigan Medical School	(1899)	Maine	
(1908), (1918), (1920, 3) Michigan		Penna.	
University of Michigan Homeopathic Medical School	(1906)	Michigan	
Columbia University	(1902)	New York	
New York Homeopathic Med. Coll. & Flower Hosp.	(1918)	Penna.	
University of Buffalo	(1902)	New York	
Pulte Medical College	(1889)	Kentucky	
Jefferson Medical College	(1901)	California	
University of Pennsylvania	(1896)	Penna.	
University of Pittsburgh	(1918)	Penna.	
Medico Chirurgical College of Philadelphia	(1912)	Penna.	
Meharry Medical College	(1906)	Alabama	
Medical College of Virginia	(1916)	Virginia	
McGill University	(1907)	Maine	
University of Toronto	(1911)	Penna.	
Undergraduate		Alabama	

Arkansas May Examination

Dr. T. J. Stout, secretary, Arkansas State Board of Medical Examiners, reports the written examination held at Little Rock, May 10-11, 1921. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Of the 23 candidates examined, 22 passed and 1 failed. Twenty-six candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Arkansas	(1904)	87.7	(1906) 85.1
College of Physicians and Surgeons, Little Rock	(1910)		82.5
National Univ. of Arts and Sciences Medical Dept.	(1912)		81.5
University Medical College of Kansas City	(1899)		88.7
Jefferson Medical College	(1911)		90.7
College of Physicians and Surgeons, Memphis	(1909)		80.4
Meharry Medical College	(1918)	75, (1921)	77, 77.7
Memphis Hospital Medical College	(1892)		82.9
(1902) 82.6, 86, (1904) 87.7			
Vanderbilt University	(1917)		82.6
University of Tennessee	(1921)	78.6, 83.6, 84, 84.1, 84.7, 86, 86.6, 88.6	

College	FAILED	Year Grad.	Per Cent.
Meharry Medical College	(1902)		43.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University	(1918)		Illinois
Rush Medical College	(1911)		Illinois
University of Illinois	(1913)		Texas
Kentucky School of Medicine	(1908)		Mississippi
University of Louisville	(1805)	Louisiana, (1911)	Louisiana
Tennessee, (1921) Kentucky			
Tulane University	(1914)		Louisiana
Johns Hopkins University	(1920)		Maryland
University of Michigan Medical School	(1897)		Wisconsin
University Medical College of Kansas City	(1906)		Oklahoma
Washington University Medical School	(1916)		Missouri
University and Bellevue Hospital Medical College	(1913)		New York
University of Oklahoma	(1917)		Oklahoma
University of Pennsylvania	(1915)		Penna.
Memphis Hospital Med. College	(1906)	Tennessee, (1911)	Texas
University of Nashville	(1905)		Mississippi
University of Tennessee	(1914)		Mississippi
Vanderbilt University	(1915), (1919), (1920)		Tennessee
Baylor University	(1911)		Texas
University of Texas	(1918), (1919)		Texas

Book Notices

LYMPHOSARCOMA. LYMPHATIC LEUKÆMIA. LEUCOSARCOMA. HODGKIN'S DISEASE. By L. T. Webster. The Johns Hopkins Hospital Reports. Volume XX, Fasciculus III. Paper. Price, \$1.50. Pp. 63, with 12 illustrations. Baltimore: The Johns Hopkins Press, 1921.

This monograph consists of a study of 123 cases of these perplexing lymphomatous growths, which exhibit a similarity and a relationship that notoriously lead to more difficulty and confusion than perhaps any other field in pathologic anatomy. Little help in differentiation is secured from this study which, as with other similar investigations, has failed to disclose any essential distinguishing points. The conclusion is reached that probably leukosarcoma, lymphosarcoma and lymphatic leukemia are different manifestations of the same disease, which is readily distinguished from lymphogranulomatosis, to which class of cases the author would limit the term "Hodgkin's disease," although it is quite certain that Hodgkin included in his clinical picture many other conditions. It also is assumed that this group of diseases, for which the term "lymphadenosis, leukemic or aleukemic" is preferred, is not a neoplasm but a direct response on the part of lymphocytes to some unknown infectious agent, although the evidence to the contrary does not seem to be adequately considered. It was found that cases in which the lymphocytes showed evidence of ameboid activity usually pursued a rapid, fatal course. As a careful study of a large amount of material in a most perplexing field of pathology, this monograph is a valuable contribution to the literature.

THE CHEMISTRY OF ENZYME ACTIONS. By K. George Falk, Harri-man Research Laboratory, The Roosevelt Hospital, New York. American Chemical Society Monograph Series. Cloth. Price, \$2.50. Pp. 136. New York: The Chemical Catalog Company, Inc., 1921.

The American Chemical Society has entered upon the laudable undertaking of publishing a scientific series, as well as a technologic series, of monographs. The purposes of the society are twofold: (1) to present the knowledge available on the chosen chemical topic in a readable form, intelligible to those whose activities may be along a wholly different line; (2) to promote research in the branch of science covered by the monograph, by furnishing a well digested survey of the progress already made in the field and by pointing out directions in which investigation needs to be extended. The editors of the scientific monographs are W. A. Noyes, G. N. Lewis, Lafayette B. Mendel, A. A. Noyes and Julius Stieglitz—two of whom are members of the Council on Pharmacy and Chemistry of the American Medical Association. The American Chemical Society is to be congratulated on this serious attempt "to found an American chemical literature without primary regard to commercial considerations." This is the first finished publication of the scientific series. The author has developed the treatise by considering the relations and theories of chemistry as of paramount importance. Thus, the introduction shows the interrelationship of "enzymes" and "catalysts," leading into modern conceptions from the electron point of view. Of course, the consideration of colloidal conditions are not neglected. The necessity of a proper understanding of the great rôle assumed by the actual acidity, hydrogen ion concentration—or, as is it more commonly spoken of—the " p_{H} ," is particularly emphasized. As has been pointed out by THE JOURNAL a number of times before in reviews on chemical topics, there are few, if any, physio-chemical subjects more important to the physician than that of hydrogen ion concentration. It is particularly striking that in the subject at hand, which affects so vitally living matter, the author states that the hydrogen ion concentration "is unquestionably one of the most important standards by which the properties of the solvent and the dissolved substances can be controlled." The next six chapters treat of the velocities and general theory of chemical reactions, and the properties, chemical and physical, common to enzyme reactions. In the eighth chapter, the material of the preceding chapters is brought to bear on the explanation of the mechanism of enzyme reactions; to the nonbiochemical worker the reasons for the chemical kinetics became apparent;

and fitly following is the discussion of the utilitarian aspects rather than the purely scientific side of enzyme actions. The author points out that enzymes are associated with all living matter, in order to favor production of products which might otherwise be found in only small amounts; the actions are present in all phenomena accompanying growth, including metabolic and catabolic changes. Hence no apology is needed for dedicating a whole book to the subject. As to the industrial application of enzymes, the author erroneously points out that "takadiastase" is an "official pharmaceutical preparation." "Takadiastase" is *not* described in the Pharmacopeia; in fact, this proprietary has been rejected by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies. For those interested in enzymes and so-called vital processes, the book should be of great value. It abounds in references, but unfortunately it has no bibliography—a department which, it is hoped, will be incorporated in future issues of the scientific monograph series.

Feebleness of Growth and Congenital Dwarfism with Special Reference to Dysostosis Cleido-Cranialis. By Dr. Murk Jansen, O.B.E., Lecturer on Orthopaedic Surgery, University of Leiden, Holland. Cloth. Price, \$5.00. Pp. 82, with 40 illustrations. New York: Oxford University Press, 1921.

As the title implies, this monograph takes up the feebleness of growth from a comparatively new angle. The cardinal principles on which the subject matter are based are: (1) Feebleness of growth is proportional to the intensity of nocivity; (2) feebleness of growth is proportional to the rapidity of the growth of the individual and its parts, and (3) feebleness of growth is characterized by enhanced sensibility and enhanced fatigability. The first portion of the book is devoted to the relation of fatigue of the mother to feebleness of growth in the child; several cases are reported which illustrate the correlation between the degree of the fatigue and the feebleness of growth. In this part the author takes up the question of the retardation of cell differentiation causing the thickening of cartilages, and he demonstrates this condition in rickets as an example. In the second part is considered congenital dwarfism, with special reference to dysostosis and cleidocranialisis. He associates with the condition not only the usual symptoms given but also the shortening of the intermediate terminal phalanges of the toes; the widened ends of the latter are missing as though they had been nibbled off; and, second, the bilateral narrowing of the chest. This also he finds to be constantly present. He believes that the chief factor in the production of this condition is a deficiency of the amnion, which produces cramping of the fetus in utero in the eighth week of fetal life. It is at this time that all parts affected in the condition are showing their greatest period of growth, and hence, according to the writer, the restriction of growth at this time is more effective in the parts concerned. He carries on this theory as an explanation of anencephaly, achondroplasia and mongoloid idiocy, and explains to a degree clubfoot and congenital dislocation of the hip on the same basis. The book opens up a new field for speculation.

A GUIDE TO THE DISEASES OF THE NOSE AND THROAT AND THEIR TREATMENT. By Charles A. Parker, F.R.C.P., Consulting Surgeon to the Throat Hospital, Golden Square, W., and Lionel Colledge, M.B., F.R.C.S., Surgeon to the Ear and Throat Department, St. George's Hospital, S. W., London. Second edition. Cloth. Price, \$8.50. Pp. 583, with illustrations. New York: Longmans, Green & Co., 1921.

This work is the delayed second edition of a textbook popular in British medicine a number of years ago. The present volume is impressive as a standard text and will make many friends in this country among students and practitioners. In one feature there is a unique departure from the usual construction of works on the nose and throat—the insertion of a section of four chapters dealing with the relation of the subject to general medicine. Acute and chronic infections, and chronic organic and constitutional diseases are reviewed and briefly discussed under separate headings. The book is well arranged and sensibly illustrated. In regard to operative technic and instrumentation, the usual criticism of European surgical methods may well apply to a number of recommendations in the volume.

Miscellany

NECESSARY QUALITIES FOR A SURGEON

Dr. E. Forgue, professor of clinical surgery in the school of medicine of the University of Montpellier, has just published in the *Presse médicale* an article entitled "Advice to Students Who Intend to Become Surgeons." This article brings out clearly and concisely the qualities that are indispensable for a surgeon. Physicians are not all equally suited for surgical practice. The future surgeon must have a delicate touch and a firm and dextrous hand; also good sight, good judgment and an ingenious mind. He must have what is known as a surgical temperament; that is, a mastery of himself and a presence of mind allowing him to face the gravest and most unexpected incidents. He must be endowed with great patience combined with firmness of character. He should be resolute of thought and quick of action. He should possess the necessary courage to face responsibility. Added to these forceful qualities, he must have polished manners and such control of language that he can convince, console and inspire confidence. The helping hand of the surgeon has been personified by mythology; for the centaur Chiron, the healer, gets his name from *χελρ*, hand, and it is also consecrated by the very term "surgery" (French *chirurgie*), which means in Greek "work of the hand." The technical training of the modern surgeon becomes broader and more complex as science progresses. It has become necessary for the future surgeon to spend a considerable length of time in the laboratories of pathologic and bacteriologic anatomy, in order to acquire knowledge of the methods of research, to interpret laboratory findings and to learn their clinical application; for diagnosis, operative indications and even operative results depend on the alliance between the laboratory and the clinic. The great problems of immunization, serotherapy and vaccination are matters of common practice, and no surgeon can be a stranger to them. No wise surgeon will think of forming a final opinion in serious urinary disease without determining the amount of nitrogen in the blood and the index of urea excretion. The deviation of complement aids in ferreting out syphilis, which is so often present; likewise sporotrichosis, and as a consequence the knife is abandoned when iodids suffice. The bacteriologic study of wounds during the war has furnished too valuable a guidance not to continue to profit by the information it offers in peace-time surgery. However, it does not suffice that a surgeon shall be gifted, learned, a good clinician, and a tried technician. In order to be successful, and especially, in order to hold a strong position in the professional world, he must have a high moral character. In this connection Forgue mentions a peculiar formula that Americans apply to their teaching; their aim is said to be the study of the three h's, the training of "head, hand and heart." The surgeon must set for himself the same goal.

THE ETIOLOGY OF YELLOW FEVER

In a lecture delivered before the Academy of Medicine of Havana, February 14 (*Sanidad y Beneficencia Boletín Oficial de la Secretaría* 25:39 [Jan.-March] 1921), Dr. Guiteras dwells at some length on this subject and summarizes his reasons for the doubts which will still remain in his mind. These are, briefly, as follows

1. A discrepancy apparently exists between Noguchi's statements and our present knowledge of the epidemiology of yellow fever. If the disease was so easily communicable to a series of animals, including the dog and the guinea-pig, how is it possible to eradicate the disease by breaking the chain between the yellow fever and man, as was done in Havana? And how is it possible that there have never been any epizootic manifestations of yellow fever among these animals in the endemic centers and during great epidemic invasions?

2. Noguchi's organism is easily inoculated through various superficial lesions of the skin, whereas all fear of necropsies has been lost since the discoveries of Reed, Carroll and

Lazear. Fomites, blood and viscera have been handled by careless assistants without ever causing infection. Fomites, in fact, appear absolutely innocuous.

3. The number of cases in which Noguchi has succeeded in demonstrating the presence of his parasite, either by direct blood examination or by inoculation into guinea-pigs, is relatively small.

4. Noguchi has had a considerable number of successes with blood taken after the third day of the disease, while the experiments of the American commission tended to show that the virus disappears from the peripheral circulation after the third day.

5. Noguchi's experiments with the transmission of his virus from man to the guinea-pig through the mosquito have been few. Out of six experiments, one was successful and one was doubtful, and he has not been explicit with regard to the details of the positive case.

6. The anatomic lesions found in guinea-pigs infected with the Noguchi organism are quite distinct from those that we find in man with yellow fever. On the other hand, they are identical with those found in Weil's disease and in pigs infected with either of the leptospiras.

7. The epidemiologic and clinical differences between yellow fever and Weil's disease are so fundamental that it is difficult to believe that they are produced by such closely allied organisms as are the two species, or subspecies, of Inada and Noguchi.

Dr. Guiteras then draws a contrast between yellow fever, so virulent in the old days, and Weil's disease at the present time.

8. Clinically, the two diseases are quite dissimilar: the period of incubation is short in yellow fever, and from seven to fourteen days in Weil's disease; of short duration and one single paroxysm in yellow fever, but with a remission in some cases similar to that of many acute febrile infections, and in Weil's disease a long duration with a recurrent type of fever, as in the relapsing fevers of similar spirochetal origin, etc.

9. Guiteras is under the impression that there is no convincing proof of the efficacy of the vaccine and serum prepared by Noguchi, and believes that they have come into play at times when active measures for the eradication of the disease were already in progress.

10. Hematologic pictures of the two diseases belong to quite distinct groups: that of Weil's disease conforming with the relapsing fevers, that of yellow fever with the hematologic formula of the filterable viruses.

Guiteras concludes: "It may be that the leptospiral infection found in some cases of yellow fever is a secondary infection similar to those that are found in influenza, the actual causative agent remaining as yet unknown. This, however, is but a theoretical suggestion. Let us hope that the genial Japanese investigator may be able to establish on a firm basis his discovery."

CENTENNIAL OF INTRODUCTION OF IODIN INTO THERAPEUTICS

Iodin was first isolated by Courtois, in 1811, but 100 years ago Dr. J. J. Coindet published his "Découverte d'un nouveau remède contre le goitre," after having reported on his success with the new remedy in the treatment of goiter at the annual meeting of the Société helvétique des sciences naturelles at Geneva, in July, 1820. The French Académie des sciences conferred on him a 4,000 franc prize, and the Bordeaux medical society awarded him another. The fame of iodine in the treatment of goiter spread, and it was used in many other diseases. In 1829, Berton advocated inhalation of the fumes of nascent iodine. The first enthusiasm with regard to iodine in the treatment of goiter and other pathologic conditions was soon followed by mishaps, and Coindet was denounced. The *Paris médical*, Nov. 27, 1920, quotes a letter from his son telling of his disappointment: "Held accountable for accidents for which only imprudent technic was really responsible, wounded in his dearest affections and in his reputation as an enlightened and cautious physician he resolved to do no further research work, and in fact he never

published anything after this. But he urged me nevertheless to study the subject, if possible from a new standpoint." Coindet, Jr., therefore investigated iodism and found that the mishaps were as frequent with small doses, if not more frequent. Piorry maintained his enthusiasm for iodine to the last, and reported good results from having tuberculous patients smoke cigarets impregnated with iodine.

Medicolegal

Law Governing Physicians Is Law for Dentists

(*Angulo v. Hallar (Md.)*, 112 Atl. R. 179)

The Court of Appeals of Maryland in reversing, without granting a new trial, a judgment recovered by the plaintiff, who sued the defendant, a dentist, for the alleged negligence and unskillfulness of his servant or employee in the extraction of the roots of a tooth for the plaintiff, says that it was referred to no cases in Maryland in which a dentist had been sued for malpractice, nor does it recall any. But there are a number of cases in which physicians and surgeons have been sued for malpractice, and there is no reason why the law laid down in those cases should not apply to dentists. The law as enunciated in such cases is that a physician or surgeon who holds himself out to the world to practice his profession by so doing impliedly contracts with those who employ him that he possesses a reasonable degree of care, skill and learning, and he is therefore bound to exercise, and is liable for the want of, reasonable care, skill and diligence, and he is responsible in damages arising as well from want of skill as from neglect in the application of skill. The cases are generally agreed on the proposition that the amount of care, skill and diligence required is not the highest or greatest, but only such as is ordinarily exercised by others in the profession generally. But while it is the duty of the professional man to exercise ordinary care and skill, a duty imposed on him by law, it will be presumed, in the absence of proof to the contrary, that the operation, or work, done by him was carefully and skilfully done. And because of such presumption, want of skill or negligence cannot be presumed, but must be affirmatively proved.

School Districts Cannot Maintain Clinics

(*McGikera et al. v. Seattle School District No. 1 et al. (Wash.)*, 194 Pac. R. 817)

The Supreme Court of Washington reverses a judgment which was rendered in favor of the defendants in this action wherein an injunction was sought to restrain the school district and its officers from maintaining in one of its school buildings, and expending funds of the school district for the maintenance therein, of a so-called "clinic," which might more properly be designated a "hospital," for the medical, surgical and dental treatment of the physical ailments of the pupils of the school district whose parents or guardians were financially unable to furnish such treatment. The court says that the question to be answered was: Have the school district and its officers legal authority for furnishing the use of, and equipping rooms in its buildings and the maintenance therein of such a clinic, by the expenditure of the taxpayers' funds collected and placed at their disposal for the sole purpose of maintaining the public schools of the district? Taking the whole of the law as found in the school statutes of the state which the court regards as lending any support whatever to the view that the school district and its officers possessed the powers which the officers were assuming, and threatening to continue to exercise, the court is quite unable to find in these statutes any power given to the school district officers other than the power to cause inspection of the buildings and premises of the district to be made with a view to making them sanitary and healthful, and to cause inspection of persons with a view to the exclusion from the school premises of all persons afflicted with contagious diseases, to the end that such diseases shall not obtain a foot-

hold among the pupils and other persons whose duties require them to be on the school premises. Counsel for the school district officers called attention to, and relied on, the decisions of this court commonly known as the "playground" and "gymnasium" cases, wherein it was held that a school district has the power to acquire, by expenditure of the funds of the district, additional land for playgrounds for the pupils, and also at the expense of the district to construct and equip gymnasiums; but the court does not think that those cases were of controlling force touching the present inquiry. The rendering of medical, surgical and dental services to the pupils is, and always has been, the court thinks, so foreign to the powers to be exercised by a school district or its officers that such power cannot be held to exist in the absence of express legislative language so providing. The court sees no argument lending any substantial support, in a legal way, to the view that the school district and its officers possessed the powers they were seeking to exercise and threatening to continue to exercise. There was much in the argument of counsel for the school officers which might be considered as lending support to the view that such powers ought to be possessed by the school district and its officers, and it was probable that counsel had many well meaning people on his side of that question. The legislature may give heed to such arguments; but the courts cannot do so. Wherefore, the judgment of the trial court in favor of the defendants is reversed, and the case remanded to that court, with directions to render a judgment enjoining the school district and its officers from furnishing or equipping on the school premises, or elsewhere, appliances for the medical, surgical or dental treatment of the physical ailments of the pupils of the schools at the expense of the district, and from employing physicians, dentists or nurses for the rendering of such medical, surgical or dental treatment; it being understood, however, that such injunction shall not restrain the school district or its officers from the doing of these things at the expense of the district in connection with, and as may be necessary in, the maintenance of the parental schools of the district and the proper care of the pupils committed to such schools.

Sufficient Visits by Physician

(*Bass v. Pioneer Life Ins. Co. (Mo.)*, 227 S. W. R. 639)

The Kansas City (Mo.) Court of Appeals, in affirming a judgment in favor of the plaintiff, says that the action was one on a policy of health insurance which promised the plaintiff indemnity for disability from sickness for the number of consecutive days that he was necessarily and continuously confined within the house, and therein regularly visited at least once a week by a regularly qualified physician. Feb. 14, 1919, he became ill from influenza, and was confined to his bed from that date to March 15. The testimony tended to prove that during that period his family physician called on him at his home on only two occasions, but that the physician received telephone calls and personal visits from relatives and neighbors on several occasions during the period; that the physician advised and prescribed for the plaintiff on such personal visits and telephone calls, and that he considered the plaintiff under his professional care during the period of illness. The testimony further showed that at least once during the period of his convalescence the plaintiff called at the physician's office. The defendant contended that the two calls made by the physician at the home of the plaintiff, and the telephone calls and personal visits of relatives and friends to the physician, and the prescriptions of the physician, did not meet the terms of the policy requiring that the plaintiff should be "continuously confined within the house and therein regularly visited at least once a week." But the court holds otherwise. Obviously, it says, the meaning of the clause was that the physician must be weekly in attendance on the insured. The physician called at the plaintiff's house on February 14, saw him in person, diagnosed his case and thereafter during the period of his illness prescribed for him, and the insured was under his professional care. To hold otherwise would be to make such a policy of insurance of very little value. The court thinks that the contract should have a reasonable construction and be viewed in the light of common sense.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Delaware State Medical Society, Rehoboth, Aug. 16.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Midsummer Session, held at Winona, June 27 and 28, 1921

The President, DR. W. J. MCCARTHY, Madelia, in the Chair

Surgery of the Ureter

DR. E. S. JUDD, Rochester: The most common operation on the ureter is for the removal of stones. Stones are most often lodged in the lower third of the ureter, often very close to the ureterovesical juncture, and sometimes in the part of the ureter within the wall of the bladder. Methods have been devised for safely dilating the lower end of the ureter and allowing stones in this location to pass. This technic is so successful that it must be considered the treatment of choice in the majority of cases of stone in the lower third of the ureter. In cases in which there is a great deal of infection, or in which the stone is very large, or when the patient does not bear the cystoscopic examination well, it is preferable to perform the open operation when the stone is in the lower part of the ureter, it is usually best to remove it by operating.

Roentgen-Ray Diagnosis of Gastro-Intestinal Diseases

DR. M. J. NESSA, Sioux Falls, S. D.: Roentgen-ray diagnosis in diseases of the gastro-intestinal tract is efficient and reliable. A résumé of the clinical history should always be made in making the final diagnosis. A preliminary examination of the chest should be made to rule out pathologic thorax. Extrinsic pathology, such as genito-urinary, gall-bladder and bone lesions, must always be considered when present and associated with symptoms of so-called indigestion. Variation in the position and tone of the stomach are factors which may influence the pathologic condition present. Routine daily examinations until the colon is empty is good technic.

Diagnosis and Treatment of Chronic Lesions of Hip Joint

DR. F. J. GAENSLER, Milwaukee: In the examination of hip lesions, it is important to strip the patient completely and to conduct the examination according to a definite plan, just as the internist proceeds according to plan in the examination of the chest. Unless this rule is followed, it is very likely that errors will occur. Inspection will disclose peculiarities in posture and gait, deviation from normal contour, awkwardness in removal of clothes, or in getting on the examination table. Palpation will determine the presence of muscle spasm, loss of normal muscle tone, elevation of surface temperature and tenderness. Mensuration is necessary to determine the degree of atrophy, apparent and real shortening, and disturbance in relation of Bryant's and Nélaton's lines. The determination of range of motion, active and passive, and careful recording of findings is important not only in establishing the diagnosis but also for purposes of comparison with future records. The essentials in treatment are adequate fixation in plaster of Paris or a brace and relief from weight bearing. In children, operative measures are indicated only in exceptional cases, while in adults operative arkylosis of the joint or arthrodesis, in other cases resection, may be called for when conservative treatment fails.

The Child's Place in the Tuberculosis Campaign

DR. S. A. SLATER, Worthington: Authorities tell us that 70 to 90 per cent. of the human race is infected with tuberculosis before the age of 15 years, and that practically every one is infected before adult life. If this is true, infection is much more common than clinical tuberculosis since only

about 10 per cent. develop it in a clinical form. It is this 10 per cent. which offers the problem and needs to be cared for before the disease becomes active. Special attention should be given to the child which is under par physically in order that he may overcome his physical handicap. It is remarkable to see what improvement these children make when living under the proper conditions, of keeping regular hours and getting sufficient and nourishing food. While many of these children are not suited for regular school work, they do well when placed in an open-air school with work adjusted to their strength. If childhood is the time when infection takes place, it is the time when the one infected should be treated.

Treatment of Sciatica

DR. WILLIAM O. OTT, Rochester: The results of treatment by epidural injections of saline solution containing procain and the removal of foci of infection in thirty-four cases of sciatica observed in the Mayo Clinic during a period of two and one-half years form the basis of this study. Of the thirty-four patients treated by epidural injections, fourteen received one injection, and thirteen, two injections; four, three injections; two, four injections, and one, five injections. Nine patients received complete and permanent relief; fourteen received partial relief, which allowed them to return to work; eleven did not receive any permanent benefit from the injection. Temporary relief, that is, for from two days to two weeks, either complete or partial, was obtained by thirty-one patients. In the greater number of cases foci of infection were removed, either a few days prior or subsequent to the injection, which were probably an occasional factor in the cure. In thirty-four cases of sciatica in which no definite removable cause could be found, the removal of possible foci of infection in 62 per cent., combined with repeated epidural injections, gave a permanent cure in 27 per cent., and permanent amelioration of symptoms, so that the patients could continue their occupation with a fair degree of comfort in 40 per cent.; 33 per cent. did not obtain permanent beneficial results.

Parenteral Infections in Infancy

DR. HENRY F. HELMHOLZ, Rochester: A breast-fed child, which had been doing well for months, became suddenly ill with vomiting and frequent stools. On physical examination, the findings, except for fever, were absolutely negative. The urine was free from pus. A cathartic was administered and the child seemed better the following day, but the fever still persisted. Numerous small, grayish follicles were visible in the throat, with considerable reddening about them. The child was kept on reduced feedings; the temperature was normal on the third day, and the recovery was uneventful. The patient on the first day appeared to be suffering from some primary gastro-intestinal disturbance, but by the findings in the throat the second day it was very evident that the disturbance of the intestines was secondary to the infection in the throat. The use of the cathartic was indicated to remove any undigested food that might irritate the intestinal tract. The uneventful recovery, therefore, would have made it appear that, had no further examination been made, the entire condition was due to intestinal disturbance.

Comparative Values of Antisymphilitic Drugs

DR. H. E. MICHELSON, Minneapolis: In attempting to classify the various drugs, one must consider first which drug has the most profound effect on the visible lesions of syphilis and can be given with the least danger to the patient. In our own experience, arsphenamin and neo-arsphenamin have about the same action on lesions. We believe that retrogression has been slower with sodium arsphenamin and silver arsphenamin. We are certain that mucous membrane lesions have been quite resistant to silver arsphenamin. Studies made on animals show neo-arsphenamin to be the less toxic. Silver arsphenamin has been given in long continued courses and has probably been better tolerated when so employed than when the other members of the group were used over a long time. This very likely is due to the much smaller therapeutic doses. The effect of all of the antisymphilitic remedies in their action on the Wassermann reaction is variable. The personal factor must be considered; and since the same individual cannot receive two drugs under precisely the same

circumstances, it is utterly impossible to make an accurate comparison. Nothing conclusive has been published to show that any member of this group of drugs possesses a selective action on any particular type of syphilis. In all arsphenamin courses the patient must be watched carefully and questioned for early warning symptoms on the part of the organism against further amino-arsenicals, and the slightest significant symptom should cause the operator to delay subsequent injections in order to avoid grave accidents. Until more evidence is at hand, we emphatically urge that mercury be used in connection with courses of any of the arsphenamins. We warn against overenthusiasm for any particular drug or regimen of treatment.

AMERICAN GYNECOLOGICAL SOCIETY

*Forty-Sixth Annual Meeting, held at Swampscott, Mass., June 2-4, 1921
(Concluded from page 314)*

Forced Labor

DR. JOHN O. POLAK, Brooklyn: In 200 cases of labor in contracted pelvis, recently studied, we found that 81 per cent. delivered spontaneously, or the labor was terminated with low forceps. This certainly shows that each case of relative contraction is at least entitled to a proper test of labor before the abdomen is sectioned. Furthermore, cesarean section is not without its morbidity and its mortality. Beck showed that there was a 30 per cent. morbidity in his study of 107 cases. Rupture of the cesarean scar is not an unknown possibility, and in my collective study of 2,000 cases by the leading operators throughout the country, there was a mortality of nearly 10 per cent. and of more than 2 per cent. in the elective group. Another procedure that should come up for consideration and comparison is hurrying the third stage of labor by expression of the placenta with the first uterine contraction after the child has been delivered. This is definitely unphysiologic in that it takes time for the uterus, by its contraction and retraction, to separate and expel the placenta and produce proper uterine hemostasis. While this practice may be safe in the hands of the trained specialist, it is bad practice and bad teaching for the practitioner and for students.

Ovulation and Menstruation and Postoperative Considerations

DR. THOMAS J. WATKINS, Chicago: The problem of the ovary relative to operative indications concerns the production of ova and corpora lutea. Unanimity of opinion exists relative to conservation of the ovary when conditions obtain which are favorable to reproduction. Opinions vary much in regard to conservation of the ovary for the purpose of production of corpora lutea. The corpus luteum during menstrual life has been proved to be an important part of the endocrine system. The physical changes that take place at puberty and the menopause emphasize the importance of the ovarian function. The usual good health which obtains after the menopause is completely established demonstrates the ability of the endocrine glands to compensate for the loss of the corpus luteum. No clinical or theoretical evidence indicates that excision of the fibroid uterus compromises the life or function of the ovaries unless they are so situated that the operation disturbs their blood or nerve supply. Conservation of menstruation has no value aside from its relation to reproduction.

Interpretation of Vesical Symptoms in Gynecologic Diagnosis

DR. F. E. KEENE, Philadelphia: I cannot emphasize too strongly the importance of making cystoscopic examinations in all gynecologic cases presenting vesical symptoms, even though the condition may seem quite sufficient to explain these symptoms. Not infrequently, by such a plan, lesions will be discovered which were unsuspected and which are of more vital import than those of the pelvic organs.

Perforating Hemorrhagic (Chocolate) Cysts of Ovary

DR. JOHN A. SAMPSON, Albany, N. Y.: Perforating hemorrhagic cysts of the ovary are hematomas of endometrial type. These hematomas manifest their "activity" during the

menstrual life of the patient. Histologically, the epithelial lining of the ovarian hematoma is similar to that of the uterine hematoma owing to the retention of menstrual blood, often present in adenomyoma of the uterus. Periodic hemorrhages occur in the ovarian hematoma which are similar in gross and histologic appearance to that of menstruating endometrium. The chocolate contents of the ovarian hematomas resemble old menstrual blood. That material escaping from the ovarian hematoma may give rise to the development of adenoma of the endometrial type in the tissues thus soiled is further proof that these hematomas contain endometrial tissue.

Torsion of Cecum

DR. SIDNEY A. CHALFANT, Pittsburgh: Torsion of the cecum, while a rare condition, does occur and must be considered in making a diagnosis in obscure cases of intestinal obstruction. This is especially the case in patients presenting a history of obstinate constipation with previous attacks of severe pain in the upper abdomen.

Pneumoperitoneum as Aid to More Accurate Obstetric and Gynecologic Diagnosis

DR. REUBEN PETERSON, Ann Arbor, Mich.: In suitable cases and with the proper technic, gas inflation is free from danger. The method should not be used in cases of acute pelvic inflammation or when disturbances of circulation may arise from sudden abdominal distention. As carbon dioxide gas is absorbed within half an hour, it is preferable to oxygen gas for inflation since the latter gas may not be absorbed for days. Whenever possible the transuterine should be chosen in preference to the transperitoneal route for the introduction of the gas because of the valuable information it furnishes regarding the permeability of the fallopian tube.

Bacteriology and Pathology of Fallopian Tubes Removed at Operation

DR. ARTHUR H. CURTIS, Chicago: Gonorrheal infection is responsible for at least three fourths of all inflammatory lesions of the fallopian tubes. Infection with various types of streptococci has been second in frequency. Tuberculosis, exclusive of generalized tuberculous peritonitis, ranks third. Excepting a few streptococcus infections, bacteria have not been isolated from tubes which fail to show grossly active inflammation. Just as gonorrheal endometritis seldom becomes chronic, so it appears that gonorrheal infection of the tubes runs a quickly self-limited course. The present study sustains previous experience that the colon bacillus does not cause serious tubal disease. In streptococcus infection, tubal involvement is usually only a part of the picture. Perisalpingitis is the most frequent type of tubal lesion, although typical salpingitis occurs with moderate frequency.

Torsion of Uterine Adnexa Occurring Before Puberty

DRS. RICHARD R. SMITH and WILLIAM J. BUTLER, Grand Rapids, Mich.: Only twenty-six cases of torsion of ovarian tumors in childhood have been reported in the literature since 1900. About 50 per cent. occurred between the ages of 8 and 10. Sixty per cent. were dermoids. The symptoms are those of an abdominal crisis similar to that of the same accident in adult life, sudden abdominal pain, vomiting, a variable degree of prostration, tenderness, rigidity, distention, temperature, increased pulse rate, and the presence of an abdominal tumor. The diagnosis is usually difficult. Appendicitis is often the preoperative diagnosis.

Cure of Cystic Cervical Endometritis by the Aid of Multiple Scarification

DR. HENRY T. BYFORD, Chicago: Instead of using the ordinary lance pointed uterine scarificator only on cysts as they become apparent, I use a bayonet pointed one and make from fifty to a hundred punctures into the diseased area or areas from once to twice a week, and make an application of iodized phenol strong enough to destroy or cause atrophy of what remains of the epithelial cells in glands that are already seriously damaged by the inflammatory action, but not strong enough as used to destroy functioning glands. The application consists of one part each of iodine crystals and glycerin and two parts of phenol. A few treatments are made twice weekly, and then once weekly until the surface looks and feels normal.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Disease of Children, Chicago

July, 1921, 22, No. 1

- *Degree of Immunity to Diphtheria Insured by a Negative Shick Test. W. H. Park, New York.—p. 1.
- *Range and Distribution of Blood Pressures in Normal Children. H. K. Faber and C. A. James, San Francisco.—p. 7.
- *Tonsils and Scarlet Fever. J. G. M. Bullowa, New York.—p. 29.
- *So-Called Inanition Temperature of New-Born. C. G. Grulee and B. E. Bonar, Chicago.—p. 44.
- Congenital Absence of Middle Portion of Esophagus. F. C. Neff, Kansas City.—p. 57.
- Recent Progress in Anatomy, Physiology and Pathology of Childhood. J. B. Holmes, Baltimore.—p. 61.

Degree of Immunity to Diphtheria Insured by Negative Schick Reaction.—A negative Schick test in cases which have an active immunity, either natural or acquired, when the toxin used and technic employed have been suitable, Park says, gives an almost complete security from diphtheritic disease, not only for the immediate time but for the future. Those that have natural antitoxin and those who acquire it through toxin-antitoxin injections may harbor diphtheria bacilli, and if they later suffer from tonsillitis, due to other microbes, throat cultures will contain diphtheria bacilli. The positive culture alone suggests but does not establish that the suspected case is one of diphtheria. Under unusual conditions it is possible that when diphtheria bacilli are present in a throat which becomes the seat of some other infection they may develop their toxin and cause superficial lesions in the mucous membrane even though the cases have sufficient antitoxin to give a negative Schick reaction. Cases which present this possibility are rare, and when met with by us have done well without additional injection of antitoxin. In the outbreak discussed by Park the fact that while an extraordinarily large percentage of all the children in the institution were carriers of virulent bacilli, only one group developed cases of tonsillitis with pseudomembranous patches makes it uncertain that the cases were diphtheria.

Blood Pressure in Normal Children.—Normal means and standard deviations for systolic, diastolic and pulse pressure and for pulse and pulse pressure—pulse product have been compiled by Faber and James for boys and girls separately, by year, between the ages of 4 and 16 years. Mean systolic pressure shows no significant difference between the sexes within the period studied. Mean diastolic and mean pulse pressure do show significant sexual differences. Standard deviations are in practically all cases greater for girls, indicating a normally greater variability in female children, which is particularly marked during adolescence. Illustrative examples of the method of measuring deviations in various pathologic states are given. The method, while involving the use of the reference tables, requires only a few seconds to apply.

Tonsils and Scarlet Fever.—Bullowa presents evidence which he believes lends support to the view that the inflamed tonsil is a focus of infection and that the cervical lymph nodes enlarge from it in scarlet fever just as they might enlarge in the absence of scarlet fever. The inflamed tonsil becomes a phlegmon on the wall of the pharynx. Rhythmic swallowing movements when they compress the tonsils force toxins or organisms into the lymph stream with subsequent inflammatory reaction in the adjacent lymph nodes. Prophylactic removal of the tonsil when buried or covered with plica or incision of the plica so as to uncover the tonsil prevents some of the severe complications arising from this source. Painstaking observation of the tonsil during scarlet fever is helpful and leads to the view that the infection is conditioned by the anatomic relations. In certain selected cases, tonsillectomy may be performed with benefit during scarlet fever.

Inanition Temperature of New-Born.—A careful study of observations made by Grulee and Bonar of 182 infants failed to reveal any regular relationship between the inanition or

transitory fever of the new-born and the quantity of fluid ingested, nor did it reveal any definite relationship between the percentage of weight loss and the temperature. The authors, therefore, conclude that the temperature rise in question is not regularly to be explained on the basis of dehydration, and since clinically the condition is clear cut, it would seem likely that the explanation for this fever must be made on some other basis. There could be very little doubt that forcing of food after this temperature has risen is accompanied by a fall so rapid that it seems more than likely that there is a definite causal relation between the taking of food and the fall of temperature. It has been suggested that meconium is a poor medium for the growth of bacteria. With the stimulation to digestion and the flow of the gastric and intestinal juices produced by the taking in of food, the meconium is unquestionably mixed with large quantities of fluid and hence would be rendered a better material for the growth of bacteria. Meconium consists almost entirely of protein material the destruction of which would most readily account for the presence of indican in such a large proportion of urines from new-born infants. With the addition of breast milk to the diet, the putrefactive processes in the intestine are reduced. It seems most likely that temperature elevation at this time may be ascribed to the absorption of some protein products, bacterial or otherwise from the intestines of the new-born. That the condition does not give rise to more serious symptoms than are present may be explained by the transiency of the fever period and by the rapid change of the condition within the intestinal canal.

Annals of Otology, Rhinology and Laryngology, St. Louis

March, 1921, 30, No. 1

- Etiology of Acute Inflammations of Nose, Pharynx and Tonsils. S. Mudd, S. B. Grant and A. Goldman.—p. 1.
- Borderland of Otolaryngology and Ophthalmology. H. W. Loeb and M. Wiener, St. Louis.—p. 74.
- Developmental Anatomy of Temporal Bone. L. Rogers, Minneapolis.—p. 103.
- Radical Treatment for Chronic Suppuration of Antrum with Modification of Canfield Technic. W. H. Theobald, Chicago.—p. 131.
- Submucous Replacement for External Deviation. T. E. Oertel, Augusta, Ga.—p. 147.
- Foreign Body in Esophagus Removed by External Esophagotomy; Cure. J. N. Roy.—p. 159.
- Borderline Diseases of Esophagus. H. L. Lynah, New York.—p. 164.
- Removal of Tonsils in Presence of a Peritonsillar Abscess. J. Holinger, Chicago.—p. 195.
- Report of Cases. 1. Simple Mastoidectomy on Man, 81 Years Old. 2. Infective Sigmoid Sinus Thrombosis—a Positive Blood Culture with Streptococcus Mucosus Capsulatus Present. J. W. White, Norfolk, Va.—p. 199.
- Lethargic Encephalitis as Postoperative Complication of Acute Mastoiditis; Report of Case. M. J. Siegelstein, New York.—p. 201.
- Tonsillar Hemorrhage. T. E. Fuller, Texarkana, Ark.—p. 205.
- Pathologic Nasal Accessory Sinuses in Children. F. W. White, New York.—p. 221.
- Atypical Mastoiditis; Report of Three Cases. E. Gill, Roanoke, Va.—p. 228.
- Accidents in Aural Paracentesis. J. F. Strauss, Chicago.—p. 232.
- Asthenic Hypoacusis. H. J. Inglis, Boston.—p. 237.
- Paralysis of External Rectus in Right Eye Following Mastoiditis in Left Ear. D. Roy, Atlanta, Ga.—p. 244.

Illinois Medical Journal, Oak Park

July, 1921, 40, No. 1

- State Medicine in Germany. E. Ries, Chicago.—p. 1.
- Jejunal Diverticula. H. N. Mackechnie, Chicago.—p. 4.
- Mental Reconstruction. R. T. Hinton, Elgin.—p. 9.
- Obesity. J. Kercher, Chicago.—p. 14.
- Seeing and Believing in Diagnosis of Smallpox. A. L. Hoyne, Chicago.—p. 22.
- Blood Transfusion. R. King, Olney.—p. 25.
- Diabetes Insipidus. H. A. Cables, E. St. Louis.—p. 28.
- Prevention of Deformities of Extremities. A. B. McQuillan, E. St. Louis.—p. 29.
- Diagnosis and Treatment of Ureter Obstruction. F. Buckmaster, Effingham.—p. 31.
- Lessons of World War for Internist. H. Brooks, New York.—p. 37.
- Intestinal Sand; Report of Case of Twenty Years' Standing. F. M. Fuller, Keokuk, Ia.—p. 45.

Journal of Orthopaedic Surgery, Lincoln, Neb.

June, 1921, 3, No. 6

- Fractures Occurring in Bone Grafts. S. A. Smith, Cardiff, Wales.—p. 270.
- Possibilities of Suture After Extensive Nerve Injury. M. F. Brown, Bangour.—p. 277.

Journal of Urology, Baltimore

April, 1921, 5, No. 4

- *Primary Carcinoma of Kidney with Impacted Ureteral Calculus. H. G. Bugbee, New York.—p. 267.
- Varying Types of Prostatic Obstruction. A. Randall, Philadelphia.—p. 287.
- Treatment of Gonorrhea and Its Complications with Vaccines. W. W. Townsend, Burlington, Vt.—p. 309.
- Stopcock and Fittings for Attaching Chismore Evacuating Bulb to Buerger Cystoscope. V. C. Pedersen, New York.—p. 313.
- *Relation Between Spina Bifida Occulta and Certain Cases of Retention. A. L. Chute, Boston.—p. 317.
- *Primary Carcinoma of Male and Female Urethra. R. F. O'Neil, Boston.—p. 325.
- *Tuberculosis of Kidney Complicated by Impacted Pelvic Calculus. H. A. Fowler.—p. 345.
- *Use of Mercurochrome As General Germicide. H. H. Young, E. C. White and E. O. Swartz, Baltimore.—p. 353.
- Fluoroscopic Examination of Injected Kidneys, and Report of Case. F. R. Hagner.—p. 389.
- New Combined Cystoscopic and Roentgen-Ray Table. H. H. Young, Baltimore.—p. 391.

Primary Carcinoma of Kidney.—Bugbee's patient was a man, aged 44, who gave a history of renal colic as far back as 1892. Fifteen years ago he had another attack, following which he noticed that after riding horseback his urine was sometimes claret-colored, but he had no colic or other urinary disturbance. He had no serious illness or urinary symptoms until October, 1918, when he had a severe attack of influenza. Two weeks after the onset of the influenza he developed profuse hematuria, pain and tenderness in the left upper quadrant and left lumbar region. Later moderate frequency and urgency of urination were noted, and a mass was palpable in the left upper abdomen. He rapidly lost flesh and strength, became decidedly anemic. There was an indefinite mass in the left upper quadrant and lumbar region, which was not hard, was slightly tender and movable. The right kidney could not be felt. The external genitalis, prostate and vesicles were negative. A roentgenogram revealed a large oval calculus in the left ureter at the point of obstruction to the catheter, 25 cm. from the bladder. Pyelogram showed the renal pelvic outline destroyed. The preoperative diagnosis was impacted uterine calculus and pyonephrosis. The postoperative diagnosis was primary carcinoma of the kidney. The patient died five months later.

Spina Bifida Occulta and Retention.—The mechanism of the retention in these cases, Chute believes, is probably an interference with the nerve supply of the detrusor due to a pulling or to a pressure on fibers of the cauda which results in a partial paralysis of the muscle. As the cause of the retention in these patients is probably due to a mechanical interference with fibers of the cauda, it is useless to look for permanent relief by any means other than attacking the problem mechanically at the point where the interference has taken place. Operations carried out for the relief of symptoms caused by spina bifida occulta in general have consisted either in dissecting out the fatty, fibrous mass pressing on the cord or cauda or in separating the nerve fibers that are attached to the scar that fills the bony defect in the vertebral canal. Usually this is followed by a plastic operation to close the defect in the body canal. These operations have not been as a whole very satisfactory, but they have occasionally given remarkable results. They seem to be attended with neither the mortality nor the discouraging results that have attended most operations on cases of ordinary spina bifida cystica. It would seem probable that the earlier these operations were carried out, the more hopeful the outlook for the restoration of the bladder function. In some cases of long duration a pressure myelitis has developed. Chute believes that this condition of spina bifida occulta will be found to explain certain very perplexing and trying bladder conditions.

Primary Carcinoma of Urethra.—Two cases are reported by O'Neil, and the literature is reviewed. From the age of the reported cases, the disease rarely occurs before 50. Among the predisposing causes trauma is mentioned, also leukoplakia resulting from chronic urethral irritation. Stricture is present in more than 50 per cent. of the cases. In the majority of the cases the bulbous urethra is the seat of the neoplasm. The early symptoms are not characteristic of

the malignant nature of the lesion and are generally such as would coincide with the ordinary urethral stricture. One of O'Neil's cases was typical in history and examination of urethral stricture with abscess, but no pus was found on incision; instead, a brittle cavity surrounding the bulbous urethra, the tissue removed showing carcinoma.

Impacted Pelvic Calculus in Tuberculous Kidney.—That true stone and tuberculosis do at times occur in the same kidney is shown by Fowler's case, in which the stone was impacted in the pelvic ureter, causing complete obstruction. By reason of the occlusion, Fowler was unable to obtain any secretion from the right kidney, and was unable, therefore, to determine the nature of the tumor mass before operation. The real pathology was not suspected until the excised kidney was examined.

Mercurochrome as General Germicide.—The authors report on 187 cases of urethritis, 40 cases of cystitis and 17 cases of pyelitis, treated with mercurochrome. Mercurochrome is an effective germicide but has not proved to be vastly superior to all other drugs in acute gonorrhea, although certainly quite efficient. The intense stain is a drawback to its use as an injection by the patient. Acriflavine is free from this objection. In chronic infections of the urethra, prostate and vesicles its great value has been amply proven. It penetrates deeply and may be found in the prostatic secretion several days after posterior instillation. The results obtained in many cases of chronic cystitis are remarkable, long standing infections often clearing up in a few treatments. The coccus infections are more resistant to mercurochrome than the colon bacillus infections. In some cases which fail to become sterile, constant reinfection of the bladder is found to occur from kidneys or prostate. Mercurochrome is less irritating and produces less reaction in the renal pelvis than silver nitrate solution, while possessing about equal germicidal powers, but in some cases both drugs should be used alternately, and sometimes silver is better. Continued use has proved mercurochrome to be a most satisfactory dressing for venereal ulcerations and buboes. In general surgery, reports indicate that mercurochrome is very valuable in dressing open wounds and sinuses. The germicidal efficiency of the drug in other branches of medicine and surgery has been proved, especially in the treatment of infections of the throat, nose, sinuses, ear and eye. It is reported to be most efficient in disinfecting the throats of diphtheria carriers.

Laryngoscope, St. Louis

June, 1921, 31, No. 6

- Cosmetic Surgery of Nose. G. Selfridge, San Francisco.—p. 337.
- Equilibrium and Vertigo. F. C. Lewitt, San Francisco.—p. 347.
- Double Mastoid Operation; Acute Thyrorenal Exhaustion. J. G. Callison, New York.—p. 359.
- Case of Facial Paralysis. A. M. Rooker, Niagara Falls, N. Y.—p. 363.
- Case of Extensive Lateral Sinus Thrombosis, with Special Reference to Low Resection. H. M. Goodyear, Cincinnati.—p. 365.
- Tuberculosis of Middle Ear. F. Leegaard, Christiania, Norway.—p. 374.

Michigan State Medical Society Journal, Grand Rapids

June, 1921, 20, No. 6

- Existing Relations Between Medical Profession and Public and Future Tendency. A. McLean, Detroit.—p. 225.
- Manifestations of Damage from Labor. C. H. Judd, Detroit.—p. 231.
- Pretuberculous Child in Schools. L. Jones, Flint.—p. 234.
- Chemical Blood Analysis as Diagnostic Aid. O. A. Brines, Detroit.—p. 235.
- Subcutaneous Emphysema Due to Ruptured Larynx in Untreated Case of Diphtheria. M. B. Kay, Detroit.—p. 240.
- Two Cases of Epidemic Encephalitis. S. Wilson and F. Weiser, Detroit.—p. 241.
- Case of Intra-Uterine Fractures. M. Burnell, Flint.—p. 243.

July, 1921, 20, No. 7

- Attainment of Certain Ideals in Obstetrics. A. M. Campbell, Grand Rapids.—p. 263.
- Digitalis Therapy. J. B. Whinery, Grand Rapids.—p. 266.
- Peripheral Nerve Injuries. W. T. Dodge, Big Rapids.—p. 268.

Military Surgeon, Washington, D. C.

June, 1921, 48, No. 6

- Part of Medical Department in Maintaining Military Morale. L. C. Duncan.—p. 613.
- Diseases Described by Medical Men Who Suffered with Them. H. Rolleston, London.—p. 648.

- Department of Epidemiology for Army Divisions. O. G. Brown.—p. 657.
Malignant Tumors in United States, 1917-1919. W. P. Finney.—p. 672.
Two Panama Mosquitos. H. G. Dyar and C. S. Ludlow.—p. 677.
Measles Virulence: Explanation of Variation. J. G. Cumming, Ann Arbor, Mich.—p. 681.
Costochondral Graft for Repair of Skull Defects. A. M. Hanson, Fairbault, Minn.—p. 691.

Minnesota Medicine, St. Paul

May, 1921, 4, No. 5

- Cleft Palate and Harelip Procedures. T. W. Brophy, Chicago.—p. 283.
Cleft Palate and Harelip. W. L. Shearer, Omaha.—p. 293.
Attempt to Unify and Harmonize Points of View of Medical and Dental Professions Toward the Constitutional Influence of Dental Pathology. W. E. Mentzer and E. L. Tuohy, Duluth.—p. 305.
Consideration of Treatment of Lesions of Thyroid Gland. E. S. Judd, Rochester, Minn.—p. 315.
Puncture of Antrum of Highmore. H. R. Lyons, Rochester, Minn.—p. 319.

Missouri State Medical Association Journal, St. Louis

July, 1921, 18, No. 7

- Diagnosis and Treatment of Brain Tumors. E. Sachs, St. Louis.—p. 217.
Radiotherapy in Nonmalignant Gynecologic Diseases. G. Gellhorn, St. Louis.—p. 220.
Radiotherapy in Malignant Gynecologic Diseases. F. J. Taussig, St. Louis.—p. 224.
Conservative Tendencies in Modern Gynecologic Therapy. H. Ehrenfest, St. Louis.—p. 226.
*Experiences with Lyon-Meltzer Method for Diagnosis of Gallbladder Disease. J. E. Cook and L. F. X. Wilhelm, St. Louis.—p. 230.
Pompholyx. R. C. Lounsbury, Springfield.—p. 232.

Lyon-Meltzer Method of Diagnosis of Gallbladder Disease.—Their experience does not encourage Cook and Wilhelm to attach great diagnostic weight to evidence obtained by means of the Meltzer-Lyon method, mainly for the reason that too often there is doubt as to the source of the bile obtained.

Nebraska State Medical Journal, Norfolk

July, 1921, 6, No. 7

- Infantile Eczema. F. S. Clarke, Omaha.—p. 193.
Infantile Cyclic Colic. J. V. Reilly, Grand Island.—p. 195.
Dry Milk in Infant Feeding. E. V. Wiedman, Lincoln.—p. 197.
Civilian Surgeon's Story of Great War. H. W. Orr, Lincoln.—p. 201.
Three Hysterectomies. W. H. Betz, Omaha.—p. 204.

New Jersey Medical Society Journal, Orange

July, 1921, 18, No. 7

- Chorea; A Case. C. F. Adams, Hackensack.—p. 223.

New Orleans Medical and Surgical Journal

July, 1921, 74, No. 1

- Importance of Securing Bony Union Following Fracture of Patella. E. D. Martin, New Orleans.—p. 4.
Inorganic Constituents of Blood as Related to Internal Medicine. W. Denis, New Orleans.—p. 8.
*Hemorrhage into Upper Digestive Tract, with Especial Reference to Arterial Disease as Cause. S. K. Simon, New Orleans.—p. 13.
*Treatment of Granuloma Inguinale. W. A. Reed and M. Wolf, New Orleans.—p. 25.

Hemorrhage Into Digestive Tract.—The occurrence of massive hemorrhage into the digestive tract has been observed by Simon in three patients, as a result, apparently in each instance, of a diseased state of the arterial system with especial localization in the vessels of the stomach and duodenum. While the presence of arterial disease could not be verified, because of lack of opportunity for direct inspection at the site of the hemorrhage, nevertheless the close association exhibited by the vascular accident in each case, with a manifestly morbid state of the arterial system as a whole, has seemed sufficient to warrant the assumption of some definite relationship between the two conditions.

Treatment of Granuloma Inguinale.—The old classical form of treatment having failed to yield any results in these cases, Reed and Wolf infected tartar emetic intravenously. Solutions of antimony and potassium tartrate are prepared with freshly distilled sterile water in 1 per cent. strengths and intravenous injections are given at intervals of from three to seven days, starting with an initial dose of from 2 c.c. and increasing the amount 2 c.c. each time until therapeutic results are obtained. Some of these patients are receiving as much as 14 c.c. at an injection. A few slight and tran-

sient reactions have been observed. A sudden paroxysm of coughing occurred in one case immediately after the injection and in another diarrhea and vomiting occurred. These two reactions occurred on reaching a dose of 8 and 10 c.c., respectively. The authors have been able to demonstrate the Donovan bodies in three of these cases and at the present time are endeavoring to grow cultures of the organism with a view of inoculating experimental animals if possible.

New York Medical Journal

July 6, 1921, 114, No. 1

- Cooperation in Endocrinology as an Introduction to Research on Morphologic Constitution. J. A. Hammar, Upsala, Sweden.—p. 1.
Relation Between Suprarenal Cortex and Sexual Development. K. H. Krabbe, Copenhagen.—p. 4.
Problem of Suprarenals. E. Gley, Paris, France.—p. 9.
Evolution from Status Thymicolymphaticus. W. Timme, New York.—p. 12.
Endocrine Dyscrasias in Production of Epileptic States. J. H. Leiner, New York.—p. 16.
Endocrines in Everyday Practice. C. E. De M. Sajous, Philadelphia.—p. 20.
Endocrine Tropisms. D. M. Kaplan, New York.—p. 26.
Study of High Blood Pressure in Women from Endocrine Point of View. J. Gutman, Brooklyn.—p. 31.
Endocrines as Factors in Causation and Treatment of Dysmenorrhea. W. V. P. Garretson, New York.—p. 35.
Radium and Roentgen-Ray Treatment of Hyperthyroidism. C. A. Simpson, Washington, D. C.—p. 36.
Ophthalmologic Implications of Endocrinology. P. Fridenberg, New York.—p. 38.
Clinical Value of Basal Metabolism Determinations in Diseases of Thyroid Gland. H. O. Mosenthal, New York.—p. 41.
Basal Metabolism and Endocrine Manifestations. A. S. Blumgarten, New York.—p. 43.
Relation of Endocrine Disturbance to Tinnitus Aurium. J. C. Scal, New York.—p. 47.
Progressive Systemic Deafness as an Endocrine Syndrome. J. G. Callison, New York.—p. 48.
Effect of Pituitary Extract on Rate of Urine Formation in Man. R. McBrayer, Sanatorium, N. C.—p. 53.

Philippine Journal of Science, Manila

January, 1921, 18, No. 1

- Fauna of Vigo Group: Its Bearing on Evolution of Marine Molluscan Faunas. R. E. Dickerson, San Francisco.—p. 1.
Philippine Scyphomedusan Jellyfishes. S. F. Light.—p. 25.
New Philippine Moraceae. E. D. Merrill, Manila.—p. 49.
New or Noteworthy Philippine Birds, III. R. C. McGregor, Manila.—p. 75.
Relation of Stocks to Mottled Leaf of Citrus Trees. H. A. Lee.—p. 85.
Enumeration of Japanese Aphelininae, Descriptions of Two New Species. S. Nakayama.—p. 97.

Southern Medical Journal, Birmingham

July, 1921, 14, No. 7

- *Radiography as an Aid in Differential Diagnosis of Pulmonary Disease. J. S. McLester, Birmingham.—p. 511.
Fluid in Pleural Cavity. W. W. Rucks, Oklahoma City.—p. 517.
*Diabetes Mellitus in Negro Race. I. I. Lemann, New Orleans.—p. 522.
Diagnosis and Treatment of Tuberculous Colitis. A. W. Calloway, Asheville, N. C.—p. 525.
Malnutrition in Children After First Year of Life. L. T. Royster, Norfolk, Va.—p. 532.
Milk and Butter in Nutrition of Childhood. W. H. Donnelly, Brooklyn.—p. 539.
Birth Trauma. W. D. Hereford, Huntington, W. Va.—p. 542.
*Ligation of Superior Thyroids in Patients with Exaggerated Toxic Symptoms. E. G. Jones, Atlanta, Ga.—p. 545.
Conservation in Skull and Brain Injuries. J. S. Turberville, Century, Fla.—p. 551.
*Case of Tuberculosis of Fascia. J. H. Blackburn, Bowling Green, Ky.—p. 556.
*Surgery of Bones and Joints: Description of New Operative Technic. M. Skinner, Selma, Ala.—p. 558.
Treatment of Fractures and Dislocations. F. G. Hodgson, Atlanta.—p. 566.
*Diverticulum of Ureter. J. H. Neff, University, Va.—p. 568.
Hydatidiform Moles: Case Report. C. R. Hannah, Dallas, Tex.—p. 572.
Operative Treatment of Chronic Suppurative Otitis Media, Comparative Indication of Radical and Modified Radical Operation. W. K. Simpson, Memphis.—p. 574.

Roentgenography in Diagnosis of Pulmonary Tuberculosis.—McLester summarizes his paper by stating that radiography in diseases of the lung will point at times unerringly to the correct diagnosis; at other times it will be of small value or entirely misleading; at all times it must be regarded merely as one phase of clinical inquiry.

Diabetes Mellitus in Negro.—Lemann's analysis of the hospital records of 160,044 patients with reference to the incidence of diabetes shows that this disease occurred in 0.86 per thousand negroes and 1.4 per thousand whites. All told

there were 194 cases of diabetes among the 160,044 admission. Diabetes is less common among the negroes than among the whites. The negro portion of the admissions is roughly 40 per cent., the negro portion of diabetes is 30 per cent., but the negro portion of such diseases as syphilitic iritis, gumma of the brain, gumma of the liver, aneurysm of the aorta, is 60 and 70 per cent. The negro portion of all cases of acquired syphilis is 56 per cent. and of congenital syphilis 52 per cent. If syphilitic pancreatitis is the chief or even a frequent factor in the production of diabetes, Lemann thinks it is strange that one does not see an abundance of diabetes in the negro services of the hospital which are so rich in all other syphilitic phenomena. It is fair to conclude, he says, that syphilis is playing an important part in producing diabetes.

Ligation of Superior Thyroids.—Jones analyzes replies received to a questionnaire sent to the surgeons as to the results of ligation of the superior thyroids for goiter. On the whole the procedure is endorsed.

Tuberculosis of Fascia.—Blackburn's case was one of multiple cold abscesses which were metastases from a primary focus in the genito-urinary tract, limited by the fascia of different regions of the body. At no point was there a direct extension from a primary bone or lymphatic focus as is usually found.

Muscle Flap for Hip Arthroplasty.—Instead of using a fat and fascia flap for interposition between the head of the femur and the acetabulum, Skinner dissects up the two outer glutei from their point of insertion into the trochanter and then perforates this muscle flap at its base, threading the great trochanter through the perforation so that the two outer glutei muscles drop naturally in between the bones and they are quite thick enough and broad enough to prevent ankylosis.

Diverticulum of Ureter.—In the only two cases of this kind on record Neff says the defect was discovered after death and apparently had caused no harm during life. His own patient had had twenty or thirty typical attacks of right-sided renal colic. At operation he found about 8 cm. above the bladder a diverticulum coming off from the posterior lateral aspect of the ureter. The diverticulum was removed and the opening in the ureter repaired with interrupted sutures of catgut. The diverticulum measured 13 cm. in length and 2 cm. in diameter at the point of its ureteral attachment.

Tennessee State Medical Ass'n Journal, Nashville

June, 1921, 14, No. 2

Present Status of Practice of Medicine and of Medical Education. L. L. Sheddan, Knoxville.—p. 41.

Treatment for Concomitant Squint; Plea for Early Operative Interference in Children; New Operation. O. Wilkinson, Washington, D. C.—p. 52.

Classification of Streptococcus. L. Arnold, Nashville.—p. 56.

Treatment of Catarrhal Deafness, with Especial Reference to Tinnitus Aurium. R. McKinney, Memphis.—p. 62.

Wisconsin Medical Journal, Milwaukee

June, 1921, 20, No. 1

Use of Stimulants in Pneumonia. L. M. Warfield, Milwaukee.—p. 1. Surgical Treatment of Empyema Complicating Pneumonia. W. Cunningham, Platteville.—p. 4.

Pathology of Pneumonia Found in Recent Epidemics of Influenza. D. Hopkinson and E. L. Tharinger, Milwaukee.—p. 10.

Local Anesthesia in Thyroidectomies. H. F. Derge, Eau Claire.—p. 14. Megacolon. T. W. Nuzum, Janesville.—p. 17.

*Sacro-Iliac Joint Arthrodesis by Bone Splitting Method. F. J. Gaenslen, Milwaukee.—p. 20.

Sacro-Iliac Joint Arthrodesis.—The operative plan described by Gaenslen has been used in four cases, brief reports of which are given. A curved incision is made parallel to and about one-half inch above the crest of the ilium through the skin and subcutaneous tissue, extending from just behind the middle of the crest to the posterior inferior spine of the ilium. The flap is then dissected free to the outer margin of the crest. With a broad, flat chisel the posterior portion of the ilium is split to a depth of about two and a half inches into an inner and an outer leaf. The outer flap is broken at its base and deflected outward as far as possible,

stripping off the periosteum from the adjacent portion of the ilium just below and anterior in order to increase the working space. The inner leaf of the split portion of the ilium is cut on a level with a point just above the posterior inferior spine to the extent of two inches. A vertical cut about one and a half inches in length is made from the anterior end of this incision extending toward the crest of the ilium at a point joining the middle and posterior third of the crest. The two points are now joined with a third chisel cut, a triangular piece of bone, therefore, being removed. The destruction of the joint is begun at the lowermost border of the sacro-iliac joint where it is plainly in view, and is carried forward from this point, working forward and slightly outward in general in the direction of the anterior superior spine of the same side. After eradication of the joint the deep trough is filled up with healthy cancellous bone chips removed during the course of the operation. The deflected outer leaf of the ilium is then brought into position and sutured along the crest to the inner leaf of the ilium which has been allowed to remain standing. In several cases the inner leaf was broken off toward the medical side, but in perfecting the technic of the operation on the cadaver it was found that the inner leaf could be left standing without adding to the difficulties of the operation.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

June, 1921, 2, No. 3

*Reaction of Blood in Secondary Anemia. C. L. Evans.—p. 105.

Mechanism of Autolysis in Paroxysmal Hemoglobinuria. W. Yorke and J. W. S. Macfie.—p. 115.

*Antigenic Properties of Acetone-Extracted Bacteria. S. R. Douglas and A. Fleming.—p. 131.

Blood Reaction in Secondary Anemia.—Although the immediate effect of hemorrhage is a lowering of the alkali reserve of the blood, Evans claims that the response of the respiratory centers may partially compensate, or even overcompensate, for this change, so that the circulating blood may be either more acid, or less acid, or of the same reaction even after as before the hemorrhage. After twelve hours the reduction in alkali reserve is compensated, owing to increased excretion of acid by the kidney; subsequently the alkali reserve of the blood may become higher than the normal and remain at this level until the corpuscular regeneration is complete. The response is a protective one against acidosis.

Antigenic Properties of Acetone Extracted Bacteria.—Douglas and Fleming state that acetone-extracted bacilli form a convenient way of storing bacilli and apparently keep their antigenic properties unchanged indefinitely. They are very easily dissolved by tryptic and other proteolytic ferments. When employed as vaccines, acetone-extracted bacilli appear to have antigenic properties fully as great as vaccines made by other methods. They also form a very suitable antigen for use in complement fixation tests. Suspensions of these extracted bacilli are agglutinated by immune serum only after a long period and by dilutions more concentrated than is the case with suspensions of living or formalised bacilli. Preliminary experiments appear to show that acetone-extracted bacilli which have been digested with trypsin when injected into animals produce a marked increase (equal to or greater than undigested bacilli) of the bactericidal power, but the increase of the agglutinating power is very much less marked.

British Medical Journal, London

June 25, 1921, 1, No. 3156

*Intrinsic Cancer of Larynx. St. C. Thomson.—p. 921.

*Hematuria as Seen by Surgeon. A. Fullerton.—p. 923.

*Schick Reaction. G. Ward.—p. 928.

Treatment of Syphilis in Macedonia on Active Service. T. H. Fowler.—p. 930.

Retrograde Catheterization for Impermeable Stricture of Urethra. W. J. Foster.—p. 931.

Suggested Autoinoculation of Rodent Ulcer. S. C. Dyke.—p. 932.

Pernicious Anemia: Repeated Doses of Calomel: Recovery. J. C. Ferrier.—p. 932.

Primary Organism in Cultures. C. B. Dyson.—p. 932.

Tartar Emetic for Venereal Granuloma. W. E. Giblin.—p. 932.

Intrinsic Cancer of Larynx.—An analysis is made by Thomson of fifty cases. Intrinsic cancer of the larynx originates on the vocal cords or in the subglottic area. It has never been found in the posterior commissure (interarytenoid region), nor originating from the ventricular bands or the ventricle of Morgagni in fifty cases carefully examined both indirectly with the mirror and by direct inspection after splitting the larynx. A malignant growth may originate on any part of a cord, but is more common in the central portion or anterior half than in the posterior area of the larynx. As is now well known, an epithelioma originating in this region remains for a long time limited to the cord affected and the adjoining side of the larynx, but it may cross the anterior commissure, and, in later stages, it invades the arytenoid and the area to the outer side of it. The inner surface of the cord may be affected primarily or by extension. The subglottic area may be invaded by a growth originating in a cord. But a cancer may also start below the level of the cords, in the subglottic area. A subglottic cancer is much more in the anterior than in the posterior half of the larynx. As regards prognosis: The superficial or projecting tumors of limited extent are the most favorable. Those situated in the middle third or anterior half of the cord are more promising than those invading the anterior commissure in front or the arytenoid region behind. Growths embedded in a cord, or extending into it below an intact mucosa are not so favorable. An epithelioma extending along the inner margin of a cord is still less favorable. Subglottic cancers are very unpromising as regards lasting cure by laryngofissure. They are frequently associated with impaired mobility or complete fixation of a cord. As regards operation: In every case, however limited the growth, the entire vocal cord should be excised from the anterior commissure up to and including the vocal process of the arytenoid. The growth, with as wide a margin as possible of apparently healthy tissue all round it, should be removed in one mass; the excision should therefore go down to the lower edge of the subglottic area; above, it should pass through the healthy ventricular band; and externally it must include the perichondrium lining the thyroid ala. To facilitate this the thyroid ala should be removed so that a laryngo-fissure is really a partial hemilaryngectomy.

Hematuria.—Tuberculosis of the urinary tract is very common in the North of Ireland. Nearly 10 per cent. of all cases cystoscoped by Fullerton had urinary tuberculosis, and in 75 per cent. of these hematuria was present. In the overwhelming majority the primary focus, as far as the urinary tract was concerned, was the kidney. In Fullerton's experience tuberculosis of the bladder, arising secondarily to deposits in the epididymis and testicle, is comparatively rare. Primary tuberculosis of the bladder, if it occurs at all, is so rare that such a diagnosis should not be made except after the most careful examination of all parts of the urinary tract. The character of the hematuria in most cases of tuberculosis of the urinary tract resembles that found in bad cases of cystitis. The blood comes for the most part from ulcers on the bladder wall. Severe hematuria from the kidney is not, in Fullerton's experience, frequent. He has seen forty-seven cases of renal hematuria in which it was the only symptom of disease except for some renal colic in a few, due, no doubt, to the passage of small clots down the ureter. In forty-four cases of renal calculus, out of sixty-one examined, the presence of blood was noted. The two cardinal signs of renal calculus are renal colic and hematuria, one or other or both of which may be entirely absent. Vomiting is also frequently present. Radiography will detect the smallest calculus. Hematuria was found in 113 cases of cystitis. In all it was moderate, and was often only discovered on microscopical examination. When visible it was generally of the terminal type, occurring at the end of micturition in the form of a few drops of blood with the last drops of urine. In some cases, and especially in those known as hemorrhagic cystitis, blood was mixed with the main part of the urine, although more pronounced in the last portion. Some of the most severe cases of hematuria met with were due to tumors of the bladder. In some cases, however, the hemorrhage was trifling—at any rate, in the earlier stages.

Out of forty-six cases of vesical calculus examined the presence of blood is mentioned in thirty-four. Other conditions in which hematuria occurs are also discussed by Fullerton.

Schick Reaction.—Ward has made a careful study of this reaction. The test has given her very definite data as to which years are the most dangerous with regard to diphtheria infection in a child's life. These are between 6 months and 6 years, while the periods of lowest susceptibility appear to be under 6 months and over 15 years. These results are endorsed by clinical experience. It is of great value in deciding the difficult question of whether a patient is a carrier or is really suffering from diphtheria. It has, perhaps, its greatest value in showing to whom, among persons exposed to infection (for example, contacts, doctors and nurses), we may safely omit to give antitoxin—thus greatly minimizing the risk of anaphylaxis and also saving pain and expense. When possible, only those nurses who give a negative Schick reaction should be employed in diphtheria wards. Ward was able by means of the Schick test to ascertain, in cases which have previously had the disease or have had antitoxin, to what extent their immunity persists, and whether they have sufficient antibodies to overcome a fresh infection.

China Medical Journal, Shanghai

May, 1921, 35, No. 3

- Artificial Feeding of Foreign Babies in China. H. B. Taylor.—p. 193.
Parasites of Vertebrates of North China. E. C. Faust.—p. 196.
Treatment of Trachoma. C. C. Rush.—p. 211.
*Fibroma Molluscum; Report of Extensive Case. E. S. Tyau.—p. 213.
Postoperative Catheterization. R. G. Mills.—p. 217.
Report of Research Committee of China Medical Missionary Association on Pulse and Blood Pressure in Normal Individuals. W. W. Cadbury.—p. 242.
Analyses of Some Chinese Foods. H. Embrey and T. C. Wang.—p. 247.
Pathology and Its Relation to Medicine. C. Y. Wang.—p. 258.
Case of Hydatidiform Mole. W. C. Sweet.—p. 264.
Value of Hospital Records. L. F. Heimburger.—p. 265.

Four Thousand Tumors in Case of Fibroma Molluscum.—In 1880, Hashimoto reported a case of fibroma molluscum with 4,503 growths. In Tyau's there were 7,241 tumors. The man was 54 years of age. These growths began at 14. Although he was thickly covered from head to foot with nodules of various sizes, there was no feeling of pain or itching, no discomfort beyond a little inconvenience. His health and weight were not affected in the least until latterly. Two months ago he had an attack of dysentery with mucosanguinous stools numbering over ten times a day. This obliged him to lie in bed for a month. He then noticed pressure sores on his back followed by ulceration of the larger nodules over the lumbar region and nape with slight pain and offensive discharge. His entire body was well covered with profuse numbers of nodules most thickly over the back, then the head, neck, upper extremities, chest, and a few on the lower parts of the body. The palm, sole, and axillary regions remained free. There were also a few small nodules in the conjunctiva, the upper lip and palate. A great number of these growths were deeply imbedded in the subcutaneous tissue, as proved by necropsy, and these were not included in the grand total of 7,241. In size, they varied from that of a pinhead to that of a large potato; in shape, the smaller growths were mostly round and slightly elevated while the larger ones were pedunculated, pendulous, round or pyriform.

Glasgow Medical Journal

May, 1921, 13, No. 5

- *Examination of Blood in Cases of Cancer of Breast in Regard to Operation and Prognosis. E. D. Anderson.—p. 321.
Defects in Cardiac Rhythm in Relation to Cardiac Failure. G. A. Allan.—p. 333.
Cookery and Digestion. J. Adam.—p. 351.

Blood in Breast Cancer.—In addition to breast cases, cases of cancer of the uterus, lip, tongue and stomach, which were diagnosed clinically before operation, were also examined by Anderson. Of thirty cases examined, twenty-one were seen before operation. The average leukocyte count of these cases was 8,962 per c. m., and the average of the first count after operation in twenty cases (one being inoperable) was 7,410 per c. m. Eleven of the twenty-one patients has a

leukocyte count of over 10,000 per c. m. before operation. The highest leukocyte figure obtained in the thirty cases was 14,400. One week after operation. A fortnight later the leukocytes had fallen to 7,800 per c. mm. Five months later the leukocytes numbered 9,800 per c. mm. The changes in the number and appearance of the red cells were not very outstanding. The hemoglobin figure ranged from 40 to 75 per cent. The color index figure showed little change after operation. In none of the innocent cases was there a leukocyte count of over 10,000, either before or after operation.

Indian Medical Gazette, Calcutta

May, 1921, 56, No. 5

- Plea for More Frequent Use of Intravenous Medication, with Special Reference to Use of Iodin. J. W. Porter.—p. 161.
*Modified Bassini Method for Radical Cure of Hernia by Plication and Overlapping of Externus Obliquus Abdominis. K. K. Chatterji.—p. 162.
Chronic Lead Poisoning in Printing Presses of Calcutta. J. J. Campos.—p. 175.

Modified Bassini Method for Cure of Hernia.—After suturing the internal oblique muscle with Poupart's ligament, thus closing the inguinal canal and forming a floor for the cord, Chatterji lets it repose on it. He overlaps the external oblique in Halstead fashion and, while doing so, plicates its fibers, taking in here and there a few fibers of the internal oblique and transversalis. This strengthens the anterior wall and at the same time does not split the fibers of the external oblique, as in Halstead's operation.

International Journal of Psycho-Analysis, London

1920, 1, No. 4

- Child is Being Beaten. Contribution to Study of Origin of Sexual Perversions. S. Freud.—p. 371.
Erotism as Portrayed in Literature. F. J. Farnell, Providence, R. I.—p. 396.
Note on Hazlitt. L. C. Martin.—p. 414.
Trivial Incident. X.—p. 420.
Word-Play in Dreams. D. Bryan.—p. 423.

Japan Medical World, Tokyo

June 20, 1921, 1, No. 2

- *Experimental Study on Prophylactic Inoculation of Typhus Fever. S. Kusama.—p. 1.
*Prophylactic Inoculation in Human Against Scarlet Fever. I. Takahashi.—p. 4.
So-Called Digestive Ulcer of Gastro-Intestinal Tract. S. Goto.—p. 7.
Beri-Beri Like Disease in Mammalian Animals. M. Murata.—p. 12.
Transplantation of Rat Sarcoma in Adult Heterogeneous Animals. Y. Shirai.—p. 14.

Experimental Prophylactic Inoculation Against Typhoid.—None of the twelve monkeys that had been injected by Kusama either hypodermically or intravenously with such a small quantity of the virus as one-tenth or less of the minimum morbid dose had a febrile attack. This fact is important for the virus was injected without being attenuated. The degree of the immunity thus obtained was not the same with all the animals, as in the first experiment the hypodermic prophylactic injection protected the animals against fifty times the minimum morbid dose; in the second experiment, in which the prophylactic injection was made both hypodermically and intravenously, the animals were protected against five times the minimum morbid dose and in the third experiment, the hypodermic prophylactic injection protected the animals against five times the minimum morbid dose. The virulency of the blood of the experimentally infected monkeys was the strongest on the first and second days of the symptomatologic attack and gradually decreased in the course of the disease until it becomes at the end of the pyrexia scores of per cent. less virulent than its maximum. The intravenous injection produces a severer attack of the illness than the hypodermic.

Prophylactic Inoculation Against Scarlet Fever.—Blood was obtained by Takahashi from the median vein of a scarlet fever patient, on the sixth day of illness. The blood was transferred to four test tubes containing certain amounts of citrated solution so that 1 c.c. of the final solution in the test tubes had 0.0001 c.c. of the blood of the patient. Thus the blood was diluted 10,000 times with the physiologic sodium chlorid solution containing 1 sodium citrate. This

dilution was used as the injection materials. From 0.5 to 1 c.c. of the solution were injected subcutaneously in the interscapular region of the author's five children. In all the cases there was no local reaction or general symptoms. Blood was obtained again from another scarlet fever patient on the sixth day and diluted with citrated (1 per cent.) physiologic sodium chlorid solution so that 1 c.c. of the final dilution had 0.1 c.c. of the blood. Neither local reaction nor general symptoms were observed in the four children injected. The results of these experiments prove Takahashi says that the injection of 0.0001 c.c. of the blood of a scarlet fever patient into children produces no reaction, but renders a certain degree of active immunity so that the introduction of the virus contained in 0.15 c.c. of the blood of the scarlet fever patient is completely prevented from causing the disease.

Lancet, London

July 2, 1921, 2, No. 5105

- *Injuries of Diaphragm: Special Reference to Abdominothoracic Wounds. C. W. B. Bryan.—p. 1.
*Feces in Alimentary Disorders. R. Coope.—p. 9.
*Unusual Type of Arrhythmia in Mitral and Aortic Disease. M. Davidson and H. G. Butterfield.—p. 12.
*Lymphadenoma and Tuberculosis. I. Fox.—p. 14.

Abdominothoracic Wounds.—In operations for strangulation and acute obstruction, Bryan says, the abdominal route will be employed, as a rule. In chronic cases, the thoracic method of approach has certain advantages; it allows adhesions to be divided under better observation, with more safety and better control of bleeding; the stomach pouch can be emptied before reduction; accurate suture of the diaphragm and any plastic measures demanded can be carried out more satisfactorily; and the pleura can be cleansed and its dryness insured at the end of the operation. If special difficulties arise, or a gastrojejunostomy is indicated, the thoracic operation is converted into an abdominothoracic one by prolonging the incision. In all types of operation the pleural cavity is open, so that the slight risks of operative pneumothorax are equally present.

Feces in Alimentary Disorders.—Coope insists that examination of the feces must be integrated with the clinical findings, usually with a thorough examination of the urine, sometimes also of the blood. Not infrequently it provides data which the clinician finds very valuable in making his diagnosis.

Arrhythmia with Myocardial Degeneration.—The case reported by Davidson and Butterfield revealed an extensive degree of myocardial disease in a heart so distorted owing to pathologic changes that identification of the auriculoventricular node and bundle in serial sections was a matter of great difficulty. The fibrosis, which was visible throughout the entire musculature, appeared to have left the fibers of the bundle intact. The clinical features of the case also were unusual. The arrhythmia is striking, and at first suggests the appearance seen in tracings from patients who have been for some time under the influence of digitalis, and have reached the toxic stage where the familiar coupling of the beats is observed. However, digitalis was not given the patient, except for one emergency injection of digitalin, and there was no reason to suppose that he had been previously taking the drug outside the hospital. There is not sign of an *a* wave in any of the tracings, and the jugular pulse is of the ventricular type. It was concluded that the auricles were fibrillating, although the pulse did not at any time show the typical continuous irregularity. There was always an absence of any presystolic murmur at the apex, although the left auricle was greatly enlarged, and there was an extreme degree of mitral stenosis. The third of the *c* waves, which correspond with the third sound already mentioned, is apparently due to a second premature contraction of the ventricle, which, although audible to the stethoscope, was never strong enough to affect the radial tracings. The first premature contraction, represented by the second of the *c* waves, can just be detected in places in the radial tracing, but could never be felt in the pulse at the wrist. From the character of the attacks of semi-unconsciousness and the extreme slowness of the pulse (26) during some of these, the condition

appeared clinically to resemble that of heartblock, but no evidence appears in the tracings of independent auricular contraction, and the auriculoventricular bundle was subsequently shown to be structurally intact.

Lymphadenoma and Tuberculosis.—No gross tuberculosis lesion was found postmortem in Fox's case, the only macroscopic changes being those of Hodgkin's disease of abdominal type. In the affected glands and spleen, tubercle bacilli were found in fairly large numbers, for the most part without other cellular reaction than one which appears to be that generally described as peculiar to Hodgkin's disease.

Medical Journal of Australia, Sydney

June 4, 1921, **1**, No. 23

Dysenteric Infections. H. R. Dew and N. H. Fairley.—p. 453.
Epidemic Diarrhea. S. W. Patter and F. E. Williams.—p. 460

Medical Journal of South Africa, Johannesburg

March, 1921, **16**, No. 8

Epidemic Encephalitis. H. T. H. Butt.—p. 146.
Etiology of Scurvy. A. J. Orenstein.—p. 151.

Annales de Médecine, Paris

1921, **9**, No. 5

Pathologic Anatomy of Familial Hypertrophic Neuritis. A. Souques and I. Bertrand.—p. 305.
*Hippuric-Acid Test of Kidney Functioning. P. L. Violle.—p. 330.
*Phonendoscopy of the Lungs. E. May and J. Rouquet.—p. 335.
*Pathologic Physiology of Fever. E. Rist.—p. 352.
The Pancreas in Hodgkin's Disease. H. Sloboziano.—p. 362.
The Pancreas in Elderly Diabetics. Idem.—p. 366.
*Bile Pigments in Intestines. M. Brulé and P. Spilliaert.—p. 377.

Hippuric-Acid Test of Kidney Functioning.—Violle's further experience has confirmed the reliability of the "hippuric synthesis test" which he described last year, as summarized here, Aug. 7, 1920, p. 435. After the elimination of hippuric acid has been determined on a definite diet, then the patient is given two doses of 0.5 gm. each of benzoic acid and of glycocholl. The normal subject on the average diet eliminates about 0.4 gm. of hippuric acid. The day of this test he eliminates 1.1 gm. Subtracting the normal 0.4 gm., this leaves 0.7 gm. as the experimental hippuric acid. The hippuric acid formed in response to the ingestion of benzoic acid represents a defensive reaction, and this suggests the participation of the liver. He gives here the findings in a few typical cases out of a large number of subjects with liver or kidney disease or both. The findings were always corroborated by the response to the methylene blue test and other measures for estimating the functional capacity of the kidneys. Uremia and albuminuria seem to occur in waves or single attacks, while changes in the formation of hippuric acid seem to be the reflection of more stable functional disturbances. Insufficiency of the liver does not modify the response to the hippuric synthesis test, and consequently this seems to belong exclusively to the kidneys.

Phonendoscopy of the Lungs.—May and Rouquet explain how enlargement of the phonendoscopic area corresponds to the extent of the sclerosis of the lung in connection with emphysema. When it covers nearly the whole of one or both lungs, there is always chronic bronchitis and changes in the lungs which sometimes are more pronounced than would be suspected from other findings.

Pathologic Physiology of Fever.—Rist reports a case of paroxysmal tachycardia in the course of paratyphoid fever in a man of 30. He had long been subject to paroxysmal tachycardia and had four long attacks during this fever. Each time, the fever dropped suddenly from 105 F. to normal or a little below, and kept at this low figure as long as the paroxysm of tachycardia lasted, while the pulse reached 200. Analysis of this case confirms the assumption that the fever is the result of exaggerated oxidations. The blood pressure dropped with the tachycardia. Thus from purely mechanical causes the blood accumulated in the splanchnic vessels, and the amount reaching the heart was correspondingly less. As less blood was thus pumped to the lungs, the amount of oxygen taken up was reduced in proportion. Hence there was not enough oxygen taken up to provide for the supplementary oxidations responsible for the fever. But the primary stimu-

lus—whatever it may be—still persisted and as soon as the mechanical obstacle to the circulation was arrested by the heart's returning to its normal rhythm, the temperature began to climb again at once. The drop in the temperature was so sudden with the abrupt onset of the tachycardia that perforation of a viscus was assumed at first. The man recovered without sequelae.

Passage of Bile Pigments Into Intestine with Normal Course Arrested.—Brulé and Spilliaert confirmed in their experiments on dogs that urobilin may be found in the intestine when the common bile duct is completely obstructed, and that stercobilin reappears in the stools when there is retention of bile pigments in the organism. The latter reach the intestine by way of the blood. In twenty cases of jaundice, stercobilin was found in the clay-colored stools in over 50 per cent. In 62 per cent. of these with complete retention of bile, urobilin was found in the stools, as also when only bilirubin could be found in the urine. In 18 per cent. there was no urobilin in urine or stools, but in 33 per cent. it was found exclusively in one and not in the other. Stercobilin in the stools is thus no criterion as to the permeability of the bile passages, and urobilinuria is no evidence that they are not completely obstructed. Although no bile was reaching the duodenum directly, urobilinuria was pronounced in 65 per cent. of their total cases. This demolishes, they say, the "enterohepatic" theory of urobilinuria.

Archives des Maladies du Cœur, etc., Paris

May, 1921, **14**, No. 5

*Explanation of Delirium Cordis. S. de Boer.—p. 193.
*Masked Dissociation of Auricle and Ventricle Beat. R. Lutembacher.—p. 202.
*Total Stenosis of Thoracic Aorta. Follet and E. Caille.—p. 207.
*Patent Arterial Duct. L. Bard.—p. 212.

Delirium Cordis.—De Boer presents evidence that the impulse to the heart beat may pass through the heart muscle in two, three or more stages of fractioned systoles. The results of Mines' and of Garrey's research confirm this explanation of delirium cordis and of accumulated extra systoles.

Masked Dissociation of Auricle-Ventricle Beat.—Lutembacher shows how there may be a bigeminus or trigeminus beat of the ventricle with dissociation of the auricle and ventricle contractions.

Total Stenosis of Thoracic Aorta.—The youth of 17 presented hypertension in the arms, with very low pressure in the legs; the left ventricle was much enlarged and considerable collateral circulation had developed. There was also an inconstant murmur at the mouth of the aorta. He succumbed to meningeal hemorrhage. The stenosis was so complete that even a pin could not be passed through it, but probably the stenosis had not always been so extreme.

Clinical Picture with Patent Arterial Duct.—Bard shows how the clinical picture varies widely according as the blood flows from the aorta into the pulmonary artery or vice versa, with persisting ductus arteriosus. Four different sets of symptoms are possible, and the clinician should specify in each case the direction of the blood stream and whether the blood is arterial or venous.

Bulletin Médical, Paris

June 18, 1921, **35**, No. 25

Chronic Intestinal Stasis. V. Pauchet.—p. 509.
*Typhoid Spine. M. Bureau and O. Marchand.—p. 511.

Typhoid Spine.—The woman of 47 had pain in the spine early in her typhoid fever but suppuration did not develop until seventeen months later, and it returned six times in the course of two years until arrested by an autogenous vaccine. Typhoid bacilli were cultivated from the pus each time.

June 25, 1921, **35**, No. 26

*Tardy Manifestations of Syphilis. C. Abadie.—p. 527.
Classification of Arsphenamin Accidents. Emery and Morin.—p. 528.
*So-Called Traumatic Syphilis. C. Simon.—p. 530.
*Treatment of Inherited Syphilis. P. Fernet.—p. 533.
Wassermann Reaction in Blood and Urine. C. Simon.—p. 536.

Tardy Manifestations of Syphilis.—Abadie remarks that enough years have elapsed since arsphenamin was introduced

for us to estimate now its efficacy in warding off the tardy manifestations of syphilis. If this medication is truly effectual, we ought to see fewer children born with inherited syphilis, and fewer cases of neurosyphilis. But nothing seems to show that the proportion of syphilitic infants is growing less, and in his ophthalmologic service the number of cases with syphilitic disease of the fundus of the eye is larger than ever. The cases of general paresis crowd the hospitals for the insane, with no reduction in their numbers. In treatment of tardy manifestations in the retina and optic nerve, he is loyal to intravenous injections of mercuric cyanide in 0.01 gm. doses every second day. This drug can be kept up for years without harm, he says, and he has found it more effectual alone than when combined with arsenicals.

Traumatic Syphilis.—Simon adds to Pasini's recently published five cases, two from his own practice in which a traumatic injury of a region containing latent spirochetes roused them to virulence. A syphilitic lesion developed at the spot although the subject had been supposed to have been long cured of his syphilis.

Treatment of Inherited Syphilis.—Fernet seeks to emphasize the chronic nature of inherited syphilis, and the advantage to be derived from associating the proper organotherapy with specific treatment.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 3, 1921, 45, No. 19

Mitral Stenosis in Relation to Syphilis. P. Merklen.—p. 815.
Subcutaneous Arsphenamin in Neurosyphilis. Tixier and Duval.—p. 818.

*Changes in Circulation Below Constricting Band. d'Oelsnitz.—p. 824.

*Symptoms from Compression of Sinus Cavernosus. E. Ledoux.—p. 827.
Autovaccine Treatment of Colon Bacillus Septicemia. F. Trémolières and Lassance.—p. 830.

Diagnosis of Cancer of Ampulla of Vater. Carnot and Libert.—p. 836.

Examination of Right Ventricle. C. Laubry and L. Mallet.—p. 840.

Anaerobic Pleurisy in Typhoid. A. Compagnon.—p. 843.

Peripheral Venous Tension. M. Villaret et al.—p. 848.

Changes in Circulation Below Constricting Band.—D'Oelsnitz here describes the response in normal subjects, the enlargement of the veins after removal of the Esmarch bandage after five minutes of compression. In cases of sympathetic inhibition, this enlargement of the veins is very slight, while it is exaggerated with abnormally excitable sympathetic system.

Symptoms from Pressure on the Sinus Cavernosus.—In the case described by Ledoux, pain in the left orbit and temple developed suddenly and the eyeball protruded and the neck began to enlarge. In about six weeks diabetes insipidus developed, and gradually the nervous symptoms of hyperthyroidism became installed. The retrospective diagnosis was some lesion in the posterior lobe of the pituitary. This had compressed the sinus cavernosus and the nerves in that region. Under pituitary treatment (posterior lobe) the symptoms all gradually retrogressed and the man now seems to be entirely cured, seven years since the first symptoms.

Journal de Chirurgie, Paris

June, 1921, 17, No. 6

*Hydatid Cysts of the Lung. D. Prat (Montevideo).—p. 529.

*Circular Constriction with Fracture of the Femur. P. Hallopeau.—p. 551.

Hydatid Cyst of the Lung.—Prat has operated in twenty-nine cases of hydatid cyst of one or both lungs, with recovery of all but two, and the deaths in these cases were from other causes. He operates as a rule at two sittings, the first intervention being restricted to means to induce adhesion, unless the cyst presents and can be evacuated at once. He gives an illustrated description of the technic. The patient sits astraddle of the operating table, leaning his head against the turned up end, in the "jockey position," his feet in stirrups. Under local anesthesia, Prat resects 6 or 8 cm. of the rib over the cyst, located with the roentgen rays. The parietal pleura is incised and the lung explored with the finger, and then a wick of gauze is introduced into the opening to induce adhesion; the wound is tamponed and left gaping and unmolested for twelve or thirteen days. Then the edges of the wound are drawn back, the cyst is punctured, its contents aspirated, and the cyst membrane removed. There never has

been inoculation from the cyst in his experience, although the only disinfection is with iodine. He leaves a drain in the wound, and healing was complete in from twenty days to one or two months or, exceptionally, three months. He calls this technic the Lamas-Mondino method. It was designed at first for cases in which it proved impossible to harpoon the lung at first as intended, and its advantages soon led to its adoption as the routine procedure, under roentgen control. The case reports are given in detail.

Circular Constriction for Fractured Femur.—Hallopeau gives the technic for belting the stumps together to insure faultless healing, and illustrates some devices with which he improves on Parham's metal bands. One is a narrow metal plate to place over the fracture, with grooves in which fit the Parham strips to keep them from slipping. A sharp pointed spur at each corner grips the bone and prevents any slipping of the plate. Or it can be made with grooves for the Parham bands at one end and holes for screws in the other half.

Journal de Médecine de Bordeaux

June 10, 1921, 92, No. 11

*Reconstruction of Fractured Long Bones. Charbonnel.—p. 305.

*Lesions of Bony Wall of Thorax. Creyx.—p. 311.

A Trip Through Indo-China. Cheyrou.—p. 313.

Reconstruction of Fractured Long Bone.—Charbonnel declares that the use of bone plates and other bone supports represents progress beyond what is attainable with non-absorbable aids in osteosynthesis. The dead bone is finally absorbed and its elements utilized in the new growth of bone. But to date circular constriction with metal bands or fixation with plates and screws has yielded the best results. His illustrations show the technic and the indications for the various procedures. He warns that the anatomic reconstruction of the bone does not hasten repair, so that the limb can be used sooner for weight bearing. With a fractured femur he keeps the patient in bed for six weeks after the splint has been removed the fifteenth day. Fracture below the knee does not require more than six weeks in bed in all. The limb must be systematically exercised and massaged while the patient is in bed. When he is allowed to get up the recovery of function will be so rapid that the time lost in bed will be soon made up. If a foreign substance is left permanently in the tissues, it can be disregarded as, even if it would have to be removed later, this will require only an insignificant intervention under local anesthesia.

Ossification of Costal Cartilages.—Creyx found no trace of ankylosis in the articulation at either end of the ribs in 100 cadavers, including five with chronic rheumatism with ankylosis of certain other joints; forty-five with pulmonary emphysema, and thirty with pronounced arteriosclerosis. The costal cartilages were frequently ossified but the play of the rib joints was never impaired. In all but one of the forty-five emphysema cases the costal cartilages were more or less completely ossified, and he thinks that this precedes and entails the emphysema.

Journal d'Urologie, Paris

April, 1921, 11, No. 4

*Impalement Injuries of Perineum. J. Ferron.—p. 265.

*Chronic Gonorrhea of Posterior Urethra. E. L. Gautier.—p. 289.
Supernumerary Blind Ureter. P. Guibal.—p. 307.

Impalement Injuries of Perineum.—In Ferron's seven cases the injury was from the horn of a bull, a branch of a falling tree, a pitchfork or oil can, or a blow from an umbrella tip in play. The two patients with injury of the urethra alone were both saved, but only one of the five with lesions of the bowel. They reached the hospital too late for effectual treatment. One of them might have been saved if he had been rushed to the hospital in an auto; Ferron did not dare to operate with merely kerosene lamp illumination. All such impalement injuries of the perineum are accompanied with profuse hemorrhage. The urine did not seep through the wound in the perineum until the third day in one case with two wounds in the bladder. An incision in the bladder only large enough to introduce a catheter to divert the urine should be supplemented by a retention catheter in the urethra to keep the shape of the latter. This catheter is kept plugged and

the space between it and the urethra wall is rinsed out with an antiseptic solution once or twice a day. The seven cases are described in detail. With wounds of the posterior perineum the intestines scarcely ever escape, and the rectal drip should not be attempted.

Chronic Posterior Urethritis.—Gautier discusses the symptoms, diagnosis and treatment, with accounts of ten cases. In all, the ordinary methods of treatment had been applied without relief. It requires topical application under endoscopy, silver nitrate, iodine, the actual cautery or high frequency current. The mucosa returns to normal under the latter without danger of hardening of the tissues. He uses for the purpose a No. 16 diathermy sound in an insulating shell, applying it one week to the anterior wall, the next week to the posterior, and so on. The tip of the sound must just escape contact with the tissues, and the current is turned on for only a few seconds, and the results then inspected. Actual contact chars the tissues and exposes to danger of stenosis later.

Médecine, Paris

June, 1921, 2, No. 9

- Recent Progress in Electroradiology. A. Zimmern.—p. 661.
*Physical Training. Gaston Vidal.—p. 671.
*Radium Treatment of Roentgen Dermatitis. J. Bergonié.—p. 675.
Measurement of Doses in Deep Radiotherapy. M. Lambert.—p. 678.
*High Frequency Current in Surgery. Heitz-Boyer.—p. 683.
The Electric Enema. Laquerrière and Delherm.—p. 690.
*Radium Treatment of Nevi. Simone Laborde.—p. 696.
*Phototherapy: Experimental and Clinical Aspects. Vignard.—p. 701.
The Occupational Output of the Severely Crippled. Gourdon.—p. 707.
Comparison of Spas of France and Germany. M. Piery.—p. 711.
Indications for Artificial Heliotherapy. H. Dausset.—p. 718.
Radium Treatment of Uterine Cancer. Regaud et al.—p. 725.

Physical Training.—The medical faculty of the University of Paris organized last year a course of training in physical education, and this year the French legislature passed a law making physical training and military preparation compulsory. M. Gaston Vidal, the undersecretary of state for technical training, is in charge of the work and is called the "sports minister." He has appointed a committee of scientific and sport authorities to study questions relative to general physical training and professional preadaptation and correction of occupational deformations. In this article he gives his views on the subject, and emphasizes in conclusion that physical training should not be limited to the young; its benefits should be extended to the adult worker whatever his field of work, intellectual or manual.

Curietherapy of Roentgen-Ray Dermatitis.—Bergonié relates that he has recently examined three roentgenologists who have had professional radiodermatitis benefited by application of radium. One of these physicians has had one finger amputated and amputation of another finger of the right hand was being considered. Another has already had four operations on the hands; the general condition was bad and the pains at times unbearable. Under exposures to radium, one of the physicians seems completely cured, all symptoms having subsided. The contemplated operation on the second has been abandoned; there is no more pain, and the stiff joints have become supple. The condition has been notably improved in the third; there is now scarcely any pain. The curietherapy has thus proved its efficacy for these roentgen lesions except the deep eschars involving the bone, with inadequate circulation and loss of muscle tissue. It seems to aggravate this class of lesions as in the third case mentioned. Most of this physician's lesions improved, but the deep eschars seemed to be whipped up to a more rapid course.

The High Frequency Current in Surgery.—Heitz-Boyer explains the special features which distinguish the high frequency current from other means to destroy tissues, its potency, the certainty of its action, the ease and convenience with which it can be manipulated, and the absence of any painful reaction. In addition to its numerous indications in disease of the bladder, urethra, ureter and prostate, he lists indications in general surgery: polyps and strictures in the rectum, nose and throat; condylomas, lupus, warts, etc. He found it particularly useful in treatment of hemorrhoids in fourteen cases, harmless, effectual and indolent. The absence of any painful reaction is particularly an advantage in this class of cases.

Radium Treatment of Vascular Nevi.—Laborde has found protruding nevi, angiomas, more susceptible to the action of curietherapy than flat nevi. The angioma type is more frequent in young children, and it should be treated early for various reasons, especially because in later life it may undergo fibrous transformation which renders it more refractory to the rays. These angiomas frequently develop during the first weeks of life, but no one heeds the small red point until it spreads considerably. It could be completely aborted, while still a mere dot, with a single electrolysis puncture. Under radium these small tumors sink down, turn brown, and then vanish without leaving a trace. Flat nevi are refractory to all physical agents, but radium may attenuate considerably the red color. Extreme caution is indispensable, as inflammation and teleangiectasis may develop at the time or even months later from the action of the radium. It is wiser not to attempt to decolor the patch completely, but stop the exposures when the red has been reduced to pink. She gives two sittings in two weeks; then waits two months and gives one sitting; then continues with a sitting once in three months. Small angiomas are given four or five thirty-minute sittings at six day intervals.

Phototherapy.—Vignard concludes his description of what can be expected from luminotherapy by saying that thermotherapy is the enemy of luminotherapy, as humidity and perspiration detract from the action of the light on the skin.

Paris Médical

Jan. 1, 1921, 11, No. 1

- Tuberculosis in 1921. Lereboullet and L. Petit.—p. 1.
*Scrofula: The Old and the New Conception. A. B. Marfan.—p. 13.
Asthma and Tuberculosis. F. Bezançon and S. I. De Jong.—p. 20.
Value of Artificial Pneumothorax. L. Rénon.—p. 24.
Prophylaxis of Tuberculosis in Infants. Bernard and Debré.—p. 27.

The Modern Conception of Scrofula.—Marfan comments on the comparatively recently acquired knowledge that immunity for acute diseases is something entirely different from immunity to chronic diseases. The first is the consequence of complete recovery; the other is a function of infection. With tuberculosis and syphilis, complete recovery causes the loss of immunity. The tuberculous lesions which used to be labeled scrofula are distinguished by their relative benignity and their power of conferring a certain degree of resistance against tuberculosis. The skin tuberculin reaction is always very pronounced, as also with impetigo, ecthyma, phlyctenular keratitis and ulcerative rhinitis, although the connection between these affections and tuberculosis has not been demonstrated otherwise. It is possible that an ordinary pyodermatitis assumes a special form in the tuberculous. He insists that the term scrofula should be retained, as facts are facts, and scrofula represents a morbid condition observed only in the tuberculous. The superficial lesions require special care in treatment to ward off and cure secondary infection.

Presse Médicale, Paris

June 18, 1921, 29, No. 49

- *Statistic Nosology. E. Rist.—p. 481.
*Access to the Heart. H. Costantini.—p. 483.
*Serodiagnosis of Tuberculosis in Children. J. Sévi.—p. 484.
*Bilateral Ligation of Carotid Arteries. C. Lenormant.—p. 485.

June 22, 1921, 29, No. 50

- Cardiac Organotherapy. A. Martinet.—p. 493.
Roentgenography of Tuberculous Lung. Pissavy and Saidman.—p. 494.

An Experience in Statistic Nosology.—This is the second part of Rist's recent study of the men exempted from military service in the nineteen years before the war. The first part was reviewed, July 2, p. 72.

Access to the Heart.—Costantini's incision skirts the costal arch from the eighth rib to the xiphoid process, then runs vertical, a little to the right of the median line, to the second interspace, and then horizontal to a point nearly perpendicular to the starting point. The sternum is divided to correspond, a little to the right of the median line. The flap thus formed can be raised to allow ample access to the heart without injury of ribs or pleura. The cartilage in the second space is cut along with the sternum, but the soft parts are left intact, and the intact left pleura is drawn out of the way with the flap of chest wall.

Serodiagnosis of Tuberculosis in Children.—Sévi obtained a positive deviation of complement in four of fifty-four supposedly healthy children in an institution. Further tests confirmed the presence of hitherto unsuspected active tuberculosis in these four.

Ligation of Carotid Arteries.—Lenormant reviews 19 recent cases he has found on record in which the carotid artery was ligated on both sides in treatment of pulsating exophthalmos. With the older cases this brings the total to 41. Only 5 of the 7 deaths could be traced to cerebral disturbance, but hemiplegia or other cerebral symptoms, slight or severe, developed in 24 per cent. This proportion is scarcely larger than after unilateral ligation. Fully 61 per cent. of the total recovered completely without by-effects of any kind. But for this it is indispensable that a sufficient interval should be left between the ligation on the two sides for the brain to become accustomed to the change in its circulation and for collateral circulation to develop. The data presented justify bilateral ligation when absolutely necessary.

Progrès Médical, Paris

June 11, 1921, 36, No. 24

Isolated Rupture of Fetal Membranes. H. Vermelin.—p. 277.

Tincture of Garlic in Treatment of Pulmonary Gangrene. Loeper, Forestier and Hurrier.—p. 279.

*Tuberculous Meningitis in Adults. L. Ramond.—p. 280.

Tuberculous Meningitis in Adults.—Ramond comments on the completely different symptoms and course with tuberculous meningitis in children and in adults, saying that the fatal outcome is about the only feature common to both. He describes a typical case in a young man sent to the hospital with the diagnosis of typhoid. A week before, paresis of the right hand and aphasia—the whole lasting less than ten minutes and without any other symptom for a week calling attention to the nervous system—gave the clue to the rest of the clinical picture. He teaches that any cerebral symptoms coming on suddenly in an adult suggest the possibility of tuberculous meningitis, even in the absence of any symptoms of tuberculosis. This young man's symptoms indicated the mild flaring up of a latent pulmonary tuberculous process, and this had been mistaken for typhoid. Lumbar puncture revealed signs of irritation of the meninges, and a few days brought the full picture of meningitis, with death in high fever the fifteenth day from the first nervous symptoms. Tuberculous meningitis in adults is usually monosymptomatic, as in this case, for a time. In children, the meninges dominate the clinical picture, in adults, the brain, and the brain manifestations may be psychic, motor or sensory, and in the form of exaggeration or inhibition. Acute mania, melancholia, or coma may usher in the disease. Tuberculous meningitis should be suspected whenever the tuberculous complain of intense headache. It should be suspected also when delirium accompanies albuminuria in the tuberculous, as uremia is rare in tuberculous nephritis. Tuberculous processes elsewhere may show marked improvement as the meningitis develops.

Revue Franç. de Gynécologie et d'Obstét., Paris

Feb. 1, 1921, 15, No. 12

*Uterine Fibromas and Retroflexion. P. Dalché.—p. 469.
Postpartum Inversion of Uterus. Le Louët.—p. 481.

The Evils of Uterine Fibromas.—Dalché comments on the difficulty of differentiating between a uterine fibroma and chronic congestion in the body of the retroflexed uterus with hystericalgia. With congestion there is usually a tendency to varices, hemorrhoids and ptosis. He combats it with half-hour hot sitz baths, with hot enemas. At night the woman takes a hot enema of 250 c.c. which is retained, lying prone on the bed. The heat and the weight of the water pressing on the uterus reduce the congestion and push it forward. Weeks may pass before the desired result is attained. Light massage aids, as also a chain of tampons impregnated with glycerin, pushed into the posterior vagina. The glycerin attracts the fluid out of the tissues; this should be repeated at least once a week. Ergot also aids by squeezing out the fluid from the uterus, and vasoconstricting drugs are useful.

Constipation should not be allowed. The retroflexion once reduced, a pessary may render good service. In six months or a year the uterus will be found in normal position. Ante-flexion is liable to be mistaken for a fibroma.

The glycosuria induced by fibromas may progress to actual diabetes, as in a case he describes in which the fibroma had developed rapidly during a pregnancy. He is inclined to ascribe this fibroma glycosuria to mechanical injury of the suprarenals. Hemorrhage in these cases is often kept under control by treatment as for diabetes plus organotherapy. The hemorrhages in the fibromatous uterus may exsanguinate the optic nerve, and total blindness result. He has had a case of sudden blindness from the bleeding of a duodenal ulcer, and warns to call in an ophthalmologist at once when visual disturbances follow severe hemorrhage. Nothing should be done that will add to the losses of blood. He has also seen cases of hemiplegia and other cerebral phenomena in the course of fibromas. When a fibroma becomes infected, the periodical release of toxins may induce recurring fever, deceptively simulating malaria.

Revue de Médecine, Paris

March, 1921, 38, No. 3

*Sodium Salicylate. G. Caussade and P. Charpy.—p. 127.
The Duodenal Fluid. H. Mauban.—p. 146.

Sodium Salicylate.—Caussade and Charpy remark that the symptoms sometimes observed during salicylic medication are generally traceable to impurities in the original salicylic acid. Only ten cases are on record of fatal intoxication from the salicylates, and Pouchet has said of these that other causes can probably be incriminated in all but two. The gravest accident from their use is salicylic delirium; there may be actual mania for a time, but it soon subsides and the drug can be continued in small doses. The fatal dose is from 12 to 30 gm. but 30 gm. have been taken without fatal outcome. In acute articular rheumatism with involvement of the heart, tendency to pulmonary edema, tachycardia, intense and very painful polyarthritides, or the heart derangement may predominate, with blood in the pericarditic effusion—in these grave cases, large doses of the salicylates are necessary to arrest the disease before irreparable damage is wrought. They recommend in such cases to give 1 or 2 gm. of sodium salicylate to test the tolerance, and follow with more to a total of 10, 12, 14 or 16 gm. given in the course of from four to six hours, never all at once. This treatment is for men only; women are less tolerant than men. Children under 7 and men over 30 should also be excluded, as also subjects with damaged heart, kidney or liver or any nervous taint or intoxication of any kind. The salicylates are ineffectual in chronic rheumatism, and in cerebral and gonococcus rheumatism.

Schweizerische medizinische Wochenschrift, Basel

June 2, 1921, 51, No. 22

*Acute Cholecystitis. A. Vischer.—p. 505. Conc'n in No. 23.
*Hemolytic Jaundice Aggravated by Altitude. Frenkel-Tissot.—p. 509.
Cesarean Section on Lower Segment of Uterus. A. Oetiker.—p. 513.
Sedatives for Painless Delivery. E. Jaeggy.—p. 515.

Acute Cholecystitis.—Vischer reviews the operative cases at the Basel surgical clinic from 1905 to 1917, a total of 119 cases with two operations on two of the patients.

Hemolytic Jaundice Aggravated by Altitude.—The young man, now 18, belongs to the family on which Minkowski based the first published description of hemolytic jaundice. The resisting power of the red corpuscles shows a pronounced drop when the young man spends a month or two at St. Moritz in the mountains, while the enlargement of the spleen and the subjaundice show no change. This case has been under close medical supervision for a number of years, and the tabulated findings suggest a theoretical explanation for the changes observed.

June 16, 1921, 51, No. 24

Prophylaxis of Postoperative Pneumonia. E. Specker.—p. 549.
*Explanation of Sudden Thymic Death. H. Ryser.—p. 554.
*The Persisting Thymus. S. Yamanoi.—p. 557.
Epigastric Hernia. H. Köhl.—p. 560.
Febrile Herpes. R. Doerr and A. Schnabel.—p. 562.

Sudden Death in Status Thymolymphaticus.—Ryser analyzes the four explanations that have been advanced to throw light on "thymus death": pressure from the enlarged thymus; chemical autointoxication; lack of epinephrin or excess of thymus secretion, and, lastly, lymphocyte infiltration of the myocardium which Celeén found pronounced in six cadavers after sudden death in the status thymolymphaticus. Ryser ascribes importance to the constant hypoplasia of the chromaffine system in these cases, plus the excessive thymus functioning, but regards the infiltrations in the heart as the principal factor. In some of Riesenfeld's and Celeén's cases the muscle fibers in the heart had almost completely atrophied, with fatty degeneration. In Riesenfeld's cases the children with idiopathic hypertrophy of the heart died suddenly as they came to an age of greater physical exertion. He adds that sudden death, as with this thymic death, is being observed nowadays in persons who had apparently recovered from influenza or other infectious disease, the underlying degeneration of the heart entailing fatal arrest of the heart, the same as in these cases of constitutional inferiority of the heart and vascular system in the status thymolymphaticus.

The Persisting Thymus.—Yamanoi investigated the thymus in 303 persons over 25 who had succumbed to acute influenza, and in sixty older cadavers. In 26.34 per cent. of 187 men there was more or less persistence of the thymus, and in 20.68 per cent. of 116 women. The microscopic and other findings are analyzed. This total of 25.89 per cent. with a persisting thymus in persons between 25 and 50 shows, he says, that the persistence of the thymus is within the physiologic range, and we must cease regarding macroscopic thymus tissue after 25 as a pathologic phenomenon.

Archivio Italiano di Chirurgia, Bologna

May 31, 1921, 3, No. 4

Grave Tetanus After Injection of Antiserum. V. Craglietto.—p. 318.

*Evolution of Connective Tissue Implants. B. Poletti.—p. 327.

*The Ureter in Renal Tuberculosis. G. D'Agata.—p. 367.

*Substitution of Fibula for Tibia. P. Fiori.—p. 380.

Testicle and Uterus in Hernial Sac of Apparently Normal Man. G. Bolognesi.—p. 393.

Connective Tissue Implants.—Poletti experimented with implants of tendons, arteries, cartilage and the cornea, devitalized and kept in alcohol for a time. The implants proved very useful to repair losses of substance, but nothing was seen that indicates the revitalization of the dead implanted tissue.

The Ureter with Renal Tuberculosis.—D'Agata gives photomicrograms of segments of ureters involved in the tuberculous process in the kidney. In 16.67 per cent. of thirty operative cases, the kidney lesion was mild, and the stump of the ureter after nephrectomy was cauterized and buried, and there have been no disturbances from it during the interval since, up to ten years. In 60 per cent. the upper segment of the ureter involved in the extensive disease in the kidney was resected with the kidney, and there have been no disturbances since. In one case advanced lesions in the prostate and one testicle subsided spontaneously thereafter, and the man is still in good health, fifteen years later. In 23.33 per cent. of the cases the kidney showed large and numerous cheesy foci and the ureter extensive destructive foci. In two in this group a fistula developed in the lumbar region, and in another case there was reflux of urine from the ureter stump. The upper segment of the ureter had been resected in these cases, and in one of the three in which these complications developed, calcareous deposits were evident. These may have interfered with the anticipated shriveling of the ureter after the nephrectomy. These experiences reiterate the importance of an early operation for renal tuberculosis, and show that the ureter can safely be left to itself in all but the most advanced cases, merely dividing it between clamps with the actual cautery, ligating with catgut.

Substitution of Fibula for Tibia.—Fiori's roentgenograms eleven years after the operation show that the shaft of the fibula has grown; the circumference of the leg is now only 2 cm. less than that of the sound side, and it is only 1.3 cm. shorter. The diaphysis of the tibia had been destroyed by five years of osteomyelitis. The technic for the bipolar

implantation is described. The patient was a boy of 14, and now, eleven years later, weighs 69 kg. and in his work as an expressman carries loads to 100 kg.

Pediatria, Naples

May 15, 1921, 29, No. 10

*Treatment of Infantile Paralysis. H. Bordier.—p. 433.

Rachitis in Syphilitic Infant. L. M. Spolverini.—p. 440.

*Means to Prevent Coughing Up of Tube. C. D'Anna.—p. 447.

Retention of Urine in the Prematurely Born. Laureati.—p. 457.

Vaccine Therapy in Typhoid in Children. G. Caronia.—p. 460.

Immunization Against Diphtheria. R. Vaglio.—p. 463.

Treatment of Infantile Paralysis.—Bordier emphasizes the necessity for prompt measures before conditions become irreparable in spinal paralysis, anterior poliomyelitis, etc. Much can be accomplished with diathermy, radiotherapy and galvanic electricity, the latter applied rhythmically and inversely to the muscles showing the complete or partial reaction of degeneration. The diathermy must be resumed during the course of treatment if the temperature of the part drops again below normal. The electric treatment must be kept up for months or even for years to obtain the full effect it is capable of rendering. He agrees with Bergonié that even the gravest prognosis may be completely transformed by intensive, well regulated, harmless and persevering electric treatment.

To Fasten the Intubation Tube.—D'Anna relates that further experience has confirmed the harmlessness and the reliability of Polverini's method of fastening the tube in the throat so that the child is free to be out of doors, etc., without danger of its coughing up the tube. He describes the five most recent cases in which this was done. An ordinary suture needle, threaded with 2 m. of strong silk, is introduced on the median line at the junction of the middle and lower thirds of the thyroid membrane, and is brought up and out through the mouth. The upper ends of the thread, after cutting off the needle, are tied around the O'Dwyer tube which is then introduced as usual. The lower ends of the silk thread, projecting from the neck, are tied over a roll of gauze, and thus fasten the tube permanently in place. The lower ends of the thread are coiled on the neck and protected with a dressing; the upper ends are tied around the ear. The disadvantages of such a thread are amply compensated by the freedom it gives the child, and the relief, in private practice, from dread of the tube's being coughed up. Sixteen years' experience with this method have placed it on a solid footing. The tube can be taken out to be cleansed at need. He says that if there is already a tube in the throat, this is not removed when the needle is introduced. The tip is guided by the finger in the throat until it can be seized with forceps.

Policlinico, Rome

June 6, 1921, 28, No. 23

Estimation of Disability for Workmen's Compensation. S. Diez.—p. 779.

Benefit from Fixation Abscess in Typhoid. P. Cataldi.—p. 787.

Ether in Treatment of Whooping Cough. A. D'Aroma.—p. 788.

*Chronic Peritonitis. P. Gilberti.—p. 789.

Chronic Peritonitis.—Gilberti analyzes the clinical pictures with chronic peritonitis, especially tuberculous peritonitis, to determine whether and when operative measures are indispensable. A laparotomy is still the best weapon at our disposal to attack chronic tuberculous peritonitis. Mild cases may subside under expectant treatment alone, and surgical intervention is contraindicated in the acute form, as it may depress the general condition too much. Gatti and Gelpke insist that the tubercles must be given time to complete their histologic development before the laparotomy can have a curative action. When the tubercles show vacuolization from a dropsical tendency, the laparotomy is most likely to prove effectual. In the very far advanced cases it is liable to fail. The best outlook for it is when the ascites is free, abundant and serous, the general condition growing gradually worse. His experience with four cases given roentgen-ray treatment was discouraging, but heliotherapy in his eighteen cases often displayed striking efficacy. The respiration and circulation soon show the tonic effect, and the general condition has improved miraculously in some cases that were considered beyond operative relief.

Riforma Medica, Naples

June 4, 1921, 37, No. 23

- Arteriosclerosis of Humeral Artery. L. Torraca.—p. 530.
 *Proteic Intoxication. F. Pentimalli.—p. 532.
 Bradycardia from Sino-Auricular Heart Block. S. Fichera.—p. 533.
 *The Leg Phenomenon with Pyramidal Disease. C. Angela.—p. 537.
 Cancer After Industrial Trauma. E. Aievoli.—p. 541.
 Disease of the Diaphragm Zone. I. Jacono.—p. 542.

Protein Intoxication.—In this preliminary communication Pentimalli remarks that the research on this subject has been restricted to acute protein intoxication, that is, anaphylaxis. He has been conducting research on the conditions that develop with chronic protein intoxication from prolonged, systematic parenteral administration of proteins.

Barré's Leg Sign of Pyramidal Disease.—Barré called attention to this leg phenomenon as a sign of disease of the pyramidal tracts, but Angela relates extensive experience with it which disproves this exclusive character for it. Under certain given conditions the sign is pronounced with peripheral as well as with central paralysis.

Tumori, Rome

April 28, 1921, 8, No. 1

- *Primary Sarcomas in Scar Tissue. F. Nasseti.—p. 1.
 *Sarcoma in Nasal Fossa. G. Bilancioni.—p. 22.
 Fibroma of External Ear. F. Putelli.—p. 42.
 *Cutaneous Manifestations of Leukemia. L. Martinotti.—p. 63. Cont'd.

Sarcoma in Scar Tissue.—Nasseti comments on the rarity of sarcoma developing in scar tissue in comparison to the relative frequency of endothelioma in a cicatrix. A single trauma is more frequently found in the anamnesis of sarcoma, and continued irritation in cases of carcinoma. In a case described, the sarcoma had developed in the cicatricial tissue left after two months of suppuration in the trapezius muscle after a shell wound. In some of the cases he cites from the literature there had been chronic suppuration from a projectile in soft parts or bones, or acute or tuberculous osteomyelitis. The cases had not been followed long enough in most of them to speak of a permanent cure after excision of the growth and its bed of cicatricial tissue and adjoining glands. In several cases the patients soon succumbed to metastasis.

Sarcoma in Nasal Fossa.—The melanotic sarcoma had developed after a gunshot wound of the cheek and orbit in a woman of 53. Bilancioni reviews the history of sarcoma of the nose from Palletta's first case in 1820 to date. In his case the small sarcoma protruded from the nostril and it was successfully removed in February, 1920. Several colored plates show the microscopic findings.

Skin Manifestations in Leukemia.—Martinotti applies the term hemoblastosis to leukemic, aleukemic and leukemoid affections, and in this instalment of his monograph on the cutaneous manifestations in these conditions he discusses the chronic hyperplastic processes, lymphoid and myeloid, chloroma, etc.

Brazil-Medico, Rio de Janeiro

April 30, 1921, 35, No. 18

- Three New Trematodes. Lauro Travassos.—p. 221.
 The Social Evils. A. Ricardo.—p. 223.

May 14, 1921, 35, No. 20

- *Mitral Stenosis. O. Clark.—p. 245.

Mitral Stenosis.—Clark reiterates that syphilis is predominantly responsible for aortic insufficiency, and febrile rheumatism for mitral stenosis. Acute articular rheumatism, he says, is rare in Brazil. He found only 3 per thousand cases among 3,000 schoolchildren examined. Even with pronounced mitral stenosis, if repose can be enforced, long survival is possible, as in cases of mitral stenosis of a degree apparently incompatible with life; if complicating paralysis fastens the patient to his bed, he may live twenty or thirty years longer. Auricular fibrillation in itself does not aggravate the condition in mitral stenosis, but bacterial invasion is particularly dangerous. The result often is a septic ulcerating or malignant endocarditis. In one such case the endocarditis induced in the young man hemoptysis, embolism in the popliteal artery and retina with panophthalmia and death in less than a month. Clark refers in con-

clusion to slow endocarditis as one of the most treacherous of all diseases. The subject is usually young and apparently in the best of health at first; the few symptoms are ascribed to some transient infection until embolism clears up the diagnosis. Eradication of every septic focus in the body is the only means to ward off these complications. Mitral stenosis is the valvular disease most frequently complicated with auricular fibrillation. He has confirmed that the latter frequently yields to large doses of digitalis according to Eggleston's method. But the digitalis has to be kept up permanently to maintain the benefit. He describes several cases of mitral stenosis with different complications.

Semana Médica, Buenos Aires

May 12, 1921, 28, No. 19

- *Syphilis of the Kidneys. C. P. Waldorp and O. Behr.—p. 537.
 *The Pituitary During Pregnancy. M. L. Pérez.—p. 540.
 *Suture of the Larynx. R. Landivar and H. Bogliano.—p. 549.
 *Malaria and Tuberculosis. J. A. López.—p. 550.
 Topographic Anatomy of the Brain. E. Amato.—p. 555.
 Prostitution and Venereal Disease. L. Sirlin.—p. 556.

Syphilitic Disease of the Kidneys.—Waldorp and Behr have always found a history of syphilis when the polariscope revealed lipoids in the urine sediment. The syphilis may have been inherited or acquired, but the lipoids testified to lipid degeneration of the kidneys. In some cases the search for lipoids in the sediment first cleared up the diagnosis, which had wavered between acute accidental nephritis and irritation of the kidneys from mercury. Lipoid necrosis may become installed after the kidneys have become degenerated from other cause, but syphilis is capable of engendering it alone.

The Pituitary During Pregnancy.—Pérez reviews the anatomy, physiology and modifications undergone by the pituitary during pregnancy, everything indicating, he says, an exaggerated functioning at this period, with hypertrophy to correspond, of the glandular portion of the hypophysis cerebri.

Suture of the Larynx.—The man of 34 had tried to commit suicide by cutting his throat with a razor, the wound in the infrahyoid region extending from one sternocleidomastoid muscle to the other. Landivar arrested the hemorrhage by clamping the superior laryngeal artery and tamponing, to allow the man to be brought to the hospital. Then all the arterioles and veins in the region were ligated separately, and the incision was sutured in four separate planes, using fine silk for the three lower planes. Morphine was injected to reduce the man's agitation and the neck was bandaged with the head bent forward. There was complete aphonia at first, and nothing was allowed by the mouth except scraps of ice. The fourth day iced milk was given. Each swallow induced a distressing cough, but this gradually wore off by the eighth day, and by the sixteenth day the man was dismissed completely recovered. The writers comment on the peculiar idea of the laity in regard to the death-dealing properties of slashing the neck with a razor, when in reality the tough cartilages and the inaccessibility of the vital arteries and spinal cord render this procedure comparatively harmless, in comparison to the actually vulnerable points in the vicinity.

Malaria and Tuberculosis.—López relates that in his experience with three generations of army recruits, he has frequently found that young men with a history of old malaria did not respond properly to quinin, and certain minor signs suggested superposed tuberculosis. Applying Vitón's tuberculin therapy with the minutest doses, supplemented with an antituberculosis vaccine, these men recovered, throwing off both the symptoms suspicious of tuberculosis and the malaria as well.

Gann, Tokyo

June, 1921, 15, No. 2

- Experimental Studies on Metastasis of Mouse Carcinoma. S. Okonogi and K. Tadenuma.—p. 7.

Archiv für Gynaekologie, Berlin

1921, 114, No. 2

- *The Death Rate of Cancer Operations. B. Schweitzer.—p. 213.
 *Premature Separation of Normal Placenta. O. Frankl and V. Hiess.—p. 225.
 Pathology of the Kidney During Pregnancy. R. T. von Jaschke.—p. 255.
 *Gonads and Development of Sex. J. Halban.—p. 289.

- *Malignant Suprarenal Tumors. E. G. Orthmann.—p. 304.
*Hydrosalpinx. B. H. Jägerroos.—p. 328.
Tuberculous Tubal Processes. J. Frise.—p. 393.
Simplified Twilight Sleep in Obstetrics. Hermstein.—p. 401.
Pemphigus Neonatorum. Bierende.—p. 411.
Unilateral Defects in Female Urogenital Tract. F. Schilling.—p. 428.
Formation of Wolffian Body, etc. F. Kermauner.—p. 438.

Improved Technic for Uterine Cancer Operations.—Schweitzer describes Zweifel's method of excluding the peritoneum completely. This method has been in constant use for ten years, and peritonitis developed in only 0.93 per cent. of the 322 cases. The primary mortality in the 281 cancers of the cervix was 5.34 per cent. There was suppuration of the wound in only 2.5 per cent. of the total cases. Through a laparotomy incision, the cancerous uterus is detached from its connections and three suture threads are passed through the apex of the bladder, and the long ends are tied temporarily to the top of the uterus. The parametrium and glands are excised, and when the uterus is thus completely free on all sides it is pushed down deep into the pelvis and the peritoneum over the bladder and pouch of Douglas is drawn up and sutured together to form a solid and impervious roof over the whole. This walls off the pelvic cavity completely, and then the cancerous uterus is easily removed through the vagina. The long threads that then hang from the top of the bladder are tied to the anterior lip of the gap left in the vaginal wall, to hold the bladder upright. A strip of iodoform gauze is packed in the supravaginal wound cavity. The gauze is removed the tenth day. The figures cited above confirm the progress realized by this technic. The vagina is not opened until the pelvis has been solidly roofed over and hence peritonitis and pyelonephritis do not get a chance to develop. The sutures holding up the bladder facilitate spontaneous urination from the start, and hold the bladder up out of the way; otherwise it sags into the space left by the hysterectomy. There was no trace of peritonitis in one series of 159 cases.

Premature Separation of Normally Located Placenta.—In the 34 cases of this kind in Frankl and Hiess' experience, 19 of the women had albuminuria, including 6 with signs of severe pregnancy intoxication, with a tendency to convulsions in 3. In the others, pregnancy nephritis was evident in 11. In 2 in this group there was preexisting kidney disease. In the 9 uteri examined postmortem, the placenta and uterus showed nothing pathologic otherwise. The negative results of their research suggest that purely mechanical factors are involved. Anything inducing sudden overfilling of the spongiosa vessels is liable to pry off the placenta from the wall. In their 16 mild cases, there was no mortality among the mothers, and 13 children were born alive, but all the children died in the 18 severe cases, and 9 of the mothers. With purely internal hemorrhage the diagnosis is not always easy. Rupture of the uterus or of the twisted pedicle of a cyst may be suspected, or a ruptured extra-uterine pregnancy. The uterus is found contracted, while it relaxes with rupture. Expectant treatment is justified with slight hemorrhage from separation of the edges. With severe internal bleeding, none of the usual measures have a chance to be effectual, and the uterus must be emptied at once. In emergencies, the inflatable bag can be used, although this exposes to danger that it may increase the pressure in the uterus to actual rupture. The bag must be weighted, and the os may have to be additionally enlarged by discission to allow forceps or version, craniotomy of the dead fetus, forceps for the living, or cesarean section. By the vaginal route the latter is less of a strain for the organism, but the danger of rupture and the difficulty of its recognition turn the scale in favor of abdominal cesarean section.

The Gonads and Development of Sex.—Halban presents an array of arguments to prove that the gonads in both sexes produce a qualitatively identical substance which has a protective and promoting action on the supply of sex characters that happen to be present in the individual. During pregnancy, he theorizes, the placenta takes up the task of the ovaries and carries it on intensified. His theory presupposes that in the fecundated ovum not only the sex is determined but the primary and secondary sex characters are already outlined. His arguments tend to prove Steinach's theories untenable.

Malignant Suprarenal Tumors.—Orthmann analyzes the records of 147 operative cases and 140 found in cadavers. Of this total 286 cases, 66 were carcinomas, 55 sarcomas, and 115 hypernephromas. Male subjects predominated (162 to 123 women in the operative cases and 84 to 54 in the others). The youngest patient was a girl of 16, the oldest a woman of 89; the majority were between 40 and 60. This analysis is followed by a minute description of a case in a woman of 42 who has been in good health since the removal of the malignant tumor in the kidney over a year ago. No trace of any suprarenal glands on that side were found at the operation; the tumor evidently represented the relics of the aberrant suprarenal tissue in the kidney.

Hydrosalpinx.—Jägerroos' long study of the etiology, pathologic anatomy, pathogenesis and the clinical aspect of hydrosalpinx is based on 100 cases and 58 anatomic specimens, and on the literature. In 70 operative cases recently reexamined, the outcome has been gratifying in 45 salpingotomy cases. In 5 others there are still subjective disturbances. In another group of 3 there are both subjective and objective symptoms; in one they are restricted to the other side. In 14 salpingostomy cases the results have been perfect. In 2 others the adnexa have become enlarged again.

Deutsches Archiv für klinische Medizin, Leipzig

June 7, 1921, 126, No. 3-4

- *Streptothrichosis of the Lung. H. Lenhartz.—p. 129.
*Splenectomy with Aplastic Anemia. H. Gorke.—p. 143.
Electrocardiogram with Brief Contractions. Mandelbaum.—p. 154.
Changes in Leukocytes After Infusion. L. Nürnberger.—p. 159.
*Edema of Extrarenal Origin. Nonnenbruch.—p. 170.
*Action of Quinidin on the Heart. E. Boden and P. Neukirch.—p. 181.
*Connective Tissue in Cure of Cancer. M. Fraenkel.—p. 192.
*Sino-Auricular Block. E. Edens.—p. 207.
*Rare Form of Anemia. W. Knoll.—p. 237.

Streptothrichosis of the Lung.—Lenhartz' case is one of the few instances of recovery from streptothrichosis of the lung. The symptoms in the man of 33, a coachman, had been those of croupous pneumonia of the lower lobe at first, but their persistence pointed to tuberculosis. There was continuous fever at 39 C. (102.2 F.) for the first eight weeks; then it became intermittent. After numerous negative punctures, pus was obtained and pure cultures of the streptothrix were obtained on anaerobic cultivation, and from the ascitic fluid of animals inoculated with it. The progressive course compelled active intervention, and the ninth rib was resected in the axillary line. The mycosis subsided completely after the evacuation of $\frac{3}{4}$ liter of pus containing the fungus in abundance. The man succumbed a few weeks later to erysipelas of the larynx and face, and necropsy confirmed the complete cure of the mycosis.

Aplastic Anemia.—Gorke removed the spleen in a case of aplastic anemia in a previously healthy butcher of 53. He hoped by this means to stimulate the blood-producing organs, but the man died the same day. In three similar cases on record, the patients died in a few hours after the splenectomy. The slight destruction of hemoglobin, as evidenced by the lack of urobilin in the stools; the small proportion of pigment in the bile; the epinephrin test, and the catalase index are useful in the differential diagnosis of aplastic anemia. In conclusion he tabulates the features that distinguish aplastic and pernicious anemia from each other and from purpura.

Edema of Extrarenal Origin.—Nonnenbruch found the blood extremely concentrated in three patients with kidney disease and edema. In three other cases even copious ingestion of water, with scanty diuresis, did not dilute the blood but seemed rather to render it even more concentrated.

Action of Quinidin.—Boden and Neukirch report constant success with quinidin in treating extrasystolia and paroxysmal tachycardia. With absolute arrhythmia they found the action uncertain; in seventeen cases only seven were restored by it to normal rhythm, and this only transiently. They describe research with it on the isolated rabbit and fetal heart, and compare the findings with those of others.

New Factors in the Fight Against Cancer.—Fraenkel hails as new factors the attempt to use the roentgen rays to enhance the defensive forces of the body rather than to annihilate the cancer directly, and especially Ribbert's obser-

vation of the spontaneous destruction of cancer cells under the influence of lymphocytes. Cancer cells seem to be susceptible to the action of toxins liberated by the destruction of lymphocytes, and we know that radiotherapy is influential in increasing production of lymphocytes and also in their destruction. Radiotherapy therefore should not be restricted to attacking the cancer, but should be applied to stimulate the defensive forces, and chief among these the connective tissue. Embryology and study of callus, scars, etc., show that this is far more than a mere supporting tissue. It is not strong enough however to stop the encroachment of the cancer. Our task is to strengthen and reenforce the connective tissue, and this we can accomplish, he reiterates, by the stimulating dose of roentgen rays. Gynecologic cancer is most admirably located for this as the connective tissue and the endocrine glands here are in the most favorable relations for the rays to be effectual in this respect. The endocrine ovaries, with their intimate connection with the thyroid, thymus and suprarenals, are stimulated by the roentgen exposures, as also the connective tissue in the region. This explains the success with uterine cancer in contrast to what has been realized to date with other cancers, the mammary, for example. We must attack cancer by promoting endocrine functioning and by stimulating the connective tissue by direct raying and, indirectly, by raying the thymus. His experimental research has demonstrated the special relations between the thymus and the connective tissue. He even includes the connective tissue in the endocrine system. Its close connection with this system is apparent in its dependence on the different phases of development of the thyroid and the thymus, as is evident in various constitutional affections, in senile processes, and in the effects of radiotherapy. Keysser's research has demonstrated that even the highest doses of the rays are not able to kill cancer cells absolutely. In the cases of cancer cured by radiotherapy, the effect, Fraenkel declares, was due not to destruction of the cancer, as has been assumed hitherto, but to stimulation of the defensive forces.

Sino-Auricular Heart Block.—Eden's study of the atrio-ventricular automatism is accompanied by thirty electrocardiograms of a number of cases under the influence of various drugs.

Rare Form of Anemia.—Knoll reports the case of a boy of 9 with the inguinal glands showing dark blue through the skin, and large spindle-shaped cells in the blood as also macroblasts with nucleoles. The blood findings are shown in a colored plate.

Deutsche medizinische Wochenschrift, Berlin

June 2, 1921, 47, No. 22

- The Functional Properties of Vitamins. E. Bürgi.—p. 613.
- *Experimental Foot-and-Mouth Disease. M. Hobmaier.—p. 616.
- Effect of Poisons on Body Spirochetes. L. Dub.—p. 618.
- Arsphenamin Dosage. K. Biele.—p. 619.
- Parallel Serologic Tests. W. Weisbach.—p. 620.
- Artificial Virulence in Relation to Chemistry. H. Much.—p. 621.
- Complications of Appendicitis. Kümmell.—p. 622. Conc'n.
- Localization of Abdominal Pain. F. Brünig.—p. 624.
- *Leukocytes in Inflammation. E. Unger and A. Wisotzki.—p. 625.
- Artificial Pneumothorax in Pneumonia. H. Burekhardt.—p. 625.
- Postoperative, Paradoxical Embolism in Systemic Circulation with Open Foramen Ovale. R. Hensel.—p. 625.
- Treatment of Polyneuritis. Rubens.—p. 626.
- *Effect of Antivenereal Prophylactics. J. Schumacher.—p. 626.
- *Recurrence in Infantile Gonorrhea. I. E. Valentin.—p. 628.
- Present State of Knowledge of Heart Failure. Hering.—p. 630.
- Children Who Do Not Seem to Thrive. L. Langstein.—p. 632.

Susceptibility of Small Experimental Animals to Foot-and-Mouth Disease.—Hobmaier states on the basis of his investigations that the virus of foot-and-mouth disease is always infectious for guinea-pigs. Some of the strains produce foot blisters; others only the abortive type of foot-and-mouth disease. The virus can be cultivated through only a limited number of generations in the body of guinea-pigs. The incubation period is usually from two to three days; but it may be a week or even longer. Not only guinea-pigs but also rabbits, rats and chickens are susceptible to foot-and-mouth disease, sometimes evidencing the acute and sometimes the abortive form. The skin nodules that arise following intracutaneous inoculation of guinea-pigs, rabbits and rats with

virulent strains contain the living virus of foot-and-mouth disease. Guinea-pigs inoculated with the virus develop a general infection with eruption of vesicles on the feet. Therapeutic serums and, to a not much less extent, normal serums exert an inhibitive effect on the development of the disease in guinea-pigs. This finds expression in the lengthening of the incubation period and diminution or suppression of vesicle formation.

Distribution of Leukocytes in the Blood in Inflammatory Processes.—Unger and Wisotzki have been investigating in connection with the increase of leukocytes in the blood in inflammatory processes whether the increase affects the whole vascular system alike or whether the distribution is unequal. They arrived at the interesting conclusion that in man the vessel leading to an inflammatory focus, the arterial blood, contains more leukocytes than the efferent vein. Leukocytes are held back at the site of the inflammation. Fewer white corpuscles leave the inflammatory focus than are carried to it. The capillary blood contains even fewer leukocytes than the vein.

Effect of Antivenereal Prophylactics.—Schumacher says that Metchnikoff's calomel ointment has been universally condemned as having no prophylactic value against syphilis. The Neisser-Siebert preparation is a good prophylactic if it is fresh, but in metal tubes, in which it has been frequently dispensed, it deteriorates rapidly. It should be put up in porcelain or glass tubes. Schereschewsky's quinin ointment keeps well in metal tubes and is effective. All investigators are agreed that solutions are more effective than ointments. A 0.1 per cent. solution of mercuric chlorid in the hands of those who know how to use it gives good results. After coition the urethral orifice should be cleansed with a cotton swab dipped in the solution. As prophylactics against gonorrhea the various silver preparations such as protargol are satisfactory. Solutions are better than ointments here as well. There is great danger of stricture of the urethral orifice if strong solutions of protargol (from 10 to 20 per cent.) are used. Much weaker solutions will have the desired prophylactic effect, and even then strictures will occasionally result. One objection to the silver preparations in watery solutions is that they are not stable. Schumacher thinks that this is one very good reason why one preparation may be well recommended to serve as a prophylactic against both syphilis and gonorrhea. He thinks that if a 0.1 per cent. solution of mercuric chlorid is used against syphilis, and the urethral orifice is carefully cleansed with the little finger dipped in the solution, or a cotton wrapped match, it will protect against gonorrhea as well.

Causes of Recurrences in Infantile Gonorrhea.—Valentin relates her experiences in the treatment of 161 cases of infantile gonorrhea. After from two to four weeks' treatment the course was suspended if the tests for gonococci were negative, but in almost all of the cases examined after several weeks or months there was a renewed discharge which was found to contain gonococci. The same treatment as the first time caused the discharge to cease and the gonococci to disappear in from four to eight weeks. If the treatment was interrupted, recurrences again set in. Some children had three or more recurrences, requiring them to be kept at the station for more than a year. The cause for the many recurrences she finds in the fact that gonococci in the glands or neighboring organs were not easily accessible to the treatment. In 61 of the children in whom recurrences occurred, gonococci were found to persist in the rectum.

Monatsschrift f. Geb. u. Gynäkologie, Berlin

May, 1921, 54, No. 5

- *The Placenta in Therapeutics. H. Guggisberg.—p. 277. Idem. E. Puppel.—p. 280. Idem. E. Martin.—p. 288.
- *Myoma and Pregnancy. F. Heimann.—p. 292.
- *Primary Chancre in Vaginal Portion of Uterus. B. Liegner.—p. 298.
- *Typhoid Peritonitis. J. Richter and J. Amreich.—p. 300.
- *Diathermia in Gynecology. Sperling.—p. 309.
- *Radiotherapy of Peritoneal and Genital Tuberculosis. S. Stephan.—p. 314.

Placenta Extract as Oxytocic.—Guggisberg reported a long ago as 1913 that certain organ extracts, especially the placenta and the thyroid, contain substances which promote

the contractions of the uterus. The extract freshly derived from placenta tissue does not seem to possess any toxic action. It is probably, he says, some proteogenous amin that exerts this nonspecific action on nonstriated muscle. He here reports further experiences with it, and its more effectual action when combined with pituitary extract.

Myoma and Pregnancy.—Heimann illustrates the varying clinical pictures that may be presented and the indications with each, as evidenced in three clinical cases. In the first, a huge myoma was discovered in the uterine cervix at the fifth month of pregnancy, and at term the woman was delivered by cesarean section of a normal child. She succumbed a few days later to postoperative pneumonia. In the second case a cluster of myomas interfered with the development of the fetus, and the pregnancy was terminated by supravaginal amputation at the third month. In the third case there was nothing to prevent the large myoma being treated conservatively, with normal delivery at term.

Primary Syphilitic Chancre on Vaginal Portion of Uterus.—Liegner cites Fuchs' discovery of the spirochetes of syphilis in the uterine cervix of women whose husbands presented contagious syphilitic manifestations, and this before the women showed any indications of the disease except the positive Wassermann reaction. This proved that the spirochetes were not from casual contamination. Liegner reports a similar case from his own experience. The diagnosis wavered between syphilis, tuberculosis and cancer. The hard edge of the process and the sudden development of severe symptoms, beginning with hemorrhage confirmed its syphilitic nature. The young woman had been sent to the hospital with the diagnosis of abortion, but there were no signs of pregnancy. No spirochetes could be found, but before the Wassermann test was completed, extensive and severe secondary manifestations of syphilis appeared along with the primary lesion. The Wassermann reaction is liable to be negative at this early stage, and the diagnosis may be very puzzling.

Typhoid Peritonitis.—In the case here reported the peritonitis developed after the rupture of an ovarian dermoid cyst which had been infected with typhoid bacilli and had suppurated. No adhesions developed later. The writers ascribe this to the fat contained in the dermoid cyst which protected the tissues against adhesion.

Diathermia in Gynecology.—Sperling states that a subjective cure was attained in 56.5 per cent. of the 110 gynecologic cases in which diathermia was applied, and improvement in 43.5 per cent. The relief of pain was the most striking effect and the promptest, both in the cases with and without inflammatory processes in the adnexa or connective tissue. It seldom failed to relieve, and then only in old chronic cases or in older women with hard and adherent processes. Even in these apparently rebellious cases, the desired result was sometimes obtained with persistent application, the lesions subsiding finally. In one case this required seventeen sittings. Recent cases are treated only with injection of turpentine.

Roentgen-Ray Treatment of Peritoneal and Genital Tuberculosis.—Stephan expatiates on the excellent results attainable with radiotherapy in all cases of tuberculous peritonitis with extensive adhesions but without ascites, irrespective of whether the genital organs are involved or not. Attempts at operative intervention generally give deplorable results. He also applies radiotherapy in the cases in which operative measures are refused, or it is not practicable for any reason. He applies roentgen-ray treatment further after the exploratory laparotomy in the miliary form with ascites. By releasing the fluid the conditions are improved for the radiotherapy, and the adnexa can be inspected better after the fluid has been drained off. If the serous membrane alone is involved, he exposes the entire abdomen from front and back, exclusive of the small pelvis. By this means the genital organs are spared the castrating dose. Even when the adnexa are involved, he tries to save at least one functioning ovary in young women. For these and other reasons an exploratory laparotomy is of great advantage, and the ovary to be left is carefully protected against the rays. He describes an instructive case which encourages to apply radiotherapy in this form even in quite recent, acute cases of peritoneal and genital tuberculosis.

Münchener medizinische Wochenschrift, Munich

May 27, 1921, 68, No. 21

- Attempt at a Uniform Explanation of Manifestations of Paralysis in Infantile Cerebral Hemiplegia. G. Eversbusch.—p. 627.
Volatile Oils and Their Practical Value. Heinz.—p. 628.
Antiseptic Treatment of Infected Wounds. J. Finger.—p. 631.
Thrush Fungus in Gastric Ulcers. Meyenburg.—p. 633.
Conservative Treatment of Streptococcus Abortions. Neu.—p. 634.
Suggestion and Hypnotism in General Practice. Hattingberg.—p. 635.
Births During Modified Twilight Sleep. K. J. Wederhake.—p. 637.
Symptomatology and Treatment of Hypernephroma. Thierry.—p. 638.
Abortive Cure of Primary Syphilis. Spiethoff.—p. 640.
Exact Diagnosis of Duodenal Ulcer. H. Lorenz.—p. 640.
Expulsion Mechanism in Narrow Pubic Arch. P. Mathes.—p. 641.
Apparatus for Lateral Roentgenoscopy of Stomach. H. Cramer.—p. 641.
*Treatment of Surgical Tuberculosis. F. König.—p. 642.
Accumulation of Iodin in Carcinoma Tissue. G. Riehl.—p. 644.
Indications for Intubation. F. Hamburger.—p. 644.
Treatment of Incarcerated Hernia. E. Stark.—p. 644.
Friedmann's Tuberculosis Treatment. L. Zschau.—p. 644.
Technic of Punctures. Michael.—p. 644.
Treatment of Cerebral Apoplexy. R. Geigel.—p. 645.

Treatment of Surgical Tuberculosis.—König warns against trusting too blindly to conservative treatment of bone, joint and gland tuberculous processes outside of well equipped institutions, saying that the results reported by Bier are something like an experiment on human beings as the ultimate outcome is not known yet. König has investigated recently 1,932 cases of resection reported from twenty different sources five, ten, twenty or more years ago, and has found that, although these were the gravest kinds of tuberculous processes, 68 per cent. have been permanently cured to date. Bier replies to this that he has also seen many of these "permanently cured" cases, and that it would be better to call them "permanently crippled" cases. Conservative measures such as he has found effectual heal without crippling, and reach foci inaccessible to surgery. In conclusion he adds to his previous directions that persons taking sun and air baths must be protected against wind. Only on the very hottest days is a fresh breeze desirable for them. (Bier's work was summarized last week, p. 329.)

Wiener klinische Wochenschrift, Vienna

May 26, 1921, 34, No. 21

- Etiology of Herpes Febrilis. Luger and Lauda.—p. 251.
Tuberculosis of Palmar Aponeurosis Simulating Dupuytren's Finger Contracture. A. Exner.—p. 252.
Nontuberculous Caries of Bones. Hamburger and Erlacher.—p. 253.
Serologic Aspects of Syphilis. Epstein and Paul.—p. 254.
*Arsphenamin Treatment in Gangrene of Lung. B. Molnár.—p. 255.

Arsphenamin Treatment in Gangrene of Lung.—Molnár states that in the hospitals of Berlin, during the period from 1897 to 1900, out of 133 cases of gangrene of the lung only 7.5 per cent. were cured, whereas 64.6 per cent. of the patients died. Of late years Becker has recommended arsphenamin treatment. His results are said to have been strikingly good. Molnár's experience with arsphenamin treatment confirms early favorable reports. In two of his cases the condition had existed only for a week or two; a cure was promptly effected. In one case of a month's standing it required two months' treatment and six neo-arsphenamin injections to bring about a recovery. The fever disappeared after the second injection, but the sputum retained its bad odor until after the fourth injection. The quantity of sputum decreased but slowly. In a case six weeks old four injections (0.30 and three times 0.45 gm.) brought some improvement, but in two cases of eleven and twelve months' standing, neo-arsphenamin could not be seen to have any effect. In recent cases, therefore, arsphenamin treatment should be employed at once without experimenting with other remedies. The etiology of gangrene of the lung and of putrid bronchitis is not known. Fusiform bacilli and spirochetes are doubtless important factors, but there is probably no single causative agent.

Zentralblatt für Chirurgie, Leipzig

May 28, 1921, 48, No. 21

- *Experiences with Parasacral Anesthesia. E. Staffel.—p. 729.
*Retention of Urine After Operations. Pólya.—p. 732.

Experiences with Parasacral Anesthesia.—Staffel reports from the Krankenstift Zwickau the results accomplished with Braun's parasacral anesthesia in the 413 cases in which it was employed during the last nine years. Since 1912 it has

been the preferred form of anesthesia in all perineal and vaginal operations, uterus extirpations, operations for prolapsed uterus, plastic operations on the vagina and perineum, urethrotomy, and operations for cancer of the rectum. In only 18 cases the sacral plexus was not entirely blocked. No untoward by or after effects were observed in any case. There were 65 cases of cancer of the rectum, in which general anesthesia was employed in 8 instances, lumbar anesthesia in one and parasacral anesthesia in 56. In 2 cases parasacral anesthesia failed entirely, and in 3 other cases general narcosis had to be employed to help out. Patients operated on under parasacral anesthesia leave the operating table in much better condition than those operated on under general anesthesia. As a rule, one would not suspect from their appearance that they had undergone a serious operation.

Prevention of Retention of Urine Following Operations.—Pólya, having repeatedly observed that after hernia operations and operations for hemorrhoids, rectal fissures and fistulas, a catheter had to be employed very commonly for several days after the operation, hit upon the plan of training patients in advance of the operation to pass urine in bed while in a recumbent position, preferably while lying on the back. It was a difficult matter for some at first, but the trick of it was usually learned in a day or two. Since this method has been employed, out of thirty-one patients (twenty-nine men, two women) operated on for inguinal hernia only one (a man) has been catheterized, and that only once. In a large percentage of other cases catheterization could be thus avoided.

Zentralblatt für Gynäkologie, Leipzig

May 28, 1921, 45, No. 21

- Extraction of After-Coming Head of Dead Fetus. E. Sachs.—p. 742.
 *Undernutrition and Fat Content of Human Milk. C. Pasch.—p. 744.
 *Conjunctivitis in Babe and Puerperal Mastitis. E. Lang.—p. 750.
 Annular Bidiscoidal Placenta. J. Schiffmann.—p. 754.
 Recurring Retroperitoneal Fibromyxoma. B. Schwarz.—p. 760.

Effect of Undernutrition on the Fat Content of Human Milk.—Pasch states after prolonged investigation that undernutrition, if only moderate, does not produce a diminution of the butter fat in human milk, provided the mother is in fairly good health. This finding agrees with that of Vollhase and Stau who reported that the fat content of unadulterated cow's milk during the war remained unchanged. Kirchner also found that cow feed that was below par as regards nutrients affected the fat content only slightly, although it did affect the quantity of the flow.

Conjunctivitis of the New-Born in Relation to Puerperal Mastitis.—Lang has been carrying on a series of investigations in the Brandenburg Midwives' Training School in connection with Feilchenfeld's communication at the 1920 gynecologic congress that there was a close causal connection between conjunctivitis in the new-born and puerperal mastitis, which rendered prophylactic measures imperative. In 455 parturients during the months of January and February, 1921, he found only six cases of mastitis, or 1.06 per cent., which corresponds in a general way to the statements of other writers, who report from 0.54 to 1.93 per cent. There was thus no increase in mastitis as Feilchenfeld had maintained. Not a single mother whose child had conjunctivitis presented mastitis, nor did he find any bacteria in the conjunctival sac of children whose mothers were suffering from mastitis. However, he did find that conjunctivitis among the new-born was more common than usual.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 14, 1921, 1, No. 20

- *Obstetric Version. G. C. Nijhoff.—p. 2652.
 *Snapping Finger. W. P. J. Hoogveld.—p. 2663.
 The Function of the Otoliths. F. H. Quix.—p. 2670.
 Pituitrin in Obstetrics. P. Timmers.—p. 2674.
 *Hunger Strike in Prisons. S. van Mesdag.—p. 2675.
 The Tetrahedric Chest. K. A. Rombach.—p. 2677.
 Abscess Traced to Helminths. F. M. G. de Feyfer.—p. 2678.

Obstetric Version.—Nijhoff tells of Irving W. Potter's systematic use of version in 1,200 obstetric cases, and reviews his arguments. Certain features of Potter's technic Nijhoff regards as progress, particularly his insisting that both feet should be drawn down, and that the arms should not be

delivered until after the scapulae have passed the pubis, and then the foremost arm first. He is careful to insure that the fetal membranes are separate from the uterine wall, and warns that a man with a big forearm has no right to attempt to put it in a birth canal. Nijhoff comments that some of these features of Potter's technic are very old but have been forgotten so long that they seem new. The most impressive element of his technic is the tranquil way in which all proceeds, from the knowledge that the child always has a chance to breathe. Nijhoff prefers hooking the mouth with two fingers or similar maneuver rather than applying forceps.

Snapping Finger.—In a case of snapping finger of the right hand, a portion of the flexor tendon was found enlarged and tender. All disturbances ceased at once when the tendon sheath was incised and the strain on the overlarge portion released. The sheath was not sutured, but subcutaneous fat tissue was sutured over the cleft.

To Arrest Hunger Strike.—Mesdag tells of a simple means to conquer a hunger strike in a prison. He allows no food except milk, and does not allow any water in the cell except water for washing, and this is all made soapy before it is brought in. The hunger striker intends to refuse food, but does not count on having nothing to drink. This soon overcomes his resistance. Mesdag has never known this to fail in several years of experience with this method, while it never has done harm. He has had no experience with it in treatment of the insane who refuse food, and has never applied it other than to healthy prisoners.

Hygiea, Stockholm

June 16, 1921, 83, No. 11

- *Weight During Treatment for Syphilis. J. Almkvist.—p. 353.
 *Lagging of Chest in Respiration. C. E. Waller.—p. 367.

Changes in Weight During Treatment for Syphilis.—Almkvist records the weight twice a week of all syphilitics taking treatment. This has shown that the weight generally declines under mercurial treatment and increases under arsphenamin. This loss of weight under mercury may be the only sign of toxic action from the drug, but he thinks that it must be regarded as indicating intoxication. Some persons lost weight under doses as small as 5 cg. of mercury salicylate, while others bore up to 20 or 25 cg. It seems wise to counteract the decline in weight with extra-nourishing food and means to stimulate the appetite, reducing the dose of mercury if the other measures are not promptly effectual, striving however to keep the doses as large as is practicable without toxic action.

Lagging Half of Chest.—Waller applies the term retardatio medica to the condition in which one side of the chest lags behind in the respiratory movements. This is often an important symptom, but it is seldom heeded. It can be rendered very prominent by holding a spirit level or its equivalent against the front wall of the chest. In the normal, both halves of the chest expand symmetrically.

Ugeskrift for Læger, Copenhagen

June 16, 1921, 83, No. 24

- *Tests of Motor Function of the Stomach. A. Als-Nielsen.—p. 805.

Tests of Motor Function of the Stomach.—Ten men and eleven women with normal stomachs were examined with the roentgen rays to determine the exact time when the stomach contents passed into the intestine. Then one or more of the five principal test meals were applied to 159 patients with various stomach or bowel derangement, and the findings are compared with each other and with the roentgen findings. It was found repeatedly that apparently normal findings with one of these methods of investigation were contradicted by the abnormal response to other tests. In 22 per cent. of fifty-one patients, the contrast meal left the stomach in three and a half hours, while the Bourget-Fabér test meal showed retention of over twelve hours. The majority in this group seemed to have gastritis. The various groups studied show that, on the whole, roentgen examination of the motor functioning may advantageously substitute the Bourget-Fabér test meal. It should always supplement roentgen examination for other purposes.

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A PLEA FOR THE EARLY RECOGNITION OF THE SYMPTOMS OF UROLOGIC LESIONS*

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The present solid foundation of urology is based mainly on our ability to make an accurate and comprehensive diagnosis of lesions in the urinary tract. The rapid and brilliant progress in this respect in our specialty is unequaled by any other in the many departments of medicine. The development of the cystoscope, ureteral catheterization, the roentgen ray, and pyelography, and the estimation of the renal function, enable us, in the vast majority of cases, not only to determine accurately the pathologic condition present and to indicate intelligently the treatment to be followed in lesions of the urinary tract, but also to differentiate the often puzzling borderline cases in which the symptoms are suggestive of a urinary lesion, when the actual lesion is outside this tract and properly comes under the realm of the general surgeon, the orthopedist, the gynecologist or the neurologist.

While these rapid strides have been made in urology, it cannot be truthfully said that the profession, as a whole, has kept pace with its progress and possibilities. Otherwise we would not see, as we do daily, in hospital and private practice, patients with undiagnosed genito-urinary lesions of long standing. How frequently we see cases of so-called cystitis, in which an insidious tuberculosis of the kidney has become bilateral during months of internal treatment or misdirected bladder lavage; or hematuria, perhaps slight at first, with long intervals between bleeding, sufficient for a small papilloma, which could have been easily destroyed by fulguration, to become potentially or actually malignant; or a renal neoplasm become transformed from an operable to an inoperable case by the development of metastases; as well as cases of chronic urinary infection, in which a kinked ureter or some deformity of the renal pelvis has caused renal retention which has failed to recover after long treatment with urinary antiseptics and vaccines; or a pair of kidneys destroyed by a pyelonephritis from the continued back pressure of retained urine, due to stricture or prostatic obstruction.

The foregoing statements may sound like an exaggeration of the facts, but they are not, as any urologist of experience can testify.

QUALIFICATIONS OF THE UROLOGIST

While it is not to be expected that the more elaborate and intricate methods of examination and diagnosis, as cystoscopy or pyelography, are to be employed by any but the specially trained, the patient has the right to expect that his adviser is at least familiar with the existence of such methods and the indications for their use; and if he is not able to carry them out himself, his responsibility to his patient demands that he put him in touch with some one who can.

Leaving aside for the moment the more elaborate methods of examination, there are certain procedures which are within the reach of every practitioner, from which logical and sufficiently accurate deductions to make a reasonable working diagnosis of genito-urinary disease can be drawn. This involves no more nor less than the ability to obtain a good clinical history, to make a complete and careful physical examination, with the employment of some of the simple instruments of precision, and to have a moderate knowledge of laboratory technic. Even the latter is not absolutely essential, as at present it is an isolated community indeed which has not access to some more or less well-equipped laboratory in which the ordinary urinary examinations, test for tubercle bacilli, estimation of renal function, Wassermann tests, and complement fixation reactions can be made. But he must be able to draw proper conclusions from the facts obtained.

SYMPTOMS OF GENITO-URINARY LESIONS

While in some lesions of the genito-urinary tract the symptoms are typical and suggestive of the location of the lesion, unfortunately in many they are quite the reverse, being suggestive of trouble in an organ or region quite remote from the one involved, which makes the clinical history as obtained from the patient often atypical and misleading. This is particularly true in regard to pain, both in lesions within the urinary tract and those without. That pain in the back is a sign of kidney disease is a belief firmly rooted in the minds of the laity. This fact is much exploited by the quack, and the picture of an agonized human being hanging on to his loins, with the legend in big type, "Have you weak kidneys?" is familiar to all. As a matter of fact, pain in the back is infrequently associated with chronic urinary lesions, and extensive destructive lesions of the kidney can occur from calculus disease or pyelonephritis due to obstruction at the bladder outlet, with no pain whatsoever. Such a case, of giant bilateral renal calculi which had never given

* Chairman's address, read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

any symptoms, recently came under my observation. Such pain, as a rule, will be found on examination to be due to osteoarthritis of the spine, sacro-iliac disease, back strain from faulty posture, etc. These facts are more or less recognized by the profession. What is not so well recognized, however, is that pain in genito-urinary lesions is often of the referred type, as seen in renal tuberculosis, in which the healthy kidney may become enlarged and tender from compensatory hypertrophy. Failure to recognize this fact has led to fatal results more than once, when the good kidney has been judged the diseased one because it is palpable and tender, and has been removed without a preliminary cystoscopic examination.

Other common examples of pain are those referred to the bladder in various renal lesions, to the loin in beginning epididymitis, to the perineum, suprapubic region, and various other locations in seminal vesiculitis, and to the glans penis in vesical calculus. Pain in the acute lesions is much more suggestive, as in renal colic, but here again it is a fruitful source of error when occurring on the right side, as the symptoms are often confused with appendicitis and gallbladder lesions. In fact, 25 per cent. of our cases of ureteral calculus in which an operation was performed at the Massachusetts General Hospital had had a previous operation for appendicitis or some other supposed intra-abdominal lesion, without relief. Pain is on the whole an unreliable symptom. It should be considered only in combination with the physical examination and the urinary findings.

Undoubtedly, the most constant symptom in genito-urinary disease is some deviation from the normal in the function of micturition. And when the history of such deviation is obtained, an immediate physical examination, as well as an examination of the urine, is indicated. For the latter procedure, it is to be remembered that in the female, a catheter specimen is absolutely necessary for accuracy. Micturition occurs in the normal individual without difficulty, four or five times during the waking hours and, as a rule, not at all during the night. The variations from the normal include increased frequency, day or night, or both, with or without pain and burning during or after the act, urgency, difficulty, retention and incontinence. The occurrence of any of these phenomena has a widely differing significance in the various "ages of man," and woman for that, and here again is to be considered only in combination with the physical and urinary findings. In this connection, the polyuria of diabetes, of nephritis and of certain nervous conditions is to be kept in mind. To attempt to discuss all of these in detail would be to open up the entire field of urinary diagnosis, which is far beyond the scope of this or any other paper. It is my intention to dwell only on certain essential features of urinary disease, frequently overlooked, which demand a careful study of the urinary tract.

EXAMINATION

The physical examination of the patient is of great importance and should be made in a careful and routine manner. It should include abdominal palpation, an examination of the joints for an existing or previous arthritis, or tuberculous processes, for the presence of scars of old sinuses, and for the condition of the reflexes; the taking of the blood pressure, the inspection of the external genitals, an investigation of the

condition of the inguinal glands, and, when indicated, a pelvic or rectal examination. The observer should have the necessary equipment to detect stricture of the urethra in the male; he should be familiar with the technic of aseptic catheterization, and should bear in mind constantly that gentleness above all things is essential in urethral and bladder instrumentation. Of greatest importance is the examination of the urine. A simple inspection of a freshly voided specimen will give a certain amount of information to the experienced eye, the presence of shreds being characteristic of prostatitis or a chronic urethritis. Cloudy urine which does not clear with heat, acetic acid or on filtering indicates a bacilluria, and heavy white sediment, occupying a quarter to a third of the volume, is characteristic of pyonephrosis. The presence of pus or blood in the urine demands an accurate determination not only of the source, but also of the cause. Formerly much stress was laid on the various types of epithelial cells found in the sediment, but they vary greatly in different stages of an inflammatory process, and since the introduction of cystoscopy and ureteral catheterization, less and less attention is paid to them. The presence of pus in the urine signifies suppuration in the genito-urinary tract itself, or in some cavity or organ draining into it, and its localization becomes of extreme importance.

The localization should be carried out in an accurate and routine manner. In the male, a portion of the urine should be voided into two glasses, and some retained in the bladder. If the first specimen is cloudy and the second clear, suppuration is limited to the anterior urethra. The prostate should then be massaged, and the remaining urine voided. If the prostate is involved, this specimen will show pus. When the two glasses are equally cloudy, the prostate is to be excluded as the source of infection by an examination of the expressed secretion. If this is found negative, a cystoscopic examination of the bladder and a study of the upper urinary tract should be made by means of ureteral catheterization, roentgen ray, etc. It may be stated that when albumin is present beyond a very slight trace, associated with pus, and in the absence of blood, the upper urinary tract is always involved. A persistent pyuria always demands a cystoscopic examination.

Two of my cases are of interest in this connection, both having occurred in young men who had had a gonorrheal prostatitis and had received local treatment over a long period of time. On examination, the prostatic secretion in each case was found negative, but the urine was cloudy from pus. In one case, there was a residual urine of 4 ounces, and a cystoscopy disclosed a diverticulum of the bladder, which was cured by operation. In the other case, the pus was found to come entirely from the left kidney. A roentgenogram revealed a large left renal calculus which had never given symptoms. It was successfully removed by operation. The urine contained albumin in the second case, but not in the first. Both of these had been considered as cases of chronic prostatitis.

Occasionally, pyuria arises from sources outside the urinary tract, owing to the rupture of an abscess or of a diverticulitis of the large intestine into the bladder. Such cases are to be recognized cystoscopically. It is to be emphasized that inflammation of the bladder is always secondary to some other lesion, and that cystitis is the result of a prostatitis, inflammation or stricture

of the urethra, tuberculous or pyogenic infections of the kidney, new growths, calculi, foreign bodies, prostatic obstruction, diverticula, cystocele, the pressure of uterine or ovarian tumors, or lesions of the central nervous system. It cannot be relieved until the underlying cause is determined and removed. But as the symptoms presented by all of these lesions are mainly those of vesical irritation, treatment is empirically directed to the bladder itself, and, in spite of all that has been written and said, the idea that cystitis is a separate entity sticks like a bur.

IMPORTANCE OF HEMATURIA AS A SYMPTOM

Hematuria is a symptom of most vital importance and should always be investigated, however slight or transient it may be. It is to be remembered that it is only a symptom and not a disease. It arises from a great variety of causes, both local and general, and may come from any part of the genito-urinary tract. We not infrequently hear the phrase, "I have been unable to control the bleeding," or "The hemorrhage continues in spite of such and such a remedy." This is a most pernicious doctrine. As a matter of fact, very few of the lesions producing hematuria are influenced in the least by internal medication or styptics or astringent washings. Still, none of these should be employed unless the location and underlying cause of the bleeding is accurately known, as what may be valuable time, or rather invaluable time to the patient, may be lost. Equally pernicious is the practice of giving a prescription to a patient with the advice, "Come and see me again if the bleeding recurs." Take, for example, the bleeding from papilloma or malignant disease of the bladder. It is often the first and only symptom of these lesions, and long intervals of time, sometimes years, may elapse between bleedings. The patient is, meanwhile, lulled into a false sense of security, only to find, on the recurrence of the hemorrhage, that his disease has progressed from one which could have been relieved to an incurable condition or one requiring extensive operation. Fortunately, hematuria of a sufficient degree to be noticed by the patient generally alarms him to such an extent that he will seek advice. But this avails him little, if the proper advice is not given. It is amazing, however, at times, to find patients who will disregard a hematuria unless it is associated with pain or difficult micturition.

Hematuria occurs clinically to an extent varying from microscopic blood to an amount sufficient to threaten life. When due to an inflammatory condition, it is characterized by pain, and pus is found in the urine. But many hematurias are entirely painless. When the first portion of the urine voided is clear, and the second portion contains blood, the bleeding can be localized to the bladder in the female, or to the bladder or prostate in the male. This condition is known as terminal hematuria. Beyond this fact, nothing can be determined as to the source of the bleeding, by inference, and, when the blood is uniformly mixed with the urine, its origin can be diagnosed only by cystoscopic examination. There is no other way to differentiate a symptomless hematuria of vesical origin from one of renal origin. Either may be continuous or intermittent. In a recent case of hematuria that I saw, occurring in a man of about 60, there was considerable enlargement of the prostate, and this was thought to be the source of the bleeding. Cystoscopic examination, however, showed that the bleeding came

from the right kidney, which was the site of a hypernephroma.

Renal hematuria can be detected only when it is active. Any case not bleeding at the time of examination should be reexamined while bleeding, if no cause is found in the bladder.

Massive hematuria, sufficient to cause retention from clots, is generally of vesical or prostatic origin. But this is not always so. I recall a case which I saw during the war, of late secondary hemorrhage from the kidney, due to a gunshot wound, in which the bleeding down the ureter was so rapid that retention occurred. Nephrectomy was successfully performed. This condition has also been noted in the bleeding of renal tumors.

The subject of hematuria is a large and interesting one, and it is obviously out of place to discuss its many features and causes, local and general, in this paper, strong as is the temptation to do so. Suffice it to repeat that every case should be relentlessly followed up until proved guilty or comparatively innocent.

AGE AND SEX AS FACTORS

Age and sex have a marked influence on the significance of urinary symptoms, and it may not be out of place to mention briefly some of the modifications due to these differences.

The diagnosis of urinary lesions in children is subject to certain limitations not present in the case of adults, owing to the fact that cystoscopy and ureter catheterization cannot be employed below a certain age or, rather, size. In spite of this limitation, the indications for their use in these little patients is, at times, quite as clear as in adults, as calculus disease, and tuberculosis and tumors of the bladder and kidney may be encountered at a very early age. Small sized cystoscopes are on the market, both observation and catheterizing, and, under a general anesthetic, the procedure can be carried out in quite young children, particularly girls. All cases of frequent, painful and difficult micturition or incontinence in children demand a careful local examination, as well as the examination of the urine, as it is only in this way that we can be sure that the so-called bed wetting habit is not a habit, but has behind it some serious pathologic condition. Not infrequently, symptoms may be found to be due to mechanical obstruction, as a very small meatus or a pin-point preputial opening or a congenital stricture of the urethra. Serious damage to the kidney from back pressure may occur from any of these, particularly should infection supervene. Probably the most common urinary lesion in children is pyelitis, which is due to the colon bacillus. This is characterized by fever, frequency of micturition, and a cloudy urine containing pus and bacteria. This may occur as a direct infection from a vulvovaginitis in little girls. Should the symptoms continue, the urine should be examined for blood, pus, and tubercle bacilli. Should these be found, further study is indicated, by the roentgen ray and cystoscopy, if possible. If not, the diagnosis will have to be made by operation.

There is a very important group of cases which is frequently overlooked, occurring in young adults of both sexes. These are the cases of early renal tuberculosis. They are characterized almost entirely at first by symptoms of vesical irritation. This first shows itself as a gradually increasing frequency of micturition. The onset is insidious, and the frequency

is, at first, confined to the day. Later the demands become more and more frequent and urgent, and nocturia supervenes. Such symptoms as these, in the absence of any obvious cause, should at once arouse suspicion of a tuberculous process, and the urine should be examined. If pus and blood are found, and the ordinary bacteria are absent, the suspicion becomes almost a certainty, and the urine should be examined for tubercle bacilli. Nor, in the continuation of symptoms, should one be content with a single negative examination, either by the microscope or by guinea-pig inoculation any more than one would be governed by a single examination of the sputum. Should tubercle bacilli be found, an immediate examination of the upper tract should be made, as early diagnosis and operation are of the greatest importance in this condition.

Abnormalities of the pelvic organs in women are frequently the cause of urinary symptoms. An examination will often disclose the presence of a cystocele, a urethral caruncle, or a tumor of the uterus or ovary, making pressure or traction on the bladder. The female urethra, although short, is frequently the site of a chronic inflammation or stricture, and gives rise to symptoms erroneously ascribed to the bladder. The treatment in all of these conditions is that of the underlying cause.

As has been stated, when the urine remains persistently cloudy, the upper tract is to be investigated. Acute pyogenic infections of the kidney are secondary to some systemic or local infection. By this is meant some focus outside the urinary tract. They tend to recover under conservative treatment, and proper attention to the focus of infection. When they do not, their persistence is due to some abnormality of the kidney, renal pelvis or ureter, causing faulty drainage of the organ, or the presence of a calculus. The indications for and methods of investigation in the bladder and upper urinary tract are the same in men as in women and have already been described.

In the male, the anatomic structure of the urethra has a direct influence on the occurrence of urinary symptoms. Acute gonorrheal inflammations of the deep urethra, the prostate and the seminal vesicles present well marked symptoms, and need no further comment. The importance of the recognition of chronic prostatitis or its absence has already been mentioned. Stricture of the urethra is a lesion of great importance, easily diagnosed, but frequently overlooked because it gives little trouble, as a rule, until the lumen of the canal becomes much diminished.

SYMPTOMS OF OBSTRUCTION

This brings us to the consideration of one of the most important chapters, one might better say volumes, in urology: obstruction at the vesical outlet in the male, with its disastrous chain of results, and its widely varying clinical picture. It is not my intention, nor is it necessary here, to discuss the various forms of obstruction which may be present, or whether this or that operation is the one of choice for its relief. The points to be established in any given case are these: Is there obstruction present? If so, to what extent? How is this to be determined? And what is to be advised? Before taking up any of these, it may be well to emphasize the importance of a careful examination of the reflexes in every case of urinary difficulty in the adult male. This as a routine measure

may save much embarrassment, if nothing worse, to the patient and his attendant, as urinary symptoms are not infrequently among the earliest in tabes and other lesions of the central nervous system.

What symptoms should excite suspicion of obstruction, and what measures should be adopted by the general practitioner to verify this? There is at first increased frequency of micturition, and the patient is obliged to void from two to four times at night. This is apt to be associated with difficulty, and pain generally described as burning or scalding. There is frequently urgency, and some lack of control of the vesical sphincter. The attack may be ushered in by an acute retention of urine, the patient having had little previous difficulty. But there is a wide variation in the extent and duration of the symptoms, and patients will frequently put up with a good deal of discomfort before seeking advice, for various reasons, among them being the impression that it is one of the unavoidable penalties of advancing years; or that all men have more or less difficulty; or through fear of being examined; or because "grandfather had a like trouble," etc.; and some of these beliefs, I fear, unfortunately, some members of our profession share.

The foregoing chain of symptoms is quite as characteristic of stricture of the urethra as of prostatic obstruction. It is to be differentiated by an examination of the urethra. The age of the patient is suggestive, as prostatic obstruction is most commonly encountered in the late fifties and beyond. This, however, does not eliminate the possibility of stricture, which may occur at any age, and, conversely, certain types of obstruction at the vesical neck may occur in much younger men. All such cases should be subjected to a routine rectal examination. The trained finger will at once detect any abnormality of the prostate. The points to be observed are: Is the gland uniformly and symmetrically enlarged, smooth and elastic? The adenomatous type. Is it small, hard and movable? The fibrous type. Or is it irregular, firmly fixed and of stony hardness? The malignant type. The latter is sometimes difficult to differentiate from the chronic, inflammatory type.

The rectal examination, however important in determining the type of prostate, is not an accurate guide to the amount of obstruction present. There may be little or no residual urine in the presence of a large mass felt by rectum. On the other hand, a small prostate may cause complete retention or a large residual, from the presence of a median bar or lobe. The question of obstruction can often be readily answered by placing the hand on the abdomen above the pubes, where the overdistended bladder can be readily felt, sometimes as high as the level of the umbilicus. These cases of chronic overdistention of the bladder are of a most serious nature, as there is generally an extensive destruction or at least a marked embarrassment of the renal function present from pyelonephritis, due to long continued back pressure. The patient is practically always unaware that he has a full bladder, so gradual is the process. What he notices is increasing frequency, which may result in overflow or the incontinence of retention. If the urine is clear, these cases should not be catheterized, but subjected to suprapubic drainage. There is often associated the signs of chronic urinary poisoning, as evidenced by the dry tongue, distention of the intestines, and sometimes hiccups and digestive symptoms. These should always be looked

for, as they are of great import. If retained urine is not to be demonstrated by palpation and percussion, the amount of residual urine is to be determined by catheterization. This is a procedure not devoid of danger, but it should be carried out with all precautions in cases presenting urinary symptoms, with or without enlargement of the prostate, as felt by rectal examination.

It may be broadly stated that a constant residual urine of 4 ounces or more indicates sufficient obstruction to require operation. One cannot be dogmatic or arbitrary in this statement, and it must be qualified by the other elements in the case, brought out by the symptomatology, and the general physical and urinary examination. Whether or not cystoscopy is to be employed as a routine in all cases of obstruction is a much discussed point. In some cases it is obviously unnecessary, and in others absolutely essential. Its performance is to be governed by the individual indication. Cystography and the roentgen ray also have a definite place in the diagnosis of bladder and prostatic lesions. The estimation of the renal function may be said to be of more interest to the surgeon than to the general practitioner.

Here, as in all other urinary lesions, early recognition is of prime importance; and in view of the brilliant results following well advised prostatectomy in skilful hands, with all due regard to the preoperative and the postoperative treatment, even in seemingly desperate cases, no patient should be consigned to a catheter life, with the assurance that "he is too old" or that "he is too bad a risk," until all the facts in the case have been carefully weighed.

CONCLUSION

In this necessarily brief and incomplete review of urologic symptoms, I have endeavored to lay stress on what may be considered some of the cardinal points in diagnosis. My excuses for presenting these facts, so familiar to all genito-urinary surgeons, are that sufficient importance is not attached to the early symptoms of urologic lesions by the profession in general, nor is sufficiently painstaking physical examination carried out in many cases, as is constantly borne out by my experience. In no class of disease is there more suffering, distress and embarrassment than that caused by lesions of the genito-urinary tract; and in no class of cases can a more accurate diagnosis be made or greater relief be afforded by operation. It is only by the constant reiteration of these facts that better results can be obtained in early recognition and treatment; and it is our duty to the profession, to the laity and to ourselves to keep these facts constantly alive.

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Effect of the Active Substance of the Corpus Luteum and of the Placenta on the Growth of the Sexual Organs.—Herrmann and Stein state, on the basis of experimentation with rats, that the active substance of the corpus luteum and placenta exerts a uniform effect in promoting the growth of the entire female genital tract, whereas, on the other hand, it exhibited a retarding effect on the growth and development of the male genital organs. In view of these facts, they think we may be justified in according to this substance a specific effect on the genital organs. The effect of the substance on the male reproductive organs is clearly brought out by two illustrations in their article in the *Zentralblatt für Gynäkologie* 44:1449, 1920, showing the difference in the growth in the treated and in the control animal.

CURRENT PROGRESS IN THE SCIENCE AND PRACTICE OF ANESTHESIA *

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Anesthesia in its many and varied forms—general, local, spinal sacral, paravertebral, intravenous, colonic, oral, synergistic—dates from the first public demonstration of ether by Morton in the Massachusetts General Hospital, Oct. 16, 1846, the word itself being coined by Oliver Wendell Holmes to fit the occasion. The addition of chloroform, ethyl chlorid and nitrous oxid as general anesthetic agents, and the introduction of local and spinal analgesia, followed in the next few years. All of the agents now used for anesthetic purposes were known in medicine many years before their anesthetic properties were utilized. Ether was known for more than three hundred years, ethyl chlorid for more than one hundred, nitrous oxid and oxygen for seventy, and chloroform for sixteen years before Morton's successful demonstration.

ANESTHESIA AND LIFE EXTENSION

Prior to 1846, surgery was crude and repulsive, and was therefore limited to the operations of absolute necessity. Today, surgery is taking on, more and more, an anticipatory aspect, its aim being a lessening of morbidity rather than of mortality. But for the discovery of anesthesia, the blessings of surgery as known today would not exist. The fact that Morton is the first and only physician whose name is enrolled in the Hall of Fame is an exact and just estimate of his achievement. As the result of his success and the consequent advances in specialized and general surgery, it is no idle boast to state that the span of human life has been increased in the aggregate many hundreds of thousands of years.

VALUE OF SEQUENCES AND COMBINATIONS

The evolution of the science and practice of anesthesia has been marked by the development of various methods, combinations and sequences which have modified the unpleasant effects in the induction period, increased efficiency during the course of anesthesia, and eliminated the period of nausea and depression during the time of recovery, thus more than doubling the safety of administration. The statistics compiled by the Committee on Anesthesia of the American Medical Association for the years 1905 to 1912, in which are recorded over half a million administrations, show that sequences and combinations of anesthetics are safer and better from every standpoint than any one agent used alone. For instance, the mortality with straight ether, according to this table, is one death in 4,533 cases; with sequences, the mortality of ether is in one sequence reduced to one death in 6,424 cases, and with another sequence to one death in 10,007 cases. When oxygen is used instead of air with any general inhalation anesthetic, it adds to the immediate safety of the patient, as well as to his subsequent comfort. The same can be said when any one of the agents employed is heated to the temperature of the body. The addition of oxygen to nitrous oxid not only renders the patient's condition more comfortable after the operation, but it also increases his safety to such an extent that no administrator would be held blameless if he did not use this

* Chairman's address, read before the meeting on anesthesia in the Section on Miscellaneous Topics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

precaution. Furthermore, with the addition of oxygen and warmth to the nitrous oxid, the administration may, under certain conditions, be prolonged without lowered blood pressure either during or after the operation; but the relaxation required for certain operations must then be obtained by the addition of other agents.

On the other hand, the administration of nitrous oxid and oxygen without the addition of other agents is quite often positively dangerous, and the mortality is high. The statistics of nitrous oxid are most misleading for the reason that, because it is the most expensive, this form of anesthesia is employed largely in private practice, probably over 90 per cent. of the patients being private ones whose deaths are not recorded in the hospital statistics. That this combination needs reinforcing is shown by the fact that ether containers are attached to all makes of apparatus, although some surgeons and anesthetists deny using ether. Unquestionably, a patient's condition is better after the administration of nitrous oxid and oxygen, with small amounts of ether (from 1 to 4 drams) than when saturated with ether. The smaller the amount of ether used, the less the resultant nausea, vomiting, and fall of blood pressure.

SYNERGISTIC EFFECT OF MAGNESIUM SULPHATE

Can we entirely abolish the use of ether with nitrous oxid and oxygen and get the same resultant relaxation? Yes. By utilizing the synergistic action of magnesium sulphate with morphin as a preliminary, we obtain a safer form of anesthesia with equally good relaxation and with less nausea, vomiting and depression afterward. Ether is thus absolutely eliminated, and increased anesthetic efficiency is obtained.

To the late Samuel J. Meltzer is due the credit of having discovered the anesthetic properties of magnesium sulphate. He erroneously attempted, however, to use this agent alone, as ether or chloroform was first used. Not only does magnesium sulphate with morphin synergize the nitrous oxid and oxygen, but if used with ether it will reduce the amount required by from one third to one half, with no decrease in efficiency. Magnesium sulphate has no deleterious effect on any of the tissues or organs of the body, and when used as a synergist it has no toxic effect whatsoever on the respiratory center. It seems to act mechanically with morphin, holding this drug in contact with the tissues longer than it is able to maintain such contact alone; but with ether, and also with nitrous oxid and oxygen, it acts by deepening or increasing the effect, rather than by prolonging it. Hence the same amount of morphin may be used with magnesium sulphate as with sterile water. For instance, $\frac{1}{8}$ grain of morphin in 1 or 2 c.c. of a 25 per cent. solution of chemically pure magnesium sulphate is increased in value from 50 to 100 per cent., as compared to the same amount of morphin used in sterile water. One hypodermic of the mixture will relieve pain for from ten to thirty hours, as compared with two to four hours with sterile water. When magnesium sulphate is used with ether, the latter may be cut one third to one half in amount. When magnesium sulphate is used with nitrous oxid and oxygen, the oxygen may be considerably increased and the nitrous oxid decreased.

As the results are constant and the technic new, but simple, an outline might be appropriate at this time.

One and a half hours before the operation a hypodermoclysis is aseptically given, of from 200 to 400 c.c. of a sterile and chemically pure 4 per cent. solution of

magnesium sulphate, at a temperature of 110 F., the solution running in by gravity in not less than thirty minutes. No abscesses or sloughs have resulted. One hour and fifteen minutes before the operation, the first hypodermic of $\frac{1}{8}$ grain of morphin in plain water or in magnesium sulphate is given. This is repeated at intervals of fifteen or twenty minutes, until three-eighths grain is given to the average adult. If an idiosyncrasy is present it will develop before the time for the third dose.

Quite often one-fourth grain is amply sufficient, especially for women. The room should be darkened and quiet maintained, or the bed screened and a towel placed over the patient's face. When ready, the patient should be lifted as gently and quietly as possibly, preferably on the operating table, and wheeled to the operating theater.

When all is ready, the mask is applied to the face, and the oxygen started at the same time as the nitrous oxid. Cyanosis should not be tolerated at any time, as the gases are used only to complete the analgesia and to render the patient unconscious. The oxygen may be rapidly increased up to 35 per cent., or even 50 per cent., as the patient will be found to be fully relaxed, and pushing the nitrous oxid will merely add to the danger without increasing the efficiency. A continuous administration is the most satisfactory.

PRELIMINARY MEDICATION

Another factor that increases the safety of all inhalation anesthetics is preliminary medication. When this is employed, anesthesia comes on sooner and with less excitement; and the margin between complete anesthesia and respiratory failure is lengthened, which means that the margin of safety is increased. Furthermore, Dr. T. Drysdale Buchanan of New York has proved clinically that, with the open drop ether method, morphin and atropin decrease nausea and vomiting by more than 50 per cent. The same rule undoubtedly applies to the other general inhalation anesthetics. The use of magnesium sulphate with the morphin still further reduces the unpleasant effects, a state of analgesia taking the place of the depression that sometimes follows the use of morphin.

With magnesium sulphate, morphin and nitrous oxid and oxygen, we can maintain a state of general analgesia with relaxation almost indefinitely, without any deleterious effects. For the new era of anticipatory surgery, this form of anesthesia is a marked advance.

THE PROBLEM OF SHOCK

An important phase of the evolution of the science and practice of anesthesia is concerned with the problem of shock. To E. I. McKesson of Toledo is due the credit of showing that when the blood pressure is taken at regular intervals during narcosis, if shock develops it will be revealed from fifteen to thirty minutes before the usual clinical signs indicate its presence.

None of the general inhalation anesthetics seem to affect the cutaneous nerves unless the patient is thoroughly saturated with the agent employed. When time permits, some local analgesic should be used for the skin, in addition to the general anesthetic. To George W. Crile is due the credit of introducing the use of a local analgesic in connection with general anesthesia. With this combined method, a much lighter and therefore safer anesthesia can be maintained. The objection to this method in general surgery is the element of time. Many surgeons can complete an entire operation

in the time consumed in infiltrating the tissues with a local agent. The utilization of the surgeon's time is one test of the efficiency of any clinic. By employing synergistic methods, a complete block against pain impulses (including the cutaneous nerves) is secured; therefore the anociassociation method may now be considered obsolescent.

ANOTHER FUNDAMENTAL PRINCIPLE

Yandell Henderson stated a fundamental principle that is applicable to all agents and inhalation methods, and that is that the patient should be kept "pink" at all times. With the blood fully oxygenated, a patient is certainly better prepared for emergencies than when this precaution is not observed. The pink patient is a constant factor in synergistic analgesia.

NEWER METHODS FOR BRAIN AND LUNG SURGERY

The fact that so few surgeons take advantage of the fundamental factors mentioned may be in great part the cause of their general tendency to use local anesthesia. As illustrating the advances of anesthesia in special surgery, it may be noted that a few years back only one or two surgeons in the United States had the equipment considered necessary to do the most advanced lung surgery. Apparatus for endotracheal anesthesia, giving positive or negative pressure safely and as required, permitted this work to be done anywhere, even on the battle field. A very great objection to this form of anesthesia is that, in order to introduce the tube into the trachea, an anesthesia deep enough to abolish all throat reflexes by ether saturation is a necessity. This ether saturation means lowered blood pressure. During the World War a new method of anesthesia for lung surgery was developed, requiring less machinery than is necessary with the endotracheal method, and also avoiding the primary ether saturation. This method consists of obtaining an analgesic state by the preliminary administration of the maximum safe dose of morphin (average for adults of three-eighths grain by hypodermic), and producing unconsciousness and maintaining positive pressure by administering from 15 to 35 per cent. oxygen with the nitrous oxid. A pressure of from 7 to 10 mm. of mercury meets all requirements, which pressure is easily determined by a mercurial manometer attached by a yoke to the respiratory bag. Without a manometer, in those types of apparatus which have the bag close to the patient's face, this pressure may be determined as follows: When the rubber bag is overdistended with the gases to such an extent that upon *full inspiration* the seams of the bag are *still* slightly distended, there is a pressure of from 5 to 7 mm. of mercury. Thus the patient is saved the ether saturation with the accompanying lowered blood pressure and temperature, and also the reaction that may follow ether saturation.

The oil-ether colonic anesthesia for operations, especially about the face and upper thorax, is becoming more generally used as its safety and utility are recognized. By synergistic methods, the ether has been reduced one-half. In one clinic, the technic is to give 2 ounces of ether in 6 drams of oil by rectum, with or without paraldehyd, 2 drams. This is preceded by morphin, one-eighth grain, in 2 c.c. of a 25 per cent. solution of magnesium sulphate, the patient receiving in all three-eighths grain of morphin and 6 c.c. of magnesium sulphate. The former practice in the same clinic was to give 3 or 4 ounces of ether. The 6 c.c. of magnesium sulphate, plus procain for the skin, takes the

place of 2 ounces of ether. This probably is not the final technic, but it is mentioned simply to show how much has already been accomplished toward reducing the amount of ether used.

OTHER METHODS

It seems clear that general analgesia is destined to replace general anesthesia, but, however innocuous it may be made, certain conditions and procedures require other methods. For this reason, local, spinal, paravertebral and other forms of anesthesia have made tremendous strides. A conservative estimate is that the use of the foregoing methods has increased more than 30 per cent. within the last few years. The use of certain methods, as intravenous anesthesia and spinal analgesia, seems to have decreased.

SCOPE, UTILITY AND DANGER OF LOCAL ANESTHESIA

From the report of the committee appointed by the Section on Laryngology and Otology of the American Medical Association for 1920, we find that Matas of New Orleans states that he does from 55 to 65 per cent. of all major operations by peripheral anesthesia. As the result of improved technic in local analgesia, Colonel Gray, of the British Army, states, according to this report, that the mortality in cranial and brain injuries was reduced from 60 to 65 per cent. to less than 30 per cent. In operations on the brain and spinal cord, Dowman limits general anesthesia to children and extremely nervous adults whose cooperation cannot be relied on. Local anesthesia is the method of choice of practically all American rhinologists, on account of lessened hemorrhage and supposedly greater safety. The same report notes twenty-one deaths, fifteen of which were from cocain and five from procain. In addition to this number, I have been informed by the chairman of that committee, Emil Mayer of New York, that twenty-two additional deaths have been reported within the last three years, making forty-five deaths from either the agent used or the method employed. How this mortality compares with the mortality from inhalation anesthesia, we have no method of determining. However, it may be stated as a general proposition that local analgesia is a safer method of procedure than general anesthesia. On account of their injurious chemical properties, chloroform, ethyl chlorid and cocain should be excluded as far as possible from all methods.

By excluding the undesirable agents and methods, and by a more extensive employment of the fundamental principles mentioned in this paper, both general anesthesia and local and general analgesia will be placed on a higher plane.

40 East Forty-First Street.

Causes of High Maternal Death Rates and High Stillbirth Rates.—Abundant experience teaches that high maternal and infantile death rates from causes connected with childbearing are associated with inadequate care afforded by ignorant and careless accouchers and nurses and that, conversely, low death rates obtain in the practice of well-trained and careful attendants, even under environmental conditions ordinarily considered adverse. It cannot be questioned that the risks to both mother and child, even in the care of the most intelligent and well-trained accouchers, are enhanced by those constitutional weaknesses, racial or individual, inherited or acquired, general or local, that influence deformities, accidents of pregnancy and labor, toxemias, and resistance to infection.—W. T. Howard, Jr., *Am. J. Hygiene* 1:229 (March) 1921.

THE ACAPNIA THEORY, NOW *

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NEW HAVEN, CONN.

AND

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It is now fourteen years since certain observations were published by one of us¹ from which the inference was drawn that diminution of the store of carbon dioxide in the blood and tissues induces profound functional disturbances: the acapnia theory.

"A great deal of water has run under the bridge" in fourteen years. Terminology and point of view have shifted. No one with the observations before him to which we have referred would today present them as Henderson did in 1907, as depending simply on deficiency of carbon dioxide. When he found a low carbon dioxide content in the blood of an animal under anesthesia and operation, he called it acapnia. Any investigator who now made such experiments as this and observed a low carbon dioxide would today term it low alkali reserve. But the phenomenon is the same whatever the name. It is only the inference from it which varies. Most investigators would infer a condition of acidosis, but in such experiments as those just referred to it certainly is not acidosis.

Cannon² found low carbon dioxide, that is, low blood alkali, in the wounded and shocked soldiers whom he studied in France during the war. He inferred acidosis. Henderson had found low carbon dioxide in the blood of dogs in experimental shock years before. Cannon's interpretation of this phenomenon as acidosis differed fundamentally from that of acapnia. But apart from all interpretation, Cannon's findings on men in the field of war and Henderson's observations on animals in the laboratory were identical.

We shall discuss here chiefly postanesthetic depression. We shall not say more than a few necessary words about shock. Apparently it is an "omnium gatherum" of innumerable but quite disconnected conditions. Investigators disagree on fundamental observations because they are dealing with quite different things—hemorrhage, cold, anesthetic depression, vascular obstruction, concussion, intoxication, beside a number of purely artificial laboratory conditions.

Probably—if we may hazard a guess from reading what has been published—the shock seen by surgeons during the war was chiefly hemorrhage. Probably also some surgeons underrate the amount of blood their peace-time patients lose and the importance of even a moderate loss. We once had a search made of hospital records; and it was noteworthy, first, that conditions, accidents and operations not involving hemorrhage did not involve shock; and, secondly, that shock was usually recorded for operations and accidents which by their

nature must have involved extensive hemorrhage. But in the latter group of cases the hemorrhage was mentioned only cursorily or not at all. This fact suggests strongly that the men who wrote or dictated those records did not note the real extent of the hemorrhage and did not realize its importance.

Just a word here on the meaning of hemorrhage. We are coming to regard it as a form of asphyxia. The critical element is not, as we see it, so much the loss of serum as the loss of corpuscles. The deprivation of the power to transport oxygen and carbon dioxide between the lungs and tissues (for the corpuscles are almost as important for carbon dioxide as for oxygen) is the crucial factor rather than mere depletion of fluid. After hemorrhage, transfusion of blood is therefore far superior to an infusion of any saline or other artificial solution.

THE TWO FORMS OF LOW BLOOD ALKALI

It is now well established that under anesthesia and operation there is a decrease in the blood alkali³ as measured by the carbon dioxide combining power. In other words, the carbon dioxide content of the blood is low.

Is this a matter of any significance? We⁴ believe that it is, and that it is the cause, or is closely associated with the cause, of most of the postanesthetic depression of vitality other than that due to hemorrhage. It also accentuates the effects of hemorrhage. This low blood alkali, however, is not an acidosis, but quite a different condition.

It is obvious that ordinarily an anesthesia lasting less than one hour, and not accompanied by a very extensive operation, does not involve more than a moderate depression of vitality. Correspondingly, the decrease of the blood's content of alkali and carbon dioxide is of only moderate degree. When the operation is extensive and prolonged beyond one hour, distinct depression is the common sequel. The content of the blood in carbon dioxide and alkali is correspondingly decreased below that of the less depressed cases. The etiology of these conditions was worked out partially, but so far as it went correctly, by one of us¹ a good many years ago. But the explanation was not acceptable to the authorities of that day. Such words as alkali reserve, hydrogen ion concentration, anoxic acidosis and the ideas which they connote had not then come into use. Accordingly, we are restudying the subject in relation to these now prevalent conceptions.

Our results demonstrate that a low bicarbonate content may be due to either of two quite distinct processes. One of these may be called the acidotic process, the other the acapnial process. In the former the alkali is first neutralized by acids entering the blood, and the carbon dioxide falls secondarily. In the latter the respiration is primarily excited; carbon dioxide is blown off, and it is now the alkali which falls secondarily as a compensation. Both result in a low blood alkali, but in all fundamental aspects they are antithetical.

The crux of the acapnia theory lies in the distinction between these two types of low blood alkali. While

* Read before the Section on Miscellaneous Topics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Henderson, Yandell: *Am. J. Physiol.* **21**: 126, 1908; **23**: 345, 1909; **24**: 66, 1909; **25**: 310, 385, 1910. Henderson, Yandell, and Scarborough, M. M.: *Ibid.* **26**: 260, 1910. Henderson, Yandell: *Ibid.* **27**: 152, 1910. Henderson, Yandell, and Underhill, F. P.: *Ibid.* **28**: 275, 1911. Henderson, Yandell, and Barringer, T. B.: *Ibid.* **26**: 288, 352, 399. Henderson, Yandell; Prince, A. L., and Haggard, H. W.: *J. Pharmacol. & Exper. Therap.* **11**: 202, 1918. Henderson, Yandell, and Harvey, S. C.: *Am. J. Physiol.* **46**: 333 (Feb.) 1918.

2. Cannon, W. B.: *Acidosis in Cases of Shock, Hemorrhage and Gas Infection*, *J. A. M. A.* **70**: 531 (Feb. 23) 1918.

3. Henderson, Yandell; Prince, A. L., and Haggard, H. W.: *Observations on Surgical Shock*, *J. A. M. A.* **69**: 965 (Sept. 22) 1917. Morris, W. H.: *J. Biol. Chem.* **36**: 211. Reimann, S. P., and Bloom, G. H.: *Ibid.* **36**: 211 (Oct.) 1918. Henderson, Yandell, and Haggard, H. W.: *Ibid.* **33**: 333 (Feb.) 1918. Carter, W. S.: *Effect of Ether Anesthesia on Alkali Reserve*, *Arch. Int. Med.* **26**: 319 (Sept.) 1920.

4. Henderson, Yandell; Haggard, H. W., and Coburn, R. C.: *The Therapeutic Use of Carbon Dioxide After Anesthesia and Operation*, *J. A. M. A.* **74**: 783 (March 20) 1920.

the details of this matter are recondite, the elements are quite simple. We shall deal here only with the elements, merely referring to a long series⁵ of papers already published by us, and still continuing, for a more detailed analysis.

Suppose that we put a solution of sodium bicarbonate in a beaker, and place the beaker under a bell jar containing an atmosphere of air and 5.5 per cent. carbon dioxid. A certain amount of the carbon dioxid goes into solution in the fluid in the beaker, and the relation of this amount of dissolved carbon dioxid, or carbonic acid, to the sodium bicarbonate determines the acidity or alkalinity, or—as we now say—the hydrogen ion concentration. To some extent this fluid is a simplified type of the blood of a healthy living man. The plasma contains sodium bicarbonate, and the amount of dissolved carbon dioxid, or carbonic acid, is determined by the atmosphere which respiration maintains in the lungs.

Suppose now that, in order to imitate the acidotic process, we pour a little hydrochloric acid into the beaker. A part of the sodium bicarbonate is neutralized and forms sodium chlorid. There is then less alkali present, and the relation of the carbonic acid to the bicarbonate is excessive. The fluid is therefore more acid than before, and its hydrogen ion concentration is thus increased. By removing some of the gaseous carbon dioxid from the atmosphere under the bell jar, however, the relation of carbonic acid to bicarbonate can be brought back so as to give the original hydrogen ion concentration. Thus, for instance, if one third of the alkali has been neutralized, and the carbon dioxid in the air is also reduced by one third (that is, from 5.5 to 3.75), the fluid, if freely exposed to the atmosphere, will hold only two thirds as much carbonic acid as before. Both the carbonic acid and the alkali have now been reduced by the same proportion; their relation, that is, the figure obtained by dividing one by the other, is therefore the same that it was originally; and the hydrogen ion concentration is the same.

We have done virtually this experiment on animals by injecting acid into the blood. When part of the alkali is thus neutralized, for instance one third, the animal's breathing automatically increases. This pulmonary ventilation dilutes the atmosphere of the lungs with fresh air so that the carbon dioxid is kept, not at the original amount of 5.5 per cent., but in this case at about a third less. The animal has then an acidotic low blood alkali.

It is more difficult to imitate, by means of a mechanical scheme, the development of a low blood alkali through the acapnial process. But let us go back to our sodium bicarbonate solution under the bell jar with air and 5.5 per cent. carbon dioxid. Suppose that now we begin by ventilating off some of the carbon dioxid in this air. Immediately some of the carbonic acid will diffuse out of the fluid. The alkali will then be left in relative excess, the hydrogen ion concentration is thus reduced, and the fluid is therefore more alkaline than before.

We can perform this experiment not only on fluid in a beaker, but also on animals and even on men. In fact, we have done it on ourselves many times. Any one can

do it by merely performing voluntary forced breathing. The lungs are thus overventilated, and an excessive amount of carbon dioxid is washed out of the blood. The acapnial alkalosis thus induced is the cause of the odd and often unpleasant symptoms which result.⁶

It is what happens next which chiefly interests us here.

If the overbreathing is prolonged, alkali soon begins to leave the blood. This apparently is Nature's method of preventing the alkalosis from becoming extreme. If urine is being secreted, it becomes alkaline⁷ and thus carries away a part. Apparently, however, most of the alkali passes into the tissues to be there stored, in some way as yet not fully understood, until recalled to the blood. Thus, the condition of acapnia and alkalosis induces a low blood alkali. Unlike the acidotic state, however, the alkali has not been neutralized, but has been forced out of the blood in the effort of the organism to combat an otherwise too acute alkalosis.

It is fortunate for anesthetists that this compensation occurs. It is quite clear now that, when respiration fails under ether, the apnea is largely due to the respiratory depression involved in such an acapnial alkalosis. Blood relatively poor in carbonic acid, or relatively rich in alkali, has this effect on the respiratory center. The normal man who voluntarily overbreathes for a minute or two, thus inducing a slight acapnia, has in consequence a period of apnea.⁸ Similarly, but in greater degree, the patient, who by unskilful etherization is kept in respiratory excitement for ten or fifteen minutes or more, would inevitably exhibit subsequently an alarming or even fatal respiratory failure, if it were not for the compensatory passage of alkali out of his blood.

The compensatory passage of alkali out of the blood spares the anesthetist the anxiety of a respiratory failure. The patient does not get off so easily. If the blood alkali has been thus greatly reduced, a condition of profound depression may continue for hours, before the organism succeeds in reaccumulating the needed carbon dioxid and recalling alkali to the blood.

In this depression the blood stagnates—probably in the abdominal vessels and viscera. The skin vessels are constricted.⁹ The superficial veins become scarcely visible, or disappear. The venous return to the right heart is deficient;¹⁰ the cardiac action lacks adequate volume, and arterial pressure is low.

Respiration is so much depressed that the oxygen intake is impeded and cyanosis is evident. The reason is merely that, as carbon dioxid is the normal stimulus for breathing, and as the store of this substance within the body has been greatly reduced, normal breathing cannot return until a sufficient amount of carbon dioxid has reaccumulated in the blood and tissues. The vital depression probably decreases also the production of carbon dioxid.¹¹

Meanwhile, anesthesia continues to a greater or less extent, for the elimination of ether is through the lungs, and the rate of elimination depends, therefore, on the

6. Henderson, Yandell: *Bull. Johns Hopkins Hosp.* **21**: 1, 1910.

7. Leathes, J. B.: *Brit. M. J.* **2**: 165 (Aug. 9) 1919. Collip, J. B.: *Brit. J. Exper. Path.* **1**: 282 (Dec.) 1920.

8. Haldane, J. S., and Priestley, J. G.: *J. Physiol.* **32**: 225, 1905. Campbell, J. M. H.; Douglas, C. G.; Haldane, J. S., and Hobson, F. G.: *J. Physiol.* **46**: 20, 1913.

9. Bryant, John, and Henderson, Yandell: *Closed Ether and a Color Sign*, *J. A. M. A.* **65**: 1 (July 3) 1915.

10. Henderson, Yandell, and Harvey, S. C.: *Am. J. Physiol.* **46**: 533 (Aug.) 1918.

11. Henderson, Yandell; Prince, A. L., and Haggard, H. W.: *Observations on Surgical Shock*, *J. A. M. A.* **69**: 965 (Sept. 22) 1917. *Aub. J. C.: Am. J. Physiol.* **54**: 388 (Dec.) 1920.

5. Haggard, H. W., and Henderson, Yandell: *J. Biol. Chem.* **39**: 163 (Aug.) 1919; **43**: 3, 15 (Aug.) 1920. Henderson, Yandell: *Ibid.* **43**: 29 (Aug.) 1920. Haggard, H. W.: *Ibid.* **44**: 131 (Oct.) 1920. Haggard, H. W., and Henderson, Yandell: *Ibid.* **45**: 189, 199, 209, 219 (Dec.) 1920; *ibid.*, to be published (July, 1921).

volume of the pulmonary ventilation. Full breathing is as essential to rapid termination of anesthesia as it is to rapid induction.¹²

The blood alkali also continues low, for it is only as the blood's content of carbonic acid rises that the alkali is recalled from the tissues.

Of course, such marked conditions as those here described occur only after prolonged anesthesia and operation. By tact and experience, even without understanding the underlying processes, the skilful anesthetist minimizes their development. To some extent, however, they occur after nearly every etherization.

Obviously, the natural method of treatment to assist Nature to recover the normal equilibrium, which we call health, is by restoring the carbon dioxid. Thereby we reverse the acapnial process. We recall the alkali to the blood. We induce a normal volume of breathing. The oxygen supply is thus restored. At the same time the circulation is supported by the increased venous return from the tissues—as is evidenced by the recovery of a normal skin color, the filling of the superficial veins of the arms and neck, the full normal arterial pulse, and the rise of arterial pressure to the same level as before the operation.

All of this is accomplished effectively by means of an inhalation device³ which we hope will soon be available for general trial and use. For a long time the technical problem of controlled administration of carbon dioxid was baffling. But we believe that the device to which we refer will prove both effective and safe. By means of it any desired amount of carbon dioxid may be administered to the patient mixed with the inspired air, but with no appreciable degree of rebreathing, as rebreathing would impede the elimination of ether.

When a patient who has been put back in bed after a prolonged operation is so treated, the first response is an augmentation in the volume of breathing. Until this is obtained, the amount of carbon dioxid administered must be adjusted with caution. With a little experience one learns how to push the dosage from this point on, and at this stage it should be pushed. In a few minutes arterial pressure begins to improve. The skin loses its leaden hue and becomes pink as the small vessels relax and fill; and the veins of the arms and neck begin to show again. From this point on, the administration of the gas is reduced, so as not to push the circulation too hard. By care in watching the distention of the superficial veins and adjusting the inhalation accordingly, we avoid an oversupply of blood to the right heart by the augmented venous return.

Meanwhile the active pulmonary ventilation has rapidly aerated the greater part of the anesthetic out of the blood. In some cases after only fifteen or twenty minutes the patient is conscious, and after a few minutes more the administration of carbon dioxid may be stopped.

It is not our purpose here to deal with details of the practical application of this treatment. We wish here merely to point out the crucial character of the evidence which this treatment affords regarding the validity of the acapnia theory.

The argument is as follows: Every one admits that after a prolonged anesthesia and operation the blood alkali is diminished. This low alkali is the result either of the acidotic or of the acapnial process. If the former

were involved our patients would have died, instead of recovering. For in animals in which the alkali reserve has been diminished by intravenous injection of acid, the administration of carbon dioxid does not recall a normal amount of alkali to the blood. It cannot, for the alkali no longer exists in the body. Indeed, such an animal when treated with carbon dioxid is overwhelmed by the acidosis, and usually dies. After considerable hemorrhage,¹³ the powerful stimulation of carbon dioxid must be administered with especial caution.

Preliminary experiments on animals had shown us what we might expect in patients. Of course we proceeded with great caution at first. We ventured to push the treatment only as experience proved that it is safe.

That this treatment works effectively and beneficially on patients affords crucial evidence in support of the acapnia theory.

ABSTRACT OF DISCUSSION

DR. YANDELL HENDERSON, New Haven, Conn.: Dr. Gwathmey, in his address, spoke of a pallor that comes on after a time under anesthesia. We have found that low blood alkali and this pallor are associated. If you stop one, you stop the other. The pallor indicates a defective circulation and that stagnation of blood, probably in the viscera, which is the cause of the low arterial pressure. It is important, therefore, to know what kind of low alkali occurs under anesthesia. It is generally assumed that in nephritis, for instance, we have essentially the condition which may be produced experimentally by injecting acid directly into the blood, and that all forms of low blood alkali must be of that type. We have shown, however, that the low alkali under anesthesia is not of that type at all. The body maintains with the utmost vigor, not a certain alkali or a certain carbon dioxid, but a certain relation between alkali and carbon dioxid. If you decrease either one you upset that relationship. When you inject hydrochloric acid into an animal, respiration blows off carbon dioxid in an effort toward compensation. The relation of carbon dioxid to alkali is restored at a lower level for both. We have shown also that an exactly opposite process may occur, namely, that if you ventilate the carbon dioxid off by overbreathing, alkali goes out into the tissues. The alkali is still in the body and there is no indication for injecting sodium bicarbonate into the blood. The indication is to recall alkali to the blood by restoring the carbon dioxid. The simplest form of hyperpnea is ordinary childish rage. The child starts tantrums to see if he can get his way. He cries continuously for a time, then stops, and there is a period of respiratory failure until carbon dioxid reaccumulates. In view of the great amount of carbon dioxid that is blown off in anesthesia excitement, it might seem strange that we do not have more frequent respiratory failures. The reason is that as the patient blows off the carbon dioxid, the alkali begins to disappear from the blood in the effort to bring the relation of alkali to carbon dioxid back to the normal. When the patient has blown off a great amount of carbon dioxid, the alkali cannot at once come back into the blood, for lack of carbon dioxid. One of the points we have in mind is by inhalation of carbon to stimulate breathing during the half-hour period after the patient is put back in bed. The surgeon seldom looks at his patient then. He is through. Even the anesthetist is apt not to see the patient, and it is only the nurse who is likely to be present to observe him. Often the air breathed is so small in amount that the ether is not ventilated out of the lungs, and the anesthesia continues. We have developed an apparatus to administer carbon dioxid mixed with air. We thus stimulate breathing and put carbon dioxid back into the blood. We have done this now with entire success in quite a number of cases, and we find that as we put the carbon dioxid back, the alkali is

12. Henderson, Yandell; Haggard, H. W., and Coburn, R. C.: J. A. M. A. 76: 672 (March 5) 1921.

13. Haggard, H. W., and Henderson, Yandell: J. Biol. Chem., to be published.

recalled to the blood, the skin color returns, the circulation recovers, and vitality is restored.

DR. FREEMAN ALLEN, Boston: I have not seen a case of acapnia which I could be sure was acapnia for at least three years, and I attribute it to using methods which provide for rebreathing. When you induce anesthesia by some method that provides for rebreathing, you have a material safeguard against acapnia. Also if you employ the rebreathing methods, such as the semiopen or closed method, to which I am very partial, you safeguard against acapnia. I have been very much struck by this in certain cases of spinal anesthesia in which there have been symptoms of toxicity closely resembling shock. In these cases there is usually pallor, nausea, vomiting, sweating and great circulatory depression, and I have had the misfortune to have my worst cases in members of the profession—two physicians. The most available agent for restoring color, pulse and respiration has been rebreathing into the bag of a Bennett or Gwathmey inhaler. The results of rebreathing are apparent in three or four minutes. The color, respiration and pulse show marked improvement within this time.

DR. ANSEL CAINE, New Orleans: When using an open method for, say, throat work, with the mouth wide open, would it meet the ends required to administer, say, a 1 or 2 per cent. or 0.5 per cent. or whatever percentage is sufficient of carbon dioxid alone, with the agent which forces the ether into the mouth of the patient?

DR. ISABELLA C. HERB, Chicago: In reference to the matter of shallow breathing when the patients have been returned to bed, had morphin or any of the opium derivatives been given prior to the anesthetic? During the stage of excitement some patients breathe rapidly, in which case narcosis develops quickly. The patients who hold their breath become more or less cyanotic, and in this class there certainly is no overventilation.

DR. McKEEN CATTELL, Baltimore: Does acapnia account for acidosis occurring in all conditions of anesthesia, especially when there is indication of shock?

DR. YANDELL HENDERSON, New Haven, Conn.: Lately we have tried to produce an asphyxial acidosis by means of the most typical form of asphyxia, that of carbon monoxid. We have utilized a fact which we have recently discovered, namely, that after vagus section anoxemia does not induce hyperpnea. We find that under carbon monoxid asphyxia after vagus section there is no increase in breathing and no fall of alkali. This shows that an animal may be asphyxiated to the point of death, and if there is no overbreathing, no fall of alkali occurs. That, I think, comes as near a perfect demonstration as any experiment can, that there is no such thing as asphyxial acidosis.

DR. RAYMOND C. COBURN, New York: Referring to the rebreathing in spinal anesthesia and the stimulating effect, that is a very characteristic effect and an important observation. But I also think that Dr. Allen will find that if he administers carbon dioxid in quite small percentage he will get a very much more pronounced stimulation. I have found in a limited number of sudden depressions that carbon dioxid administered in air is by far the most pronounced circulatory stimulant I have ever seen used. I have not used it very much and we have not come to very definite conclusions about it, but carbon dioxid in air seems to have given much better effect than carbon dioxid in oxygen. In regard to the use of carbon dioxid in operations, adding carbon dioxid to etherized air, will result in respiratory stimulation, and to a certain extent might supplement its administration after operation. From 3 to 5 per cent. would meet this requirement. From 7.5 to 10 per cent. is what we have used to stimulate a patient in a depressed condition. You have to administer nearly that much in order to get a pronounced effect. If you want only a slight effect, of course the lesser percentages will answer. As regards morphin accounting for the cyanotic depression after operation in those cases reported, in the cases we first reported we did not give morphin. And regarding the question of whether acapnia accounts for all shock under ether, we have always distinguished and made the exception of shock connected with hemorrhage. Hemorrhage per se produces shock which has no connection with carbon dioxid.

ETHYL CHLORID IN GENERAL ANESTHESIA

ITS ACTION ON THE CARDIOVASCULAR SYSTEM; A CLASSIFICATION OF SIGNS OF OVERDOSE *

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This report is based on observations made during the last five years with the personal use of ethyl chlorid in general anesthesia in about 2,000 cases. These were mostly for operations of from one to five minutes. About 200, however, were for operations lasting from fifteen minutes to one hour each. Nineteen cases carefully studied were of an average length of fifty-three minutes. Much of this work was done in France on soldiers, where, in addition to the personal cases above mentioned, it was my pleasure to be in close contact with the application of this agent, as an inductor for ether anesthesia, in many thousands of cases.

Most of my observations have been made on adults in good physical condition, the majority of these, wounded soldiers in France.

I do not care to enter into a discussion of technic, or of the various methods for applying this agent. However, the observations here presented held good in any method. In the majority of cases I used a gauze-covered mask of the Yankauer type.

Ethyl chlorid in overdose produces one of two sets of symptoms. I have designated these as the spasm type and the respiratory depression type.

SPASM TYPE

Approximately nine out of ten of all patients overdosed with ethyl chlorid manifest this type.

The first indication of approaching spasm is a sardonic grin, due to contraction of the muscles about the mouth. About the same time we notice a beginning contraction of the masseter muscles, and a beginning crowing of inspiration. This crowing, due to partially obstructed inspiration, is the real warning that the dose must be reduced.

If the overdose of the drug be continued, the spasm progresses rapidly until, in about one or one and a half minutes more, it will have become a complete respiratory obstruction, and a state of peripheral asphyxia is present.

Just what muscles are involved I have not been able to determine. Generally speaking, they are the facial muscles about the mouth, the muscles of the neck surrounding the pharynx, and the muscles of the larynx. The masseters start to contract early as stated above, and this contraction progresses rapidly and to a great degree. Only in the spasm of tetanus have I seen such a masseteric contraction. With this masseteric spasm well developed, it is practically impossible to pry the jaws apart sufficiently to insert a mouth gag.

With the general spasm well developed, all of the muscles of the body are somewhat rigid, though far less rigid than the muscles of the face, mouth, pharynx and larynx. The respiratory effort is violent.

The spasm, once inaugurated, develops so rapidly that cyanosis does not appear in the usual case until the obstruction is almost total. When it appears it develops rapidly, and half a minute later the patient is black.

* Read before the Section on Miscellaneous Topics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

The rapidity of progress of the spasm is apparently in proportion to the vapor tension of the ethyl chlorid.

In all ethyl chlorid anesthetics, there is apt to be a decided dilatation of the pupil during the early induction stage, which dilatation disappears, however, within a minute or two after the third stage of anesthesia is reached. In the spasm type, the pupil does not again dilate until respiratory obstruction is almost total: indeed, I have seen cases of almost total obstruction lasting half a minute, yet with no secondary dilatation of the pupil. The patient's open mouth does not prevent this obstruction.

In prolonged ethyl chlorid anesthetics, this spasm may reappear as often as the patient is overdosed. In many cases, the latitude between operative anesthesia and wakefulness is so narrow, and the stage of overdose so close upon the operative stage, that it is difficult to maintain an anesthesia without many times entering the beginning of this spasm.

During the spasm period, the systolic blood pressure is elevated to varying degrees in different patients. I have seen the systolic pressure mount rapidly as much as 50 mm. The highest rise occurs in about a minute following the spasm, and usually the rise is proportionate to the severity and duration of the spasm. The average rise in light or, as I choose to call it, aborted spasm is from 5 to 20 mm.

The diastolic pressure may follow the systolic upward, it may remain stationary, or it may fall as the systolic rises. The fall of the diastolic with the rise of the systolic is usually proportionate to the systolic rise, thus maintaining a level average pressure. When the diastolic rises with the systolic, this rise is usually much less than the rise of the systolic. I have seen the systolic rise 30 mm. with a rise in the diastolic of but 5 mm: I recall one case in which, after eighty minutes of anesthesia, the systolic had risen from 120 to 170 mm., and the diastolic had fallen from 90 to 40 mm. Pulse pressure at the beginning was 30 mm., and at the end, 130 mm. This was an unusual case. Indeed, cases showing this progressive equal divergence of the two pressures to any degree are usual.

I make no further attempt at this time to analyze these varying changes in blood pressure, except to state that they have not occurred in other than spasm types in which operative anesthesia and the inauguration of the spasm stage were so close together that the recurrent spasm was frequent.

The pulse rate increases during the spasm, as a rule proportionately to the increase of systolic pressure.

There is a deepening of the spasm once inaugurated, for a period of a few seconds after the removal of the inhaler. This is constant, and the anesthetist knowing it will be saved some worry.

As for resuscitation in these cases of peripheral respiratory obstruction, the problem is the same as with overdose under any other anesthetic agent, namely, the removal, from the blood and tissue cells, of the excess of the drug. However, in the spasm type this is not an easy task because of the rigid contraction of the masseters. The mouth must be opened, the tongue pulled far out and vigorous chest compression made. Even with the mouth open and the tongue out, there is still a great deal of obstruction. However, the rapidity of elimination of ethyl chlorid makes the resuscitation successful in the good cardiovascular type. I have not seen a death under ethyl chlorid but, in my early use of it, I have been more than once badly frightened.

With knowledge of this action, there is ample warning from the beginning spasm to avoid the more serious aspects of it by the immediate removal of the drug, as soon as the beginning spasm is noticed.

The beginner with this drug should always insert a substantial mouth gag before starting the anesthetic.

DEPRESSION TYPE

This is a progressive central respiratory depression, and occurs in approximately one out of ten overdosed patients. From the onset, the respiratory effort grows less both in volume and in rate. The volume depression is greater than that of the rate. With the continuance of the drug in overdose, this depression progresses to a complete respiratory paralysis in from one-half minute to two minutes, depending on the patient and the vapor tension of the drug. The patient is perfectly relaxed, in every way.

The picture during the deeper degrees of depression is one of collapse. The color is ashen: the pupils widely dilated: and the respiratory effort, if present, is quite discouraging. The picture resembles that of cardiac syncope. But the pulse belies the picture.

The pulse, although slowed in rate, is of good quality and regular. In fact, it seems to be affected in rate only, and, in cases of light depression, not even in rate.

The blood pressure does not fall to an extent that the change can be detected by palpation. Because of the infrequency of this type, we succeeded in finding only two, during our detailed study of the clinical effects of this drug on the cardiovascular system. In one of these two there was a rise in systolic of 30 mm. and a rise in diastolic pressure of 20 mm., at the time of reduction of respiration to imperceptibility. In the other there was a rise in systolic pressure of 18 mm. and a drop in diastolic of 10 mm., at the time of complete respiratory cessation.

Clinically, in many cases of this depression, I have not found any change in pulse by palpation, other than a moderate slowing. The greatest fall in pulse rate that I have seen was from 100 to 50, in a period of five minutes, during one minute of which there was no respiratory effort whatever. The normal anesthetic pulse rate reestablishes itself with the reestablishment of the anesthetic normal of respiration in any given case. The slowing pulse rate begins with the slowing of the respiration, and progresses with the respiratory depression.

As with the spasm type, this respiratory depression may repeat, during the same anesthetic, as often as the patient is overdosed. Following recovery from this depression, the anesthetic may be continued as usual. The type is constant, and the character of anesthesia secured is apparently better than that secured in the spasm type. In the depression type there is a marked secondary dilatation of the pupils as the depression progresses. This is not so in the spasm type.

To the observant anesthetist there is ample warning of the approach of this depression; and there is no need that it be carried to the degree of total paralysis of the center. If total paralysis should occur, however, resuscitation is simple. There is no respiratory obstruction, and two or three forceful, manual compressions of the thorax serve to eliminate the excess of the drug from about the respiratory center, and automatic respiration is reestablished, to carry itself to the anesthetic normal in from one to four minutes.

GENERAL OBSERVATIONS, REGARDLESS OF TYPE

The first stage pupillary dilatation is more marked with ethyl chlorid than with any other anesthetic. This early dilatation is of no importance. Dilatation of the pupil after anesthesia is well inaugurated does not occur except in overdose, and is then confined to the depression type.

Calling attention to previous reports of frequent cardiac syncope with ethyl chlorid, in laboratory experiments on animals, I wish to state that, clinically, in man we have not found this to occur.

It is impossible to predetermine the type in any individual; but once a type is manifested, it remains constant throughout the anesthetic. I have seen but one case in my experience which manifested both spasm and depression types during the same anesthetic, and neither of the symptom syndromes was typical.

An analysis of fifteen cases studied in detail is here presented. The average length of these anesthetics was fifty-three minutes. Van Slyke test of the blood before administration of the anesthetic averaged 57.4 per cent., and twenty-four hours later was 54.8 per cent. Loss, 2.6 per cent.

BLOOD PRESSURE READINGS

Blood pressure readings showed the following averages:

Normal, systolic, 124; diastolic, 82.

At start of anesthesia, systolic, 136; diastolic, 81.

At finish of anesthesia, systolic, 133; diastolic, 81.

One hour after finish, systolic, 120; diastolic, 75.

Twenty-four hours later, systolic, 120; diastolic, 73.

The blood pressure was sustained fairly well throughout. The best comparison in the foregoing readings should be that pressure taken as normal, the day before the operation, and that taken one hour after the operation, which comparison shows a loss in systolic pressure of 4 mm. and a loss in diastolic pressure of 7 mm.

The pulse readings showed the following averages:

Normal, 80.

At start of anesthesia, 93.

At finish of anesthesia, 91.

One hour after the finish, 78.

Twenty-four hours later, 85.

Here the only comparison of value is the normal count, as taken from the hospital chart previous to the operation, and that taken at the finish of the anesthesia. This reading shows an increase in the pulse rate of 11 a minute.

RESPIRATORY RATE

The respiratory rate based on a reading at five-minute intervals throughout all cases showed an average of 29 a minute. Although these readings in so small a number of cases cannot be of great significance, they serve to show the absence of any great digression from the anesthetic normal as established by ether or nitrous oxid with oxygen.

The foregoing study was made on average adults undergoing prolonged but extraperitoneal surgery.

CONCLUSION

In the field of anesthesia, ethyl chlorid falls third in value to nitrous oxid-oxygen and ether. I place it above chloroform in valuation. It is applicable for short operations and for induction of ether anesthesia when nitrous oxid and oxygen are not available.

ABSTRACT OF DISCUSSION

DR. F. HOEFFER McMECHAN, Avon Lake, Ohio: Some years ago I made a similar clinical study at the Cincinnati General Hospital, and also included the use of ethyl bromid. I came to about the same conclusions that Dr. Guedel reached, without, however, making the blood pressure test. The types of spasm and depression occurred in my series of cases in about the same proportion as in his, and they were of the same type. I agree with Dr. Guedel that ethyl chlorid is a most valuable drug for inducing anesthesia, but I would sound a note of warning, in using it as a preliminary anesthetic, that it be used with caution if it is to be followed by chloroform-ether sequence. In such use there is very apt to occur, particularly in children, a rapid and occasionally rather disconcerting cardiovascular depression. The spasm type of reaction to ethyl chlorid will undoubtedly prevent anesthetists from using it in long operations, unless some method is devised by means of which it can be used concurrently with sufficient oxygenation not to affect the depth of the ethyl chlorid anesthesia and at the same time to provide sufficient oxygenation to eliminate the untoward respiratory symptoms. For short operations, ethyl chlorid has certain advantages in its rapidity of induction, but it has equal disadvantages in the fact that it is not a very useful muscular relaxant. In using it for setting fractures and reduction of dislocations, one has to push the anesthesia rather far. Embley and Webster have found something like a proportionate difference of 19 to 1 in its toxicity. But in comparison with the amount of anesthesia which must be used as between ethyl chlorid and chloroform, the larger quantity of ethyl chlorid brings down the toxicity of this agent virtually to that of chloroform.

DR. LINCOLN F. SISE, Boston: I used ethyl chlorid in the war on the men in the navy before I could get hold of gas, in order to make a quicker induction. I followed that quickly with ether, using the two together for a short time, and then going on to straight ether, and in that way would have these strong, husky young men ready for operation in about five minutes, whereas with straight ether it would take twenty minutes, or sometimes half an hour, to get them ready for operation. I never saw the spasm stage, but I did see an apparent vascular depression. I made no blood pressure studies, but they certainly did pale out, particularly if put in an upright position. It seems to me that for peace time work it is too dangerous to use, both in its immediate and in its postoperative effects.

DR. JAMES T. GWATHMEY, New York: I have been drawn to the same conclusions as Dr. Guedel, and thought that ethyl chlorid would be a safe drug to use, so I had it prepared with certain amounts of oil, and by passing gas and oxygen over this mixture I procure anesthesia quickly. This method was used with children particularly and for induction only. When the patient is slightly under, the ether is turned on and nitrous oxid and ethyl chlorid and ether are used to maintain the anesthesia; but I secured better results by passing nitrous oxid and oxygen over and through anesthesiol. However, I found very quickly, after using this mixture a half dozen times, that the last patients did not do so well as the first, as the ethyl chlorid had disappeared from the mixture. The practical point in this method of anesthesia is that you can increase the oxygen to 35 or 50 per cent. and thus keep the patient pink as well as thoroughly relaxed throughout the operation.

DR. H. E. G. BOYLE, London, England: I discarded ethyl chlorid some years ago. Dr. Guedel has summed up the position most admirably. It is applicable for short operations and for induction of ether anesthesia when nitrous oxid and oxygen are not available.

DR. ARTHUR E. GUEDEL, Minneapolis: Now that this subject of experiment is over, I have no use for ethyl chlorid, except in an emergency. But as it must be used in an emergency occasionally, it is well for us to have had the opportunity to observe its action, to discuss its use so that others may understand it and be prepared somewhat. Answering Dr. Sise's question, I have not seen it used in an upright position and I have not seen the depression which he speaks

of in a large series of cases. Nor has the blood pressure studied shown cardiovascular depression in the series which I spoke of in prolonged anesthesia. In regard to its relative safety, the best comparison I have to make is the determination of blood pressure readings after fifty-three minutes of chloroform; comparing that with the blood pressure readings after the ethyl chlorid experiment, you will find a much greater blood pressure reduction with the chloroform than we were able to obtain with the ethyl chlorid.

HOW ANESTHESIA MAY AID AND PROTECT SURGERY*

E. I. McKESSON, M.D.

TOLEDO

Two general factors as they affect the surgeon and anesthetist are presented herewith: namely, the diagnosis and treatment of circulatory depression, and the application of anesthetic gases at various pressures, in which the pressure is the essential factor in the narcosis and operation.

Circulatory depression and surgical shock are still an open question. Their etiology in the civil practice of surgery is not fully determined, since there are some who still assert that hemorrhage alone is responsible. But as an anesthetist, having made an extended clinical study of the conditions in which pulse, respirations and blood pressures have been recorded, while watching the influences of various factors upon these functions, I am convinced that among the etiologic factors involved are the following, named in the order of their potency: hemorrhage, trauma, overanesthetization, toxemia, pain and fear. Any one of these may be the dominant factor in a given case; but more generally, fatal shock results from some combination of these influences. Extreme trauma too often leads to overanesthetization, associated with oozing or frank hemorrhage in a patient poorly equipped to withstand their depressing influences.

From a clinical study, it appears that circulatory depression in some degree is the forerunner in all cases of surgical shock. And its degree, as indicated by certain pulse and blood pressure reactions, is a dependable measure of its severity, which, taken with its duration, forms a rational basis of prognosis and treatment.

Without discussing those factors in the physiology and pathology of the circulatory and respiratory systems which are, however, the one fundamental requirement for the diagnosis of the patient's state, I shall direct your attention to those elements which are not so often considered. The anesthetist is the only member of the surgical team who is in a position to make the necessary observations and conclusions during the operation.

The number of deaths from circulatory depression occurring within from three to four days following the operation perhaps exceeds 1,000 a year in this country alone, which are preventable by early diagnosis and proper treatment.

The surgeon has concerned himself largely in devising means intended to prevent this condition; and while prevention is of the utmost importance and should be universally sought for by all surgeons instead of the few, nevertheless this method has failed because igno-

rance, on the part of the surgeon, of what changes the patient develops during the operation prevents his adoption of better operative technic and the institution of treatment in time to be of benefit to the patient. He has not utilized the experience of the anesthetist, and has either failed to urge or encourage this member of the operating group to employ those agencies which will furnish the necessary data for the good of the patient. The anesthetist owes surgery the fullest service which a medical training can bring to the patient to cooperate with the surgeon in keeping him informed in accurate terms of the patient's reaction to the various procedures, especially as they effect such vital functions as the circulation and respiration. Until such cooperation becomes general and intelligent, much future progress in preventing shock is not to be expected.

Perhaps it needs to be repeated that no one is able to diagnose varying degrees or the progress of circulatory depression by merely feeling and counting the pulse, until the third stage with its classical signs has been reached. The sphygmomanometer is the only instrument which we have for definitely indicating the pressure elements of the circulation; and to anesthetize for major operations without its use is inexcusable.

While the normal ratio of pulse pressure to diastolic pressure is as 1 is to 2, in surgery there are many cases in which these ratios have been disturbed before the patient comes to operation. The duty of the anesthetist is to attempt to keep the ratios as favorable as possible, but at least to counteract depression as far as it is possible to do so.

Rarely, if ever, is surgery beneficial to the circulatory system at the moment of its performance; it is generally depressing. Moreover, every known anesthetic is a depressant except when administered in less dosage than required to produce local or general anesthesia. The loss of blood, if great, disturbs the relation of vascular tonus to the heart beat and reduces the oxygen carrying function; while, if small, the local disturbance of blood pressure may initiate an unfavorable readjustment of the vascular bed generally. Favorable readjustment is, however, common if other depressing factors are slight, although I have seen a squirt of only three heart beats from a uterine artery lower the blood pressure 20 mm. within two minutes! Trauma, especially within the abdomen and without appreciable loss of blood, is also depressing and quite as effective in the production of shock as hemorrhage in some cases. In others, the patient may withstand considerable trauma with little damage.

The normal reaction of an increasing pulse rate is an increase of blood pressures; and similarly, a decrease in pulse rate causes a fall in blood pressure. Except in high pulse rates this reaction is obtained in surgery under anesthesia and is a good sign.

Examples of circulatory stimulation characterized by an increase in blood pressures with an unchanged heart rate or a slower beat are infrequent, and when encountered, it is usually due to fear or pain, which has been relieved with unconsciousness.

THREE STAGES OF CIRCULATORY DEPRESSION

Clinically, we may divide depression into three stages or degrees by the pulse-blood pressure reactions or relations:

First Stage.—This is characterized by either a small increase in pulse rate without a corresponding increase

* Read before the Section on Miscellaneous Topics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

(50 per cent. of the increase in pulse rate expressed in mm. of mercury) in systolic pressure or a small decrease in blood pressure without a decrease in pulse rate. The first degree is commonly obtained in major operations and often accompanies minor operations with or without anesthesia or hemorrhage. The first degree is not dangerous but is of prognostic value in estimating the patient's power of compensation when compared with the depressing influences applied to the patient just previous to its occurrence.

Second Stage.—This is usually characterized by an increase in pulse rate and a decrease in blood pressures amounting to 25 per cent., or more, of each. This stage is regarded as dangerous and is the signal for the anesthetist to have restorative measures ready for immediate use should it merge into the third stage. In some instances, at least, treatment should be started at this time, and the surgeon should always be advised so that he may be prepared to modify his operation if it becomes necessary. This stage is dangerous since the heart is called upon for greater work, while its own nourishment and rest are reduced by the lowered blood pressure and shortened diastole. At the same time the arterial muscle loses much of its tonus by the weak and too frequent pulse wave stimulations, thus further contributing to exhaustion and relaxation. Small arterioles in the mesentery, and perhaps all over the body, which previously may have been invisible now may be readily demonstrated. Whether the veinules relax correspondingly in the second stage has not been demonstrated so far as I know.

Third Stage.—This is a further depression of the second, and in the adult, is characterized by a progressively increasing pulse rate above 100 and decreasing blood pressures below a systolic of 80 mm. and a pulse pressure of 20 mm. and less.

The onset of the third degree during an operation indicates the gross incompensation of the elements of circulation—the inability of the patient to withstand the depressing influences upon the cardiovascular system, and marks the moment when active measures are to be instituted to assist the exhausted circulatory muscle, if not already undertaken. This is the condition of the circulatory system when the classical signs of shock become manifested.

Under suitable treatment I believe there is a period of time in which nearly every patient may be recovered from this vicious cycle. This time period necessarily varies with the muscular reserve and presupposes an amelioration or elimination of the causes of depression.

The reaction period after the third degree depression has begun may extend from minutes to three or four days before the patient either regains circulatory balance or dies of exhaustion. But it appears from clinical observation that few patients recover if the third degree is allowed to continue progressively over a period of more than from twenty to thirty minutes.

Twenty minutes is a short time in which to act, when it is remembered that in the average hospital more than half an hour passes before normal saline solution can be or rather is actually running into the vein of the patient after it has been ordered. Its late introduction is quite as ineffective in restoring the patient as an insufficient quantity.

Of the measures employed to restore blood pressure—pulse ratios compatible with recovery from a third degree depression, normal saline, Ringer's or Fisher's

solution have given me the best results. Blood transfusion is rarely available at the moment and probably not as safe.

TREATMENT OF THIRD DEGREE DEPRESSION

Prophylaxis is always first; removal of the apparent causes; intravenous normal saline solution; warmth to the extremities. Digitalis derivatives and camphorated oil may be employed with doubtful benefit.

Fisher's solution seems to give good results; but physiologic sodium chlorid solution, if prepared, should be used rather than time being wasted in preparing Fisher's solution.

Saline solutions have failed in shock; first, because administered too late; second, because the proper quantities have not been administered, and third, because they have been used subcutaneously. They are used to fill up the vascular system and should be continued or repeated as necessary to keep it filled until the patient is able to maintain the blood pressures desired. The patient may show decided improvement after 500 c.c. have been administered, but it is necessary to bring the systolic pressure up to within from 10 to 15 mm. of the patient's normal pressure and to maintain this pressure by slow additions of the saline solution until the operation has been completed. After the patient is put to bed, the blood pressure should be watched, and intravenous injections repeated if the rectal drip fails to maintain the pressures during the next twenty-four to thirty-six hours, or longer. The quantity of physiologic sodium chlorid solution which should be administered intravenously must be determined by the sphygmomanometer, and not measured by volume except as a matter of record. It varies from 300 c.c. to 2,500 c.c. at one time.

It will be found that physiologic sodium chlorid solution does not always elevate the diastolic pressure in its normal proportion to systolic pressure—that while the vascular system is filled, the arterial tonus does not recover so rapidly as the cardiac muscle. For this reason one should also watch the relation of the pulse pressure to diastolic pressure and should stop the saline if the pulse pressure begins to exceed the diastolic pressure just before the desired systolic pressure is attained. In this respect, Fisher's solution is better for intravenous injection in shock.

COMMENT

I should not pass this subject without emphasizing the observation that deep relaxation from relative over doses of anesthetics are responsible for many cases of circulatory depression in which there is stormy convalescence, when recovery takes place. The deep relaxation of striated muscle is accompanied by a similar relaxation of the cardiac and vascular muscles, and the old theory that deep anesthesia prevents shock is not borne out by the sphygmomanometer. The lightest narcosis with which it is possible to operate gives the best results, and those anesthetic agents having the lowest power of muscular relaxation also result in fewer cases of shock, other things being equal.

Respiration exerts a direct influence on the circulation. The lungs and chest during inhalation aspirate the blood into the chest, and from the right ventricle into the lungs; while, during exhalation, the positive intrapulmonary pressure forces the blood into the left side of the heart and also assists the heart in discharg-

ing the blood into the aorta. This function of respiration is often a potent factor in circulation when the heart itself is approaching exhaustion. It explains, in part, the dyspnea sometimes seen. With an adequate supply of oxygen administered under slight (1 to 2 mm. of mercury) pressure during exhalations, to further increase expiratory pressure, the anesthetist may take over a small but appreciable part in circulation during a critical period of "heart lag."

USES OF RESPIRATORY PRESSURE

Without attempting to cover many of the other situations in which the intelligent anesthetist may aid surgery, I wish to call attention to the use of various pressures at which anesthetics may be administered to aid the patient or the operation. This factor of pressure applies particularly to the use of gas-oxygen, although with suitable equipment it could be employed with other general anesthetics.

In some goiters, or other growths obstructing the air passages, more or less, the patient is often threatened unless enough pressure is maintained in the inhaler to assist inhalations. After the goiter is removed, if the tracheal rings have been absorbed for any distance, this pressure maintains the trachea patent during inhalations until the sutures may be so placed as to hold the trachea open or until a tracheal cannula is inserted.

Pressure in the operations for quinsy applied through the nasal inhaler prevents the aspiration of pus and assists the inspirations of the patient. In this disease, obstruction to the air-way is such a serious complication that patients are unnecessarily operated on without anesthesia.

For the discharge of pus from the chest in empyema, an inhaler pressure of from 5 to 10 mm. of mercury applied during exhalations will commonly clear the pleural cavity of large masses of exudate and restore the lung to its normal size, shortening the period of convalescence. In this condition, the patient's circulation and respiration are often seriously embarrassed during even this short operation which a pressure of 2 or 3 mm. of mercury will either completely relieve for the time or greatly benefit.

Sudden vomiting and aspiration have drowned many patients during the period of narcosis. This may be prevented by promptly inflating the lungs with oxygen under pressure. This serves the two purposes of holding the fluid momentarily in the stomach while filling the lungs, and restores the glottis reflex, which prevents the aspiration of the vomitus. Similarly, the administration of oxygen under pressure may be successfully employed to fill the lungs when a tonsil, adenoid, tooth, sponge, or chunk of meat has been inspired and threatens life by asphyxiation. By filling the lungs and also by restoring the cough reflex, the patient is usually able at once to cough out the object without further assistance.

In the acute pulmonary edema of cardiac compensation, in which froth blocks the bronchial tree and the patient is apparently dying of asphyxia, the administration of oxygen under from 5 to 15 mm. of mercury pressure during exhalations, suddenly released by lifting the inhaler during inhalations, has broken up the bubbles of froth, restored aeration in the lungs, and saved the life of the patient in my hands. While this procedure is usually encountered outside of sur-

gery, it may occur during or following an operation and prove to be a life saving measure to the surgical patient.¹

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ABSTRACT OF DISCUSSION

DR. ISABELLA C. HERB, Chicago: Surgeons and anesthetists have been laying stress on the respiratory system and overlooking to a considerable degree the importance of the circulatory system. Circulatory failure is a common cause of respiratory arrest, as I have frequently observed in the operative surgery classes. If a dog's chest was quickly opened after respiration ceased, it was noted that, although rhythmic heart movements persisted for a while, the contractions were not sufficient to drive the blood out of the heart into the general circulation. On the other hand, in order to have efficient circulation, oxygenated blood must be brought to the coronary arteries which nourish the heart. When the operative procedures require the prone posture, lung expansion will be facilitated by placing sand bags under each shoulder. Most of the inspiratory work is done by the diaphragm, and it is therefore important that its descent should not be too much restricted by abdominal pads while the patient is in the Trendelenburg position. In empyema, if the fluid is sufficient to put one lung out of commission, and the unaffected side is underneath, the patient may become alarmingly cyanotic from insufficient oxygen supply.

DR. FRANK L. RICHARDSON, Boston: We ought all to bear in mind the necessity of cooperation between the surgeon and the anesthetist. One point in the treatment of shock which Dr. McKesson did not emphasize as much as it deserves is the question of posture. The elevation of the lower extremities in case of shock, after the patient leaves the table particularly, is of great importance, and I rely on this as one of the adjuncts in the treatment of shock.

DR. C. E. SAWYER, Lewiston, Maine: The only form of anesthesia we use is an ethyl chlorid-ether sequence. The men have been satisfied with it.

DR. C. N. CHIPMAN, Washington, D. C.: The men I am working with practically leave the matter of stimulation or nonstimulation to the anesthetist. Rarely are strychnin or digitalis used during the operation. When they are to be used, the anesthetist is the one to say what and when it should be given, and what the patient should have immediately after coming from the operating room. When shock is apparently starting, in, say, an abdominal operation, if the situation justifies it, I stop the anesthetic and let the patient regain consciousness. The operator will have to wait. We know very little about the nervous control that causes shock. We do know, however, that very little trauma about the great nerve centers of the abdomen will cause shock. When the mechanism of the body is worked at a normal rate, it will stand a much greater strain than if we try to overwork it and then restore it to normal by various forms of stimulation, so that the time we take in allowing the body to regain its "normal nervous control" is fully justified by the results. Another thing that you have to watch is the extreme Trendelenburg, when a surgeon insists on packing sponges against the intestines and driving them down against the diaphragm. With team work at all times, results will be much better.

DR. H. E. G. BOYLE, London, England: The relations of the surgeon and the anesthetist are extremely important. The surgeon should realize that the anesthetists are their best friends, and they should at all times employ the men most skilled in this work. Many lives would be saved if anesthesia were reserved entirely for duly qualified practitioners of medicine and surgery, and I sincerely hope that the time will soon be at hand when that will become law.

DR. HENRY I. DORR, Winchester, Mass.: With ether as an anesthetic, physiologic effects can be traced from its first action on the olfactory nerve through its field of operation to the sensory center. Safely lies in not invading the center

1. Suitable charts for recording pulse, respiration, blood pressure, etc., are prepared by The National Anesthesia Research Society for general distribution. The charts of cases shown at the meeting are omitted here to conserve the space of printing.

of respiration and circulation. The cooperation of the patient is essential. He must freely breathe the ether and not fight against it, that the necessary speedy effects might be produced without risk of partial anesthetization, which would add shock, a dangerous factor. There is just a moment in partial anesthesia when you can perform a minor operation without much suffering. I consider it unethical and unjust to have any one administer anesthetics except a well qualified physician or dentist.

DR. RAYMOND C. COBURN, New York: One point in reference to treatment of shock that I would like to emphasize is to get the operation completed as quickly as possible, and the patient back into bed as quickly as possible. Most surgeons, if urged, will shorten the operation. One of the beneficial medicinal agents which ought to be used when the operation is over, and some use it during the operation, is morphin in large doses. At this time it should be given without atropin. It allows carbon dioxide to accumulate and stimulate the circulation. I believe that is one of the leading effects of the morphin during that time.

DR. F. HOFFER McMECHAN, Avon Lake, Ohio: I regret that Dr. McKesson did not have time enough to touch on the effect of the various pressures used in the administration of anesthetics, particularly in the use of gas and oxygen as an aid to surgery. Most of you are familiar with the work which Dr. Gwathmey did at the front in making pressure play an important part in intrathoracic surgery. Dr. McKesson's investigations have been related to the problem involved in empyema. One of the most forward looking steps taken lately in behalf of anesthesia is the use of pressure, in order to dilate the collapsed lung and refill the chest cavity, to permit a much quicker recovery period of the patient. This use of pressure is also of interest in connection with massive lung collapse. In 519 cases, Scrimger reports eleven in which the roentgen-ray study in the postoperative condition showed lung collapse with serious impairment of respiratory efforts. This condition continued from several days to ten days and two weeks. All cases eventually cleared up, but it raised the question whether under these circumstances the anesthetist is not the proper person to be called. The treatment indicated would seem to be 5 m.m. of pressure, to reinflate the collapsed lung. Dr. Shannon of Detroit recently reported a case in which the atelectasis was treated in this manner in a new-born baby, and during four days and four nights the one-tenth inflated lungs of this baby were gradually inflated and deflated, during the periods of recurring cyanosis. Roentgenographic studies were made at times, and at the end of the fourth night the pictures showed perfectly inflated lungs, the pulse rate had dropped from an uncountable number to 140, respiration had dropped from 110 to 40, and the baby was in a healthy pink condition with a lusty cry. When born the baby weighed 6½ pounds, and two and a half months later the baby was in perfect health and had grown to 10½ pounds.

DR. ELMER I. McKESSON, Toledo, Ohio: There is no objection to informing yourself of the patient's condition during an operation. Certainly there could be no objection to having a cuff applied to the arm, if it is not kept pumped up all the time. Dr. Chipman spoke of the use of strychnin, and I want to emphasize this point in regard to the administration of drugs as directed by the surgeon, who may be thoroughly occupied with his own work. In relation to shock, I believe that the patient suffers from shock oftener in deep anesthesia than in light anesthesia. In fact, I believe with Dr. Chipman that when the patient develops the first or second degree depression it is desirable to lighten the anesthesia, giving the patient more freedom of reaction, instead of lessening it. The final cause is not the result of hemorrhage pure and simple, but is usually a combination of trauma, hemorrhage, deep or overanesthetization all combined in a patient who is ill prepared to withstand the combination, and the result is fatal. The individual, in determining the operative period, is a factor that we cannot reckon with. There is a safe period of anesthesia and a safe period of operation beyond which further surgery, further manipulation, further anesthesia is bound to cause the demise of our patient. What is that period? In one patient it may be an hour, in another

five hours; in another it might be all day; but there is a safe operative period and we should be sure that we are always within that period. The blood pressure is one of the ways of finding out. It tells us when we are outside safe limits. Morphin in large doses without atropin causes a fall in blood pressure. The overdose lowers the rate of respiration, but we do not have that shock situation of rapid pulse, rapid respiration and low blood pressure; we have a slow pulse, slow respiration, low blood pressure—the patient is not exhausted. It is not a case of shock. I have been worried about the low pressures. I have been worried about slow respirations under those circumstances, but I never have seen a patient die who had very low pressure due to relative overdosing with morphin.

ANESTHETIC UNITS OF MEASUREMENT*

ALBERT H. MILLER, M.D.

PROVIDENCE, R. I.

Science began with the substitution of the balance, the yardstick, and the clock, for even the most accurate guesses as to weight, dimension and time. In anesthesia the same, I feel, must hold good.—*W. W. Keen.*

In this paper is presented a discussion of measurement as applied in anesthesia: especially in local, nitrous oxid-oxygen, and ether anesthesia. No attempt is made

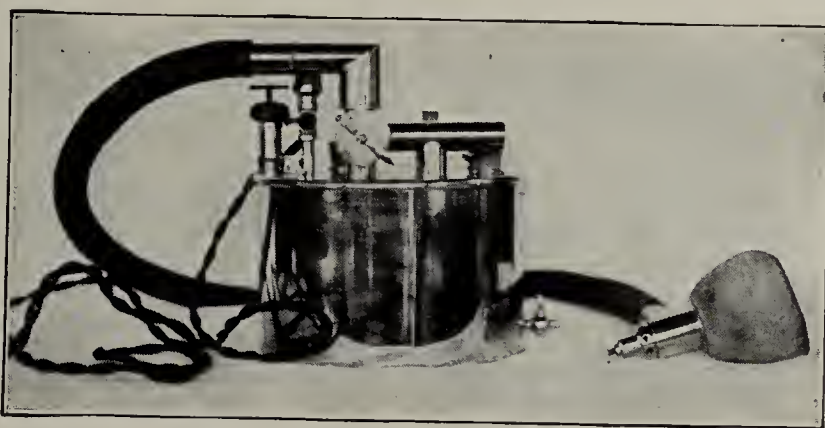


Fig. 1.—The constant temperature ether vaporizer, front view. From left to right: thermostat, heater, three-way mixing valve with check valve casing above, air inlet, inhaler.

to demonstrate the necessity of measurement in anesthesia, as the need seems self-evident. Any scheme of anesthesia which is not based on measurement of dosage is crude, indefinite and unscientific, and is bound sooner or later to result in catastrophe even in the hands of the most expert.

MEASUREMENT IN LOCAL ANESTHESIA

The drugs used in local anesthesia are introduced in aqueous solution. The unit of measurement is either percentage of the drug in the solution or weight of the drug employed. For controlling the local effect, percentage of solution is the more convenient unit. Unfortunately these drugs have a general as well as a local effect, and deaths have resulted from their use even in dilute solution. Although the local anesthetics may be absorbed from any part of the genitourinary tract excepting the bladder, ten times the usual dose is often introduced into the urethra. An ounce of a 5 per cent. solution of cocaine, representing twenty-five times the safe dosage, is used in the course of

* Read before the Section on Miscellaneous Topics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

a nasal operation. The preferable, because safer, unit of measurement for the local anesthetics is weight of the drug.

MEASUREMENT IN NITROUS OXID-OXYGEN ANESTHESIA

The present success in the administration of nitrous oxid-oxygen can be largely attributed to the routine use of measured dosage. The two gases are used in a mixture free from air. The unit of measurement in the constant flow administration is in liters or gallons of flow of nitrous oxid and of oxygen per minute; in the intermittent flow administration, the unit is percentage of nitrous oxid and of oxygen in the mixture. Either method gives satisfactory results.

ETHER VAPOR AND AIR MIXTURES

The determination of a unit of measurement for the volatile anesthetics, of which ether is the most prominent example, is a much more difficult problem. The boiling point of ether is 2.5 degrees F. below the normal body temperature. It follows that, while under ordinary conditions ether is a liquid, at the temperature of the body it is a vapor, and has expanded to about 300 times its liquid volume. The rate of vaporization of ether is variable, depending, at atmospheric pressure, on the rate of renewal of the atmosphere, the extent of the evaporating surface, and the temperature of the liquid ether. As vaporization goes on the liquid ether steadily becomes colder, and the rate of evaporation as steadily decreases.

Pure ether vapor is practically irrespirable and is never used for anesthetic purposes; instead, a mixture of ether vapor with air is administered. The mixture of ether vapor and air is formed in one of two ways. In the usual manner a current of air is passed over the surface of liquid ether. The steady reduction in the temperature of the liquid ether due to evaporation results in the constant diminution in the rate of vaporization, and a constantly declining percentage of ether vapor in the mixture. The attempt to regulate exactly the dosage of ether by diluting the mixture with a known percentage of air must fail on account of the constantly decreasing percentage of ether vapor in the original mixture. In the second method, known amounts of liquid ether are injected into the current of air. If the flow of the air current is also measured, a very accurate measure of the vapor strength may be obtained.

APPARATUS FOR ETHERIZATION

It is evident that ether can be administered with greater regularity and precision by a mechanical apparatus than it can possibly be administered by hand. In the apparatus in which ether is vaporized by the passage of a current of air over the surface of liquid ether, the variation in dosage due to changes in temperature of the liquid ether is a serious objection. The complication and expense of the apparatus injecting ether

into the air current prevent their general use. The constant temperature ether vaporizer here described for the first time makes use of a new principle providing for maintaining liquid ether, partly filling a container, at a constant temperature, the space remaining in the container being filled with ether vapor at a constant tension, depending on the temperature of the liquid ether, and providing for withdrawing from the container the ether vapor mixed with air to any desired percentage. The container, which is 12 inches long, 2 inches wide and 3 inches deep, is submerged in a water bath which is kept at a constant temperature by an electric heater and a thermostat. Openings are placed at each end of the container on its upper aspect, and in one of these is mounted a three-way graduated valve, by means of which the saturated ether vapor as it is withdrawn from the container is diluted with air to any desired percentage. An outwardly opening check valve controls the exit from the container, and an outwardly opening valve for the expiration is mounted on the inhaler. The unit of measurement is the tension of the ether vapor in the container. The dosage is indicated in percentages of this tension. With the thermostat set for 90 F., the average patient is anesthetized with

a 50 per cent. mixture, after the induction period. The apparatus is very economical, using about 4 fluidounces of liquid ether during the first hour's anesthesia.

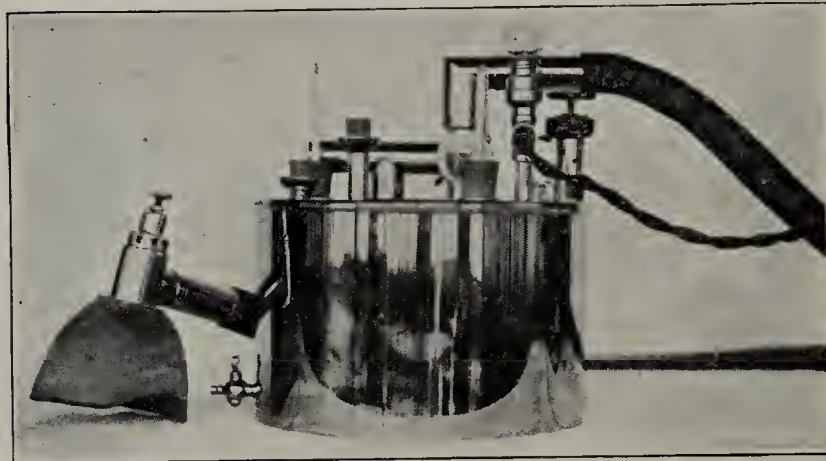


Fig. 2.—The constant temperature ether vaporizer, back view. From left to right: inhaler, water filler, thermometer, ether filler, mixing valve, ether gage, heater, thermostat.

MEASUREMENT IN ETHERIZATION

Three units of measurement have been proposed for the vapor strength of the mixture used in etherization: percentage of ether to air by weight, percentage of ether vapor to air by volume, and

ether vapor tension in millimeters of mercury. As there is no method known for directly determining the tension of ether vapor in a mixture, this unit of measurement is rather of theoretical interest than of practical value. Percentage by weight of ether vapor in air is readily determined by comparing the weight of the liquid ether with the weight of the volume of air, or by weighing the mixture by displacement in a Waller balance. Percentage by weight is therefore a practical unit of measurement for the dosage of ether vapor. Percentage by volume cannot be directly measured, but may be readily computed from the percentage by weight by taking into consideration the specific gravity of ether vapor and the weight of the volume of air. From the data given, this formula is readily deduced:

$$X = \frac{32 P}{32 + 83 (1.00 - P)}$$

in which X is the percentage by volume expressed as a decimal, and P is the percentage by weight expressed as a decimal. Percentage by volume is a valuable unit of measure, as it provides a clear mental picture of the ether vapor dosage. The theoretical tension of the ether vapor in a mixture is represented by the atmospheric pressure, 760 mm., multiplied by the percentage of ether vapor by volume, expressed as a

decimal. It is important to keep these units clearly in mind. The majority of papers dealing with ether dosage are valueless because the unit of measurement used has not been indicated and is unknown.

The idea that air is displaced by the ether vapor in this mixture is incorrect. Imagine a rigid container filled with 1 liter of air at the atmospheric pressure of 760 mm. Introduce 1.62 gm. liquid ether, and cork the vessel tightly. The ether will completely vaporize and the vessel will then contain a liter of ether vapor at a pressure of 434.8 mm., in addition to the liter of air at 760 mm. The total pressure will be 1,194.8 mm. Uncock the vessel, and a part of the mixture will escape and become diffused into the surrounding atmosphere. The mixture remaining in the container will consist of a liter of ether vapor at a pressure of 288.4 mm., and a liter of air at 471.6 mm., the total pressure equaling the atmospheric pressure. In this process the air has not been displaced but has become rarefied as a result of the expansion of the mixture with ether vapor. This is the process which is continuously going on during the vaporization of ether for anesthetic use. Using the open method of etherization at a temperature of 68 F., the proportion of oxygen may be reduced 57 per cent., such a reduction in the oxygen pressure as is found in the atmosphere at the top of very high mountains. Much of the nausea and vomiting following etherization is due to the rarefaction of the air and is comparable to the condition of mountain sickness.

RECTAL AND INTRAVENOUS METHODS

In rectal and in intravenous etherization, liquid ether is introduced into the body and is entirely utilized without waste. The dosage in each of these forms of etherization is about 2 ounces of ether for the first hour's anesthesia.

INSUFFLATION METHODS

In intratracheal and intrapharyngeal etherization, a mixture of ether vapor and air is formed at some distance from the patient, and passed into the respiratory tract through a tube in which the flow is maintained by a blower or pump. The flow is constant, and independent of the respiration. The rate of vaporization of the liquid ether depends on the factors already noted: the rate of renewal of the air, the extent of the evaporating surface, and the temperature of the liquid ether. The rate of flow of the mixture must constantly equal the maximum requirement of inspiration. Delivery of the mixture into the trachea or the pharynx is efficient. Delivery into the mouth or nasal passages cannot be relied on. The strength of ether vapor in air required in these methods of etherization has been exactly determined.

MEASUREMENT WITH THE USUAL METHODS

In the usual inhalation method, the evaporating surface is confined in a channel through which the entire quantity of inspired and expired air passes. The atmosphere is constantly renewed by the respiration; the extent of the evaporating surface may be regulated

to suit the conditions; and the liquid ether on the evaporating surface is kept at a fairly constant temperature by the warm expired air. With the open method, it is inevitable that at least half of the ether applied shall be wasted, as the expiration as well as the inspiration passes through the evaporating material. If care be taken to avoid all unnecessary waste of ether, a satisfactory measured dosage may be obtained

AMOUNT OF ETHER USED IN THE INHALATION METHOD OF ANESTHESIA

	Fluidounces of Ether		
	Average	Minimum	Maximum
First 5 minutes.....	1.95	1	2
First 10 minutes.....	3.06	2.5	4
First hour	9.64	7	16
Second hour	4	1	8

with the open method by measuring the volume of liquid ether applied to the evaporating material. The unit of measure is in volume of ether rather than weight, because the volume is more readily measured. The best results have been obtained with a funnel or cone 7 inches in length. One end is fitted closely to the patient's face. In the other end of the funnel is placed the evaporating material, consisting of a strip of No. 1 surgical gauze, 14 by 36 inches. Ether is applied to this evaporating surface fairly continuously, and, as the last drops of each ounce are applied, a note is made on a chart on which are divisions, each division corresponding to a five-minute period. The most convenient measure is a 4 ounce graduated dropping bottle. The accompanying table of ether dosage gives the result in 2,000 administrations by the method described.

As the specific gravity of liquid ether is 0.718, the dosage by weight is 28 per cent. less than the dosage by volume. The dosage varies with the mental state and the physical stamina of the patient, and with the nature of the operation. It is not directly influenced by age, sex, body weight, previous anesthesia, or changes in posture. Operations on the stomach and gallbladder require a deeper anesthesia than does a simple incision. A patient in good physical training requires more than the average dose: the same patient after a week's confinement in bed takes less than the average. The patient who is in the condition of shock may be anesthetized with a very small dosage. The average dose might readily prove fatal in such a case.

The anesthetist who has a knowledge of anesthetic dosage administers more or less as circumstances dictate, watching out for trouble with the surgeon if he is using less than the average dose, and looking for trouble with the patient if he is going beyond it. The practical importance of this knowledge of anesthetic dosage is great, being comparable in value with all the usual signs of anesthesia.

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ABSTRACT OF DISCUSSION

DR. LINCOLN F. SISE, Boston: The percentage of ether given is a very exact unit of measurement, mathematically progressive, from zero up, and this unit should be used in

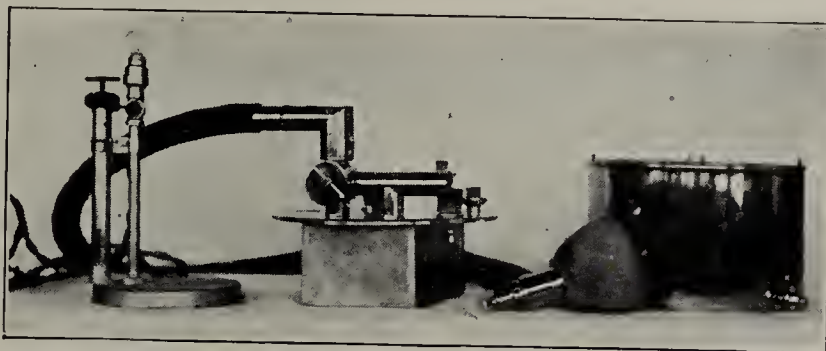


Fig. 3.—The constant temperature ether vaporizer. From left to right: heater and thermostat, ether chamber, inhaler, water bath.

speaking of the depth of anesthesia. This brings up the question of giving ether by apparatus instead of by hand. The advantage of it is the same. We have here a definite accurate method of giving ether, against a more or less guesswork method when given by hand. When given by hand we have to wait and see what the reaction of the patient is before we know definitely what we have done. If we have a machine giving a certain and definite percentage of ether, we know what we shall do to the patient before we do it. Another point about giving ether by apparatus is that it relegates the mechanical process of delivering ether where it belongs, and leaves the intelligence of the anesthetist free to do what he has to do, to observe the patient and see the effect of the anesthesia and operation, and to record the facts connected with the anesthetization.

DR. BORIS RAPOPORT, Boston: Very often after a morning's work of three or four cases in anesthesia I suffer from the absorption of ether. If we have some method by which we can give the patient just so much ether and not take so much ourselves, it is a great work for the anesthetist. The anesthetist should consider himself as well as the welfare of the patient.

THE CONSERVATIVE TREATMENT OF CERVICAL LYMPHATICS IN INTRA- ORAL CARCINOMA *

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It has long been recognized that the successful treatment of intra-oral cancer depends more on the treatment of the cervical nodes than of the primary lesion. During the last twenty-five years, radical changes in the surgical treatment of cervical nodes has taken place.

In 1895, Butlin¹ began a complete dissection of the anterior triangle on the affected side in every case of intra-oral carcinoma, as a routine procedure. This was followed and amplified by others. Within a few years, the procedure was extended by many operators to both anterior triangles, as a routine. The work of Crile² in this country, setting forth the principle of removing *en bloc* all lymphatic tissues of the neck, has remained the standard about which various modifications have been made.

The work of Sir George Lenthal Cheate,¹ in which he demonstrated the invasion by malignant cells of the deeper lingual muscles in tongue cancer, brought from him the suggestion of a wider excision of the primary growth. This was coupled with the block dissection idea and soon a complete removal of the primary lesion and lymphatic structures in one piece was advocated. Morestin³ favored this, but confined his neck dissection for the most part to the side of the neck on which the lesion was situated. He did, however, advise a removal of all structures that could be sacrificed, adjacent to the lymphatic chains of the anterior triangle. Butlin was in favor of Cheate's plan for wide excision plus block dissection, in the more advanced cases, but admitted that his own statistics did not bear out this opinion. He also advocated the doing of the neck dissection before the appearance of definitely involved

nodes and stated that his results were improved thereby. In his report, however, he cited the cases of eight patients operated on after nodes had appeared, with three successes—and seventy patients operated on before nodes appeared, with twenty-four successes. This does not indicate a benefit from performing an early dissection. Many operators performed a two-stage operation, removing first the primary lesion and second the gland-bearing area, to avoid infection and the higher mortality incident to a single operation. Crile² favored this method. Others insisted on a complete removal in one stage. Warren⁴ was very emphatic on this point because of his belief in extension of the disease by direct permeation of lymphatic channels. In a recent excellent analysis of the cervical lymphatics, with particular reference to carcinoma of the tongue, Jamieson and Dobson⁵ have pointed out the multiple channels of dissemination. Based on this,



Fig. 1.—Heavily filtered "pack" and "tray" used for external radiation of neck.

they consider the block dissection of Crile inadequate in dealing with most tongue lesions. In this particular type of intra-oral carcinoma, their plan may be briefly summarized thus: Early lesions of the lateral border of the tongue require a complete unilateral block dissection with intrabuccal excision of the primary growth. Early lesions of the tip, frenum or dorsum of the tongue require bilateral dissection with intrabuccal excision of the primary growth. In more advanced lesions in any of these locations and in all lesions of the back of the tongue they advise a bilateral block dissection with extrabuccal excision of the primary lesion. They note that the latter operation is impossible at one sitting, highly dangerous at two and only to be done with any degree of safety at three sittings: also that it is difficult to induce patients to submit to a three-stage operation. Their technic of block dissection entails briefly a complete removal of the sterno-

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Butlin, H. T.: Results of Operations for Carcinoma of the Tongue, Brit. M. J. 1: 462 (Jan.) 1909.

2. Crile, G. W., and Lower, W. E.: Anoci-Association, Philadelphia, W. B. Saunders Company, 1914, Cancer of the Tongue, pp. 187-89.

3. Morestin, H.: La cure radicale du cancer de la langue, J. de chir. 15: 221-252 (Sept.) 1919.

4. Warren, J. C.: Cancer of the Mouth and Tongue, Cong. de la Soc. internat. de chir. 2: 17-46, 1908.

5. Jamieson, J. K., and Dobson, J. F.: The Lymphatics of the Tongue: with Particular Reference to the Removal of Lymphatic Glands in Cancer of the Tongue, Brit. J. Surg. 8: 80-87, 1920.

mastoid muscle, internal and external jugular veins, a considerable area of deep fascia of the neck and all the groups of lymphatic glands—lower and upper deep cervical, submaxillary and submental. In the bilateral operation the internal jugular vein is left on one side.

Such, then, is, very briefly, the trend of surgical experience in dealing with the cervical metastases of this group of carcinomas. What have been the results?

The very fact that the principle of more radical neck surgery has received almost universal approval in surgical circles is proof enough of its superiority over the older methods. Definite comparative statistics on this point by the same operator are scarce. Andrews⁶ quotes Crile as stating that the older methods gave 29 per cent. of patients well after three years, while his new technic gave 52 per cent. well after three years. The present surgical position has been forced by the fact that the death rate from intra-oral cancer was increased, once the disease became firmly established in the cervical nodes. In an effort to circumvent this, then, the only thought has been to remove as many glands as possible as early in the course of the disease as possible.

There are other considerations, however, which we must bear in mind. All patients suffering from intra-oral cancer, even though the lesion may be early, are not physically able to withstand such an operation. In some groups of cases, the operative mortality is comparatively low while in others it is higher. In following his radical technic with tongue cancer, Morestin³ had an operative mortality of from 20 to 25 per cent. In another analysis of tongue work, Meller found that the radical procedure prolonged life thirteen and four-tenths months, cured 14.6 per cent., and had an operative mortality of 13 per cent. Apart from the operative mortality, we must consider the subsequent course of the failures from radical operation—very often their condition is rendered worse rather than better. It is true that the ordeal of such a radical procedure is but a small sacrifice if it gives a fair hope for recovery, but as long as we are forced to offer it to the public as the only hope for a gambling chance the average layman will avoid it until his best chance is lost.

It would be very interesting and instructive to know what percentage of glands removed in the routine block dissection are actually invaded by malignant cells. Many observers have assumed that nearly all are, but no one has demonstrated it. Practically all reports on the results of radical neck dissections fail to state the percentage of glands found involved by microscopic examination.

Bloodgood⁷ has contributed strong evidence in favor of an early block dissection. In twenty-one lip cases showing no demonstrable involvement of nodes at the time of their removal, twenty patients remained well for five years. Of his patients with glandular involvement only 50 per cent. were still well at the end of this period. In a series of 516 lip cases in which operation was performed, and which were reported by Broders,⁸ neck dissections were performed in 449, or 87 per cent., and metastases found in 105, or 23.38 per cent. In other words, 344 patients, or 76.6 per cent.—at least nearly that number, allowing for some

failure to demonstrate existent metastases—were operated on unnecessarily. Lip cancer is undoubtedly the most favorable of the intra-oral group for surgical treatment, and the average results show about 70 per cent. of the patients well five years after the complete operation. The tongue, on the other hand, is probably the most difficult to deal with. In a series of 802 cases collected by Bastianelli,⁹ 584 were followed, and of these 11.6 per cent. were free from recurrence after three years. He did not find a single patient with cancer of the base of the tongue well after three years, even though a radical bilateral operation on the neck had been performed.

It would seem, therefore, that if a blanket rule for block dissection of the neck is to be applied to every case that can stand it or will permit it, an appalling number of unnecessary operations must be undertaken, many of them offering but a poor chance for the patient at that.

Would it not be better to attempt to ascertain whether the death rate would be increased by separating those cases in which metastases are most liable to occur

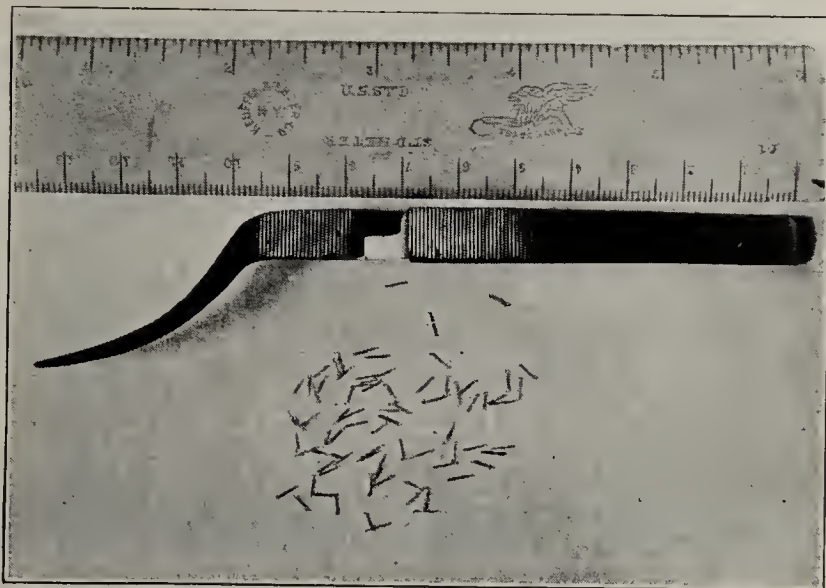


Fig. 2.—Radium emanation tubes used for burying in tissues at time of operation.

from those in which they probably will not occur? Epidermoid carcinoma presents two distinct types: the superficial papillary and the deeply infiltrating. The former is much less liable to extend to the nodes until very late in the course of the disease. The disease in different locations varies in its capacity for early involvement of the nodes. Carcinoma of the tongue and tonsil extends to the regional nodes much earlier than that of the mucosa of the cheek or lip. While the age of the patient is not an infallible guide, it is, nevertheless, a strong predisposing factor. The hygiene of the buccal cavity itself is undoubtedly of more importance than is generally recognized. With the oral cavity kept under the best hygienic conditions, it has been our experience that extension to the cervical nodes is relatively less frequent than when no attention is given to proper cleansing. Ewing¹⁰ has pointed out that changes in the lymph nodes draining malignant tumors show that the implantation of metastases is preceded by a period of preparation of the soil; the nodes show evidence of septic and toxic absorption for a considerable period.

6. Andrews, E. W.: *Keen's Surgery* 3: 330, 1914.

7. Bloodgood, J. C.: *Cancer of the Lower Lip*, Boston M. & S. J. 170: 49, 1914.

8. Broders, A. C.: *Squamous-Cell Epithelioma of the Lip: A Study of 537 Cases*, J. A. M. A. 74: 656-64 (March 6) 1920.

9. Bastianelli, M. R.: *Discussion—De la résection du maxillaire inférieur dans les cancers de la bouche*—Vallas (Lyon) Cong. de la Soc. internat. de chir. 1: 80, 1908.

10. Ewing, J.: *Neoplastic Diseases*, Philadelphia, W. B. Saunders Company, 1919, p. 824 and pp. 76-84.

After classifying our cases in this manner, would it not be possible to ascertain, in a large percentage of the cases at least, whether the death rate would be increased by following an expectant plan of treatment and reserving our surgery until a definite node is palpable? By intelligent cooperation on the part of the patient, it is possible to palpate an involved node in the average neck before its capsule has been perforated. In this stage, the node performs a conservative function and represents one of Nature's strongest barriers to dissemination of the disease. Ewing¹⁰ has noted that embolic cancer cells may be destroyed in the nodes

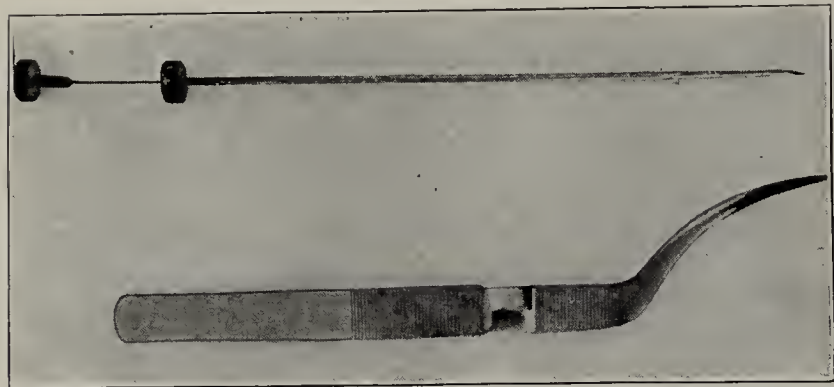


Fig. 3.—Trocar needle used for inserting radium emanation tubes in tissues.

under some circumstances but that for the most part the nodes appear to retain and retard growth rather than destroy these cells. Evidence of retardation of growth in the nodes by fibrosis and encapsulation are common. In this early stage of palpable involvement, the node demonstrates the direction the metastasizing is taking through the lymphatic channels and holds the disease in check until it can be intelligently dealt with. It has been my experience that a dissection at this time reveals usually only one or two nodes involved. It is rare that a chain of nodes is found involved throughout until late in the disease. This appears to be true of all cervical metastases of intra-oral carcinoma. It is one of the chief clinical differences between the metastasizing properties of epidermoid carcinoma and glandular types of carcinoma such as that of the breast.

The mode of dissemination itself is a factor in favor of conservatism. I believe we are now fairly well agreed that cancer cells metastasize by embolism and not by direct extension along the walls of the lymphatics. Ewing¹⁰ favors this theory and suggests that Handley's idea may be due to the lodging of cell emboli within the lymphatic channels with growth in either direction from these. Jamieson and Dobson⁵ believe that extension within the tongue is by permeation of lymphatics, but that extension to the nodes is by embolism. Ryall¹¹ states that the situation of the primary lesion does not indicate either the chain of nodes or the side on which metastatic involvement may appear. In Broders' large series of lip cases, not a single patient with involvement of more than one group of lymphatics recovered.

It would seem, therefore, that the adoption of a radical block dissection as a blanket rule is a frantic, rather than a scientific, effort, borne out by the natural history of the disease, toward preventing its extension.

To add to our argument in favor of the conservative treatment of the nodes from a surgical standpoint,

we have now the aid of the physical agents. During the last few years, rapid progress has been made in the use of the roentgen ray and radium from the therapeutic standpoint. We have, therefore, felt disposed to take advantage of these agents and use them in conjunction with surgery where this combination seems justifiable.

In our work at the Memorial Hospital, we have used radium almost exclusively in our neck work, although more recently we are doing more external radiation, and for this purpose we are utilizing the roentgen ray to a greater extent than previously. During the last year, we have endeavored to radiate all necks externally as soon as possible after admission to the service. For the more favorable cases, we have used radium, for the remainder, the roentgen ray, and in some, a combination of the two agents.

In those cases having no palpable nodes, this has been done for the purpose of stimulating the protective defenses in the lymphatics and destroying minute metastatic foci at a time when they are of least proportions. Radiation tends to block lymphatic channels through its effect on the endothelial cells, and on the gland itself the effect is to produce a marked cellular reaction. There is an exudation of lymphocytes and plasma cells, production of connective tissue is stimulated and this tends to incarcerate vagrant cancer cells. Thus, the natural barriers to cancer dissemination are strengthened rather than removed. From external radiation alone, however, we do not believe that we have ever been able to destroy, completely, fully developed epidermoid carcinoma in the cervical nodes.

In cases in which nodes are already palpable, external radiation, by reason of the effects previously mentioned, inhibits the progress of the disease and renders it, at least temporarily, less malignant, and therefore a safer operative risk. A considerable series of nodes studied microscopically suggests that this result has been accomplished.

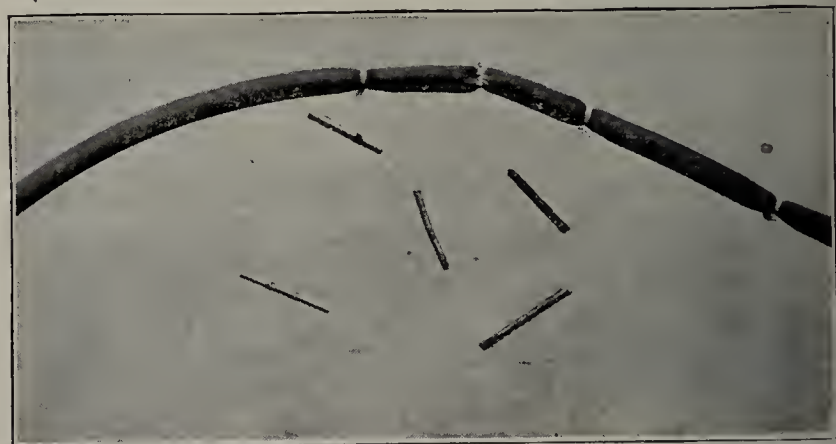


Fig. 4.—Rubber tubing containing filtered radium tubes, used in neck wound. This is not so effective as buried emanation.

In all cases with operable nodes on admission, or which develop nodes following treatment of the primary lesion with radium, a neck dissection is undertaken, following external radiation, as soon as the maximum of inflammatory reaction from treatment of the primary growth has subsided. We feel that, as a general rule, all such dissections should be unilateral and complete. Cancer, however, is a disease in which each case must be considered individually and consequently various modifications of the operation must be made. These cannot usually be determined until the deeper structures of the neck are exposed.

11. Ryall, C.: Cancer of the Tongue, Brit. M. J. 1: 697-99 (April 5) 1913.

In all cases radium emanation is embedded in the operative field following removal of the lymphatic structures. For this purpose small, fine glass capillary tubes, 0.3 by 3 mm. in size, are prepared, containing from 0.5 to 1 mc. of radium emanation. These are embedded at all suspicious points in the wound, especially where the

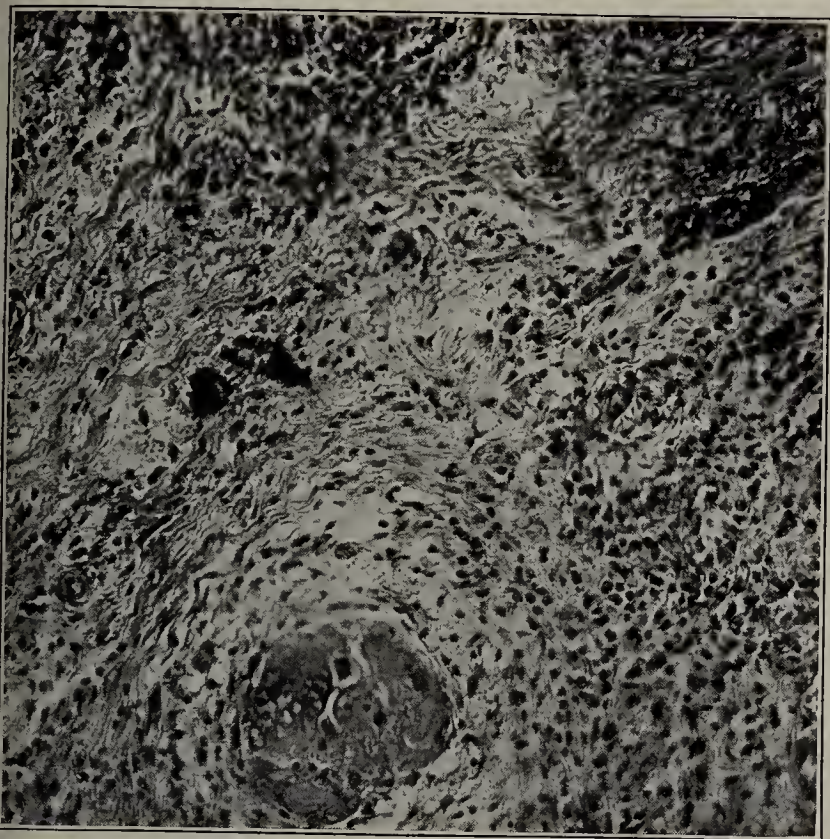


Fig. 5.—Section of node radiated externally before surgical removal.

lymphatic channels are severed. Since radium emanation decreases in value at the rate of approximately 15 per cent. per day, it will be seen that a certain amount necessary for the dosage decided on can be buried in the wound and left in situ. We have never had trouble from the minute glass tubes: they readily become encapsulated in a small connective tissue capsule excited by the inflammatory effects of the radiation. One mc. of radium emanation affords a total radiation equivalent to approximately 132 mc. hours from the time of its introduction until it is entirely exhausted. Since this requires several weeks, it will be seen that a very prolonged and continuous radiation is made possible, and the fact that the active radiation extends over weeks permits of heavier dosage. The inflammatory effects of radiation are not apparent for several days and therefore have no detrimental effect on the healing of the wound. By burying the emanation directly in the wound, a uniform distribution is obtained and radiation may be concentrated at suspicious points. Usually a dosage of 5 to 15 mc. is distributed throughout the operative field, concentrated for the most part at the points of severance of lymphatic channels. This gives a total radiation of from 600 to 2,000 mc. hours of unfiltered rays. We feel that the utilization of beta as well as gamma rays by this method is a very distinct advantage because of the intense local effect of the beta radiation. We feel also that use of the radium in this manner is distinctly superior to the use of filtered radium encased in rubber tubes and placed in the wound as a drainage tube might be placed. This method fails to concentrate the radiation at points where it is most needed.

The use of external radiation following operation is advantageous in some cases, especially over the opposite

side of the neck. However, where intense radiation has been used within the wound it does not seem that much is to be gained by further external radiation. It is quite possible to devitalize the tissues by overdoing the use of the physical agents.

As for the operation itself, our procedure has been this: Local anesthesia of 1 per cent. procain, using a combination of the infiltration method for the skin incision and conduction for the deeper structures, is employed. A preliminary hypodermic of $\frac{1}{6}$ to $\frac{1}{4}$ grain of morphin is advantageous in some cases, but by no means necessary in all. A skin incision is made from over the base of the styloid process and 1.5 cm. posterior to the angle of the jaw, downward over the anterior border of the sternomastoid muscle to the episternal notch. This incision is bisected by a second, beginning at the tip of the chin. The skin and superficial muscle is laid well back. The next step depends on the individual case. If the sternomastoid muscle can be satisfactorily retracted it is left in place, otherwise it is divided below and turned upward with the fat tissue and lymphatic structures. The posterior belly of the mylohyoid muscle can usually be satisfactorily retracted. The internal jugular vein is not removed unless a node seems firmly attached to it. Under such circumstances, no hesitancy is felt in removing it. The upper cervical chain of lymphatics is separated as close to the parotid as possible, and, if necessary, a portion of that gland is also removed. The submaxillary gland is removed with its surrounding lymphatic plexus and the adjacent submental nodes. Only in cases in which a definitely involved node lies suspiciously near to muscles is a portion of the muscle fascia excised. In all cases in which the primary lesion remains ulcerated

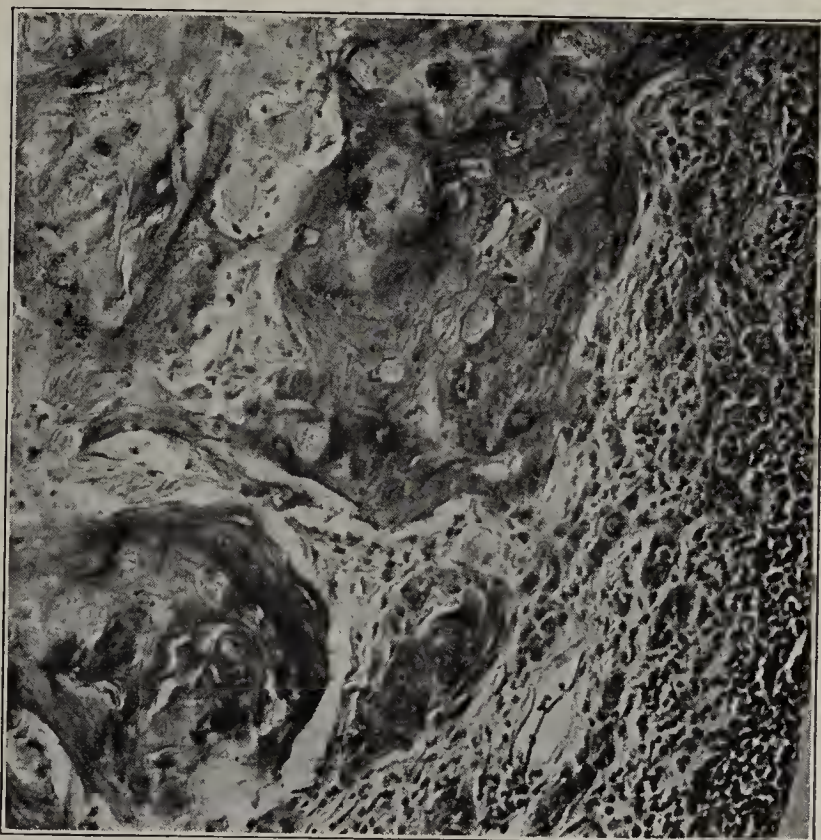


Fig. 6.—Effects of heavy external radiation before removal.

at the time of operation the external carotid artery is ligated, and to further cut off anastomotic circulation the branches supplying the region of the primary growth are also ligated separately. As Kuster¹² has pointed out, ligation of the external carotid as a routine

12. Kuster: Treatment of Carcinoma of the Tongue and Ligation of the External Carotid Artery, Arch. f. klin. Chir. 81:1, 1906.

procedure is perfectly safe. I should like to note, however, that ligation should always be done above the superior thyroid branch to avoid nutritional disturbances through interference with thyroid function. After insertion of the radium emanation tubes, as previously outlined, the wound is closed in the usual

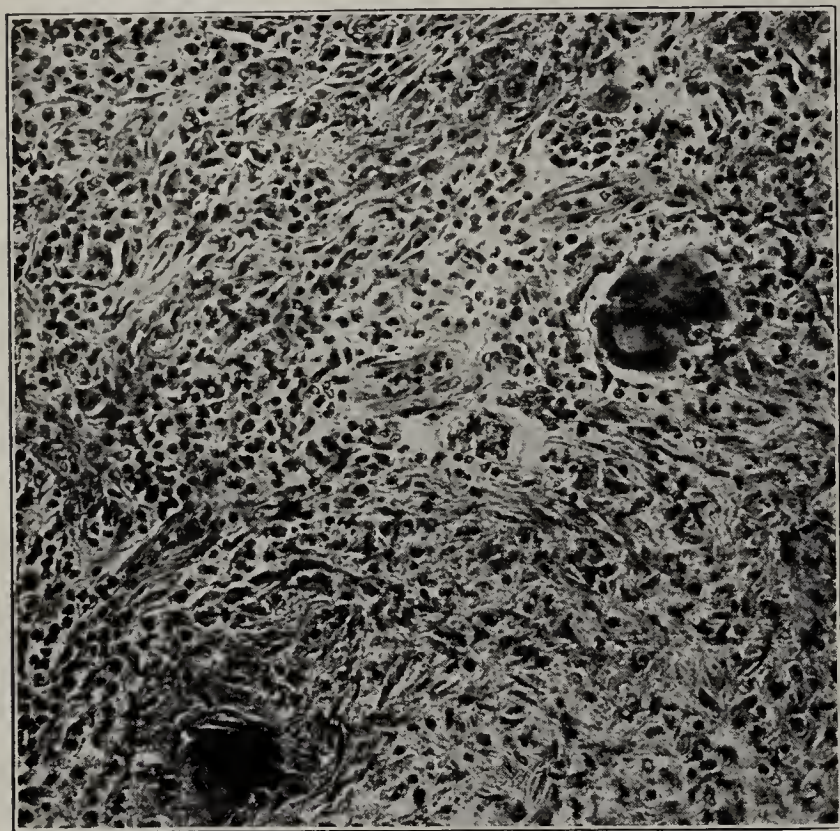


Fig. 7.—Fibrosis and cellular destruction due to external radiation.

manner and drainage provided for the first twenty-four hours after operation.

In certain cases, I believe that various modifications of this routine method may be made to advantage. In many elderly patients with primary lesion healed or well under control, the dissection may be confined to the submaxillary and submental groups through a submaxillary incision or to the upper and lower deep cervical groups through a sternomastoid incision. In either case, radium is used as before and the procedure in no way interferes with a subsequent dissection of the other group in the event of that becoming necessary.

In all cases in which the disease has perforated the gland capsule and is infiltrating widely, I believe that it is unwise to attempt a radical surgical removal. Radium emanation in sufficient dosage is distributed uniformly throughout the mass and at other strategic points and the wound closed. The mass affords an excellent means of retaining the radium in place and thus permits of very heavy radiation of all surrounding parts. In this instance, surgery is employed for exposure and accurate localization only. We now have a small group of cases in which all palpable evidence of the disease has disappeared following treatment in this manner. It is the only way in which we have been able to destroy, completely, well-established epidermoid carcinoma in the cervical nodes.

I should like to emphasize the performing of neck surgery under local anesthesia. The patient's head is under complete control; surgical shock is reduced to a minimum; hemorrhage is better controlled; the danger of postanesthetic pneumonia is avoided; more careful work can be done, and many patients can be successfully cared for who could not stand a general anesthetic.

The time factor in this plan of treatment is still short, and our statistics are therefore of little value from a comparative standpoint. I do believe, however, that they are reasonably suggestive. Since the two extremes of intra-oral carcinoma may be represented by tongue and lip cancer, our statistics for these may be briefly cited.

Our series of carcinoma of the tongue, reported in December, 1920, for the period of three and one-half years previous, comprised a total of 148 cases. Sixty-nine were primary cases without palpable involvement of the nodes, and of these, thirty-four were classed as surgically operable. Of this group of thirty-four cases, twenty-nine were free from clinical evidence of disease for periods ranging from three months to three years; five cases developed nodes after treatment of the primary lesion with radium. Of these, three were clinically free from disease following the combination of surgery and radium. One died a year after operation with recurrences both local and regional, and the other was lost track of.

Of the primary cases with definite involvement of the nodes upon admission, only three were operable. These were treated with radium for the primary growth and a combination of surgery and radium for the neck. All three were clinically free from disease—the longest case being of nearly three years' duration. Of the recurrent cases, three were operable, all local recurrences, and of these, two were well for periods of one and one-fourth years and one and three-quarter years without development of nodes to that time, while the third case was lost track of.

Of the total series, neck dissections, following the plan described, were performed in fifty-eight cases.

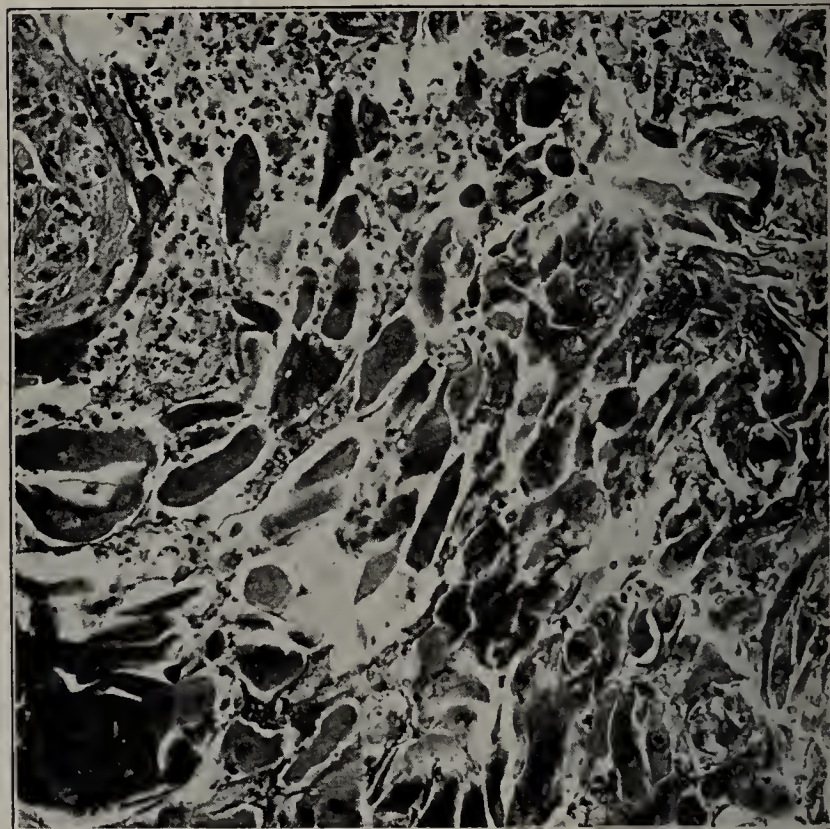


Fig. 8.—A later stage of case shown in Figure 7, demonstrating marked destructive changes within the node.

Of these, recurrences appeared in fifteen, or 25.8 per cent. In cases developing nodes after treatment of the primary growth with radium, the average period between this treatment and the appearance of the node was four months: the extremes being six weeks and twelve months.

To the time factor of this group of cases another six months may now be added since all of the patients reported clinically free from disease at that time have remained so with the exception of one in whom a recurrence has followed the neck operation. A second operation has recently been performed in this case.



Fig. 9.—Replacement by fibrous tissue following the burying of radium emanation within the malignant node.

Our series of lip carcinomas for the last four and a half years comprises 162 cases. Ninety-two were primary without demonstrable involvement of the nodes: eleven were primary with nodes, and fifty-nine were recurrent. Of this total group, 115 cases have been traced to date. Eighty, or 69.5 per cent., are clinically free from disease for periods ranging from four months to four years, the average period being eighteen months.

Of the ninety-two patients without nodes on admission only eight are known to have developed nodes after treatment of the primary growth with radium, although it is to be supposed that certain others are present in the group of untraced cases. Of these eight cases, seven are now clinically free from disease following our usual neck technic for periods ranging from four months to four years. The other patient died of recurrence in the neck one year after the original operation had been performed.

In all, twenty-two neck dissections were performed following the plan previously outlined. Fifteen patients are now free from disease for periods ranging from four months to four years, the average being eighteen months. Six patients died at periods of from four months to two years after operation, the average duration of life after operation being fourteen months. One case has recently recurred and is steadily becoming worse.

CONCLUSIONS

In making deductions on such a subject as this, the factors presumed, as based on our clinical experience with the combination of surgery and radium, must not be considered proved as yet. The time limit is still brief and methods have changed considerably through this period of four years. I believe, however, that

the results to date are suggestive and very encouraging and that these results warrant our continuing our effort along the same lines.

Our present opinion, therefore, may briefly be summarized as follows:

1. The routine block-dissection of the neck in practically all cases of intra-oral carcinoma as generally accepted at the present time is a frantic effort without regard for sacrifices and does not recognize either the natural history of the disease or the various factors which may modify it in individual cases.

2. The cervical lymphatics perform a conservative function in the early course of the disease, and to remove them by a routine early block dissection removes Nature's chief barrier to dissemination, frequently at a time when it is needed most.

3. An expectant plan of treatment which recognizes the natural history of the disease and the natural factors of resistance to it is an approach toward a more scientific solution of the problem and in no way jeopardizes the best interests of the individual case.

4. The physical agents have demonstrated their worth as valuable factors in the treatment of this disease and should be used in every case, unless hopelessly advanced.

5. A combination of surgery and radium offers more than surgery alone, once the indication for operative intervention has arisen.

6. The use of local anesthesia is preferable in all surgery of the cervical lymphatics.

7. A conservative plan of treatment gives promise of reducing practically to a minimum the present immediate operative mortality; of saving patients an appalling number of unnecessary operations, and of

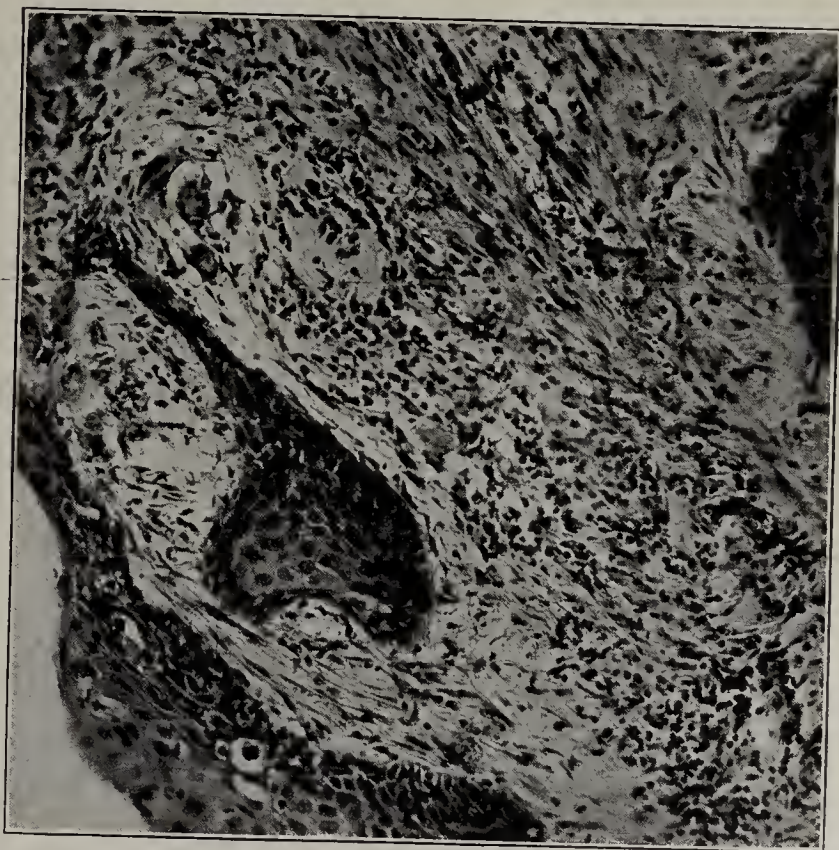


Fig. 10.—Beginning fibrosis and cellular destruction from burying emanation interstitially.

saving considerable added suffering following many of these operations. This will react to relieve considerably the factors of fear and distrust on the part of the laity and bring patients into proper channels earlier in the course of their disease.

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ABSTRACT OF DISCUSSION

DR. R. B. GREENOUGH, Boston: The statistics Dr. Quick gives are the strongest argument for this method of handling cases. We must, however, distinguish clearly between the different types of cancer of the tongue and of the lip. They are two very different diseases. At the Collis P. Huntington Memorial Hospital we have seen great palliative benefit from roentgen-ray and radium treatment in retarding the development of cancer in lymph nodes, but we have yet to see a case that can be called a cure brought about by external radiation. In our experience, a few cases of cancer of the tongue, with extension of the disease to the regional lymph nodes, are cured by radical operation, but such cases are relatively rare, and there is a tendency, in this community, at least, to restrict the radical operation to the earliest and most favorable cases. The microscopic examination of a mass of lymph nodes may fail to show evidence of metastasis even though such an area may be present. It is impossible to place under the microscope anything but a few sections from the more suspicious areas, so that a negative pathologic report is of little value. The first small embolic foci of cancer in a lymph node may thus escape the pathologist's examination. Dr. Quick attributes the successful treatment of metastatic lymph nodes by roentgen ray and radium chiefly to the fibrosis thus produced, and in this opinion I agree. If we incapacitate a lymph node by fibrosis, it is of no more use to the individual than if we took it out, and I cannot see why the barrier produced by operation should not be as good a barrier as is a lymph node containing cancer and surrounded by fibrosis. For these reasons I am still in favor of the operative removal of the regional lymph nodes in the early and favorable cases. In the more advanced cases, however, I think that the method advocated by Dr. Quick is to be preferred. It will prolong life and make many patients more comfortable, and a certain number may obtain permanent relief.

DR. VILRAY P. BLAIR, St. Louis: After a long period of observation, both before and since we have had the advantage of using radium and the roentgen ray in connection with surgery, I am convinced that one cannot make as extensive or as quick a dissection under local as under general anesthesia. I heartily agree with the idea of radiation in connection with operation, but I think that when one determines the type of cancer one must also distinguish the mentality of the patient. Certain patients will come back, as advised, at regular intervals for further observation; others will not. We all know that the majority of people with a squamous epithelioma in the mouth will probably in two years or even very much earlier have epithelioma in the neck, often with extremely rapid growth after its appearance. Even in those that have been cured, the appearance of recurrent carcinoma may be delayed; this is especially true after the cure of lip cancer, in which I have seen it as late as eight years afterward. For these reasons I think it is just a little dangerous to have the unqualified advocacy of not dissecting the lymph nodes come from this section, even though in my own observation the vast majority of those removed were found noncancerous by the pathologist.

DR. JOSEPH C. BLOODGOOD, Baltimore: Radium and roentgen-ray treatment of spinous cell cancer of the tongue, oral cavity and lower lip is having an important bearing in a progressive attack on this type of cancer, because it is putting surgery on the defensive. I am convinced that the five-year operative cure of cancer in almost every localization has been exaggerated, because cases have been included in which an incorrect diagnosis of cancer has been made. To correct these figures we cannot depend on written diagnoses made years ago, but we should resort to a restudy of the sections and, if possible, obtain the opinion of two or more pathologists. The number of cases with metastases to glands has been exaggerated by the misinterpretation of endothelial hyperplasia, which is often difficult to distinguish from metastasis. My own restudies have shown that the five-year cures in early cancer of the tongue are about 62 per cent., while in late cancer they are only 12 per cent. From my personal experience and a study of the literature, I can find no evi-

dence that roentgen ray or radium alone can compete with surgery. It is yet to be demonstrated whether roentgen ray and radium in conjunction with surgery can improve these results. I am inclined to believe that the greatest improvement in the number of deaths from cancer rests more on the education of the public on the importance of presenting themselves when they first see or feel the initial lesion.

Radium and roentgen rays should be employed with the greatest caution for cancer in every localization in its early stage where immediate and proper surgery has accomplished excellent results, and this is true of the early stage of cancer of the lip, tongue, floor of the mouth and oral cavity.

DR. DOUGLAS QUICK, New York: The surgeons who are unwilling to forego a routine block dissection would be doing a great favor to humanity if they would have a careful microscopic examination of these nodes made in every case, not a perfunctory affair, but a real examination of all the nodes. We do not know, of course, how many show involvement. Only occasional reports appear here and there. I feel strongly in regard to local anesthesia. The patient's head is under control, bleeding is less, you can take your time, and this is one of the jobs in surgery in which speed is not the most important factor. In our own clinic we have had no difficulty in doing as extensive a procedure as we liked. The sternocleidomastoid, internal jugular, and the lymphatics of both anterior and posterior triangles can be removed without trouble. The elimination of congestion from general anesthesia cuts down materially the amount of hemorrhage; and if we accept Gaylord's work of several years ago on the lowering of the resistance to cancer by hemorrhage, I think it is a very real factor. In regard to eliminating nodes, I want to make clear what Dr. Greenough mentioned, which I stated in the paper as well, that by external irradiation alone we have been unable to clear up, entirely, epidermoid carcinoma in the cervical nodes.

GASTROJEJUNAL AND JEJUNAL ULCERS

REPORT OF TWENTY-ONE CASES *

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NEW YORK

Gastro-enterostomy has been considered, until a few years ago, by the large majority of surgeons as the operation of choice for the radical treatment of pyloric and duodenal ulcers. However, the results obtained by this operative procedure have not been such as to justify the high hopes that were entertained by surgeons for it.

There is no doubt that about 75 per cent. of all pyloric and duodenal ulcers are permanently cured by gastro-enterostomy. This is verified by the statistics of the large surgical clinics.

The object of this paper is to deal with one of the causes of failure to effect a radical cure by gastro-enterostomy, namely, gastrojejunal¹ and jejunal ulcer.

Gastrojejunal and jejunal ulcers occur in about 4 per cent. of gastro-enterostomies.

Numerous theories have been advanced as to the causation of these ulcers. Many authors have assumed that nonabsorbable suture material (Pagenstecher's linen thread) was one of the most frequent causes for

* From the Wimpfheimer Division for Gastro-Enterological Surgery (Service of Dr. A. A. Berg), Mount Sinai Hospital.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Because of lack of space, this article is abbreviated here by the omission of case reports and tabular matter. The complete article appears in the Transactions of the Section and in the author's reprints.

1. The term "marginal ulcer," which is often applied to these ulcers, is nondescriptive and should not be used.

the formation of these ulcers. Eusterman² reports from the Mayo Clinic that in one third of eighty-three gastrojejunal ulcers, retained suture material was a highly probable causative factor. Our statistics do not warrant the same conclusion. In none of our patients suffering from gastrojejunal or jejunal ulcers were remnants of suture material found, though linen thread had been used for the outer layer in every case. Though nonabsorbed suture material may be found in reopening a gastro-enterostomy stoma, the proof is missing that these retained sutures really cause the formation of these ulcers.

Most surgeons, following the advice of the Mayos, have, during the last few years, abandoned entirely the use of nonabsorbable suture material in gastro-enterostomies. In our clinic, we have partly discontinued the use of nonabsorbable suture material for the last year and a half. It will be interesting to observe whether the use of catgut for both layers in gastro-enterostomies will reduce materially the number of gastrojejunal ulcers.

The traumatism caused by clamps, etc., has been considered as a factor in the production of these ulcers. However, it is not our opinion that this causative factor is of great moment. Of course, it is very obvious that gastro-enterostomy ought to be performed with as little traumatism as possible, and specially prepared sutures should be used, as they injure the tissue much less than the ordinary needle and thread.

The question of the causation of gastrojejunal ulcers will be solved, when the true cause of gastric and duodenal ulcers is definitely established. Rosenow³ asserts that gastric ulcers are manifestations of a hematogenous infection with streptococci. Reeves⁴ has published interesting anatomic studies, showing the close relation of ulcers to arterial vessels which branch off from the main gastric arteries and pierce through the wall of the stomach.

There can be no doubt that the direct introduction of acid gastric juice without the mixture of the different ferments which the food obtains normally on its way through the duodenum is a very important factor in the causation of gastrojejunal ulcers. However, there must be other factors as cases of gastrojejunal ulcer with hypo-acidity have been reported. Case 13, for instance, had a marked hypo-acidity, though the patient was suffering not only from a gastrojejunal ulcer, but simultaneously from a penetrating ulcer of the lesser curvature.

It would carry us too far to report in detail the attempts that have been made to reproduce gastrojejunal ulcers experimentally. All these experiments

have failed to produce permanent ulcers of the human type. They lack the permanency, the extreme chronicity of the human ulcer. In other words, they are not true reproductions of the condition under discussion.

Wright,⁵ in 1918, collected 145 cases, including his own, from the literature. The types of preliminary operation performed in these cases were these: anterior gastro-enterostomy, 38; anterior gastro-enterostomy and entero-anastomosis, 26; anterior gastro-enterostomy en Y, 10; posterior gastro-enterostomy, 54; posterior gastro-enterostomy, with entero-anastomosis, 3; posterior gastro-enterostomy en Y, 5, and not stated, 9. It is evident from this list that all methods of establishing a direct communication between the stomach and the jejunum are likely to be followed by gastrojejunal or jejunal ulcers.

Wright states that the percentage of gastrojejunal ulcers following anterior gastro-enterostomy is higher than that following the posterior gastro-enterostomy.

The diagnosis of gastrojejunal ulcers is comparatively easy to make.

For about four or six months following the gastro-enterostomy, the patients feel perfectly well. Then they begin to notice a recurrence of their gastric distress. The pain is slight in the beginning, but gradually increases in intensity. Frequently, the pain is very severe, much more so than in pyloric or in duodenal ulcer. In some instances, the patients even threaten to commit suicide. The immediate and complete relief which these patients experience following the excision of the gastrojejunal or jejunal ulcer is one of the most gratifying results in abdominal surgery.

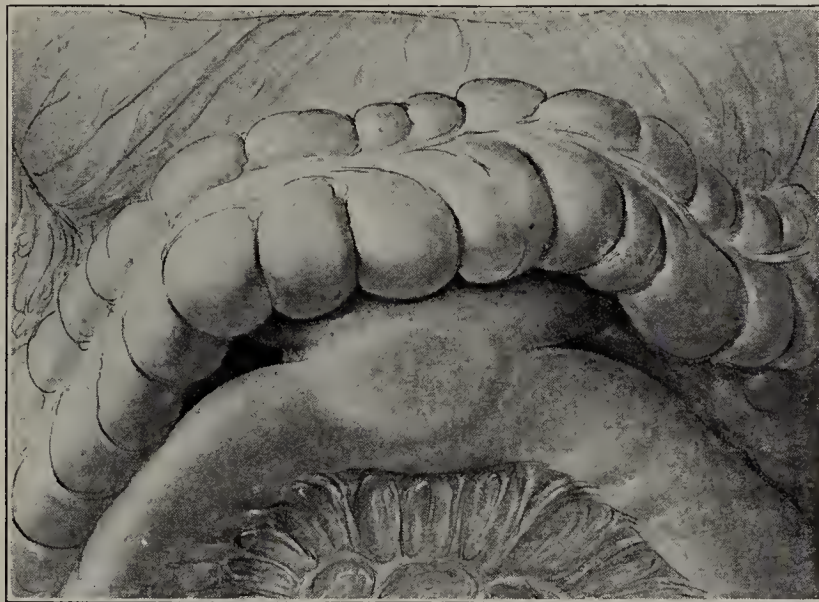


Fig. 1 (Case 21).—Large gastrojejunal ulcer.

Constipation is recorded in the majority of cases. Careful examination of the stools may show evidence of blood. Some patients vomit occasionally.

Physical examination does not yield many symptoms except local tenderness, usually in the left upper abdomen and the lumbar region.

Roentgen-ray examination, which is of such great value in the diagnosis of pyloric and duodenal ulcer, is equally important in the diagnosis of gastrojejunal or jejunal ulcer. Thus in our own cases, our roentgenographers (Dr. Jaches and Dr. Goldfarb) made the correct diagnosis in sixteen out of a total of eighteen patients. They failed to make the diagnosis in only two cases in which operation subsequently established the presence of a gastrojejunal ulcer. A correct diagnosis was thus made from the roentgen-ray findings in 88 per cent. of the cases.

The roentgen-ray diagnosis is based mainly on the following findings: Irregularity of the stoma, tenderness of the stoma on pressure during fluoroscopy, hyperistalsis, diminished patency of the stoma and residue of the test meal in the stomach after three and

2. Eusterman, G. B.: Gastrojejunal Ulcers, *Minnesota Med.* 3: 517 (Nov.) 1920.

3. Rosenow: Production of Ulcer of the Stomach by Injection of Streptococci, *J. A. M. A.* 61: 1947 (Nov. 29) 1913.

4. Reeves, T. B.: A Study of the Arteries Supplying the Stomach and Duodenum and Their Relation to Ulcer, *Surg., Gynec. & Obst.* 30: 374 (April) 1920.

5. Wright: Secondary Jejunal and Gastrojejunal Ulcerations, *Brit. J. Surg.* 6: 390, 1918.

six hours. Residue, however, is not necessary to establish the diagnosis of gastrojejunal ulcer. In Cases 15 and 17 no residue was present. And yet the patients suffered from a typical gastrojejunal ulcer.

It can be safely stated that the diagnosis of gastrojejunal ulcer is not a very difficult one. Occasionally

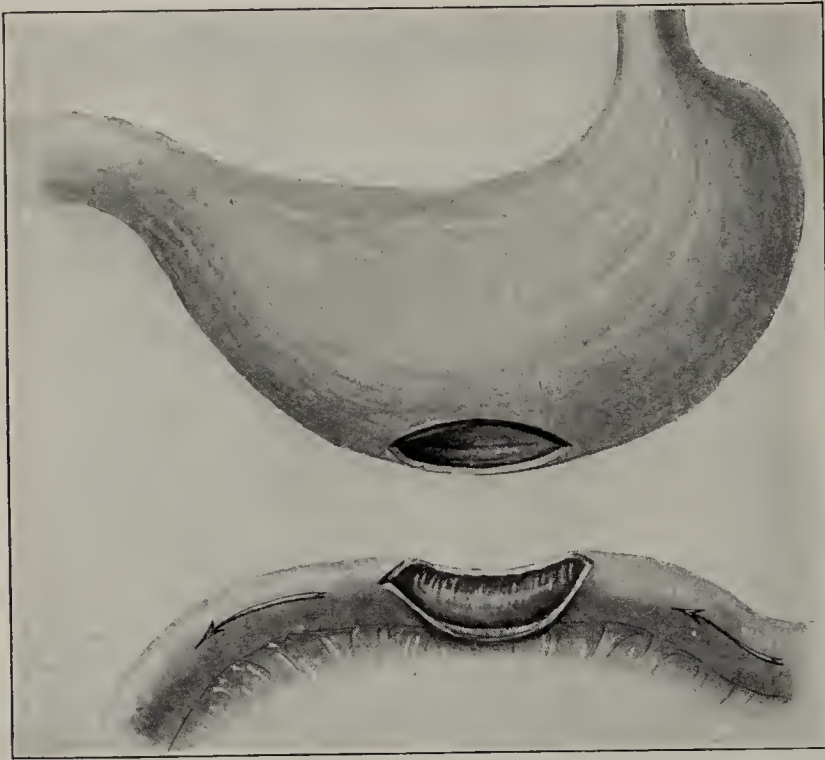


Fig. 2 (Case 21).—Defect in stomach and jejunum after excision of gastrojejunal ulcer.

a gastrojejunal or jejunal ulcer will be suspected, whereas the exploratory laparotomy only shows post-operative adhesions as the cause of recurrent gastric symptoms.

The twenty-one operations, performed on eighteen patients (in Case 2 there were two operations and in Case 6, three operations) show the location of the ulcer as follows: fifteen gastrojejunal ulcers; two recurrent gastrojejunal ulcers; one perforated gastrojejunal ulcer; two jejunal ulcers, and one perforated jejunal ulcer.

In five cases, the original operation (gastro-enterostomy) was performed in other hospitals.

The frequency of gastrojejunal ulcers as compared with jejunal ulcers is very evident from this list. The preponderance of gastrojejunal ulcers is well known and has been mentioned by practically all authors.

Seventeen patients were male and only one patient (Case 13) was female. This coincides with the preponderance of the male sex in cases of ulcer of the stomach and duodenum.

If it should be assumed that there is a relationship between traumatism and the formation of gastrojejunal ulcers, it must be stated that this connection can hardly account for the jejunal ulcers, which occur a considerable distance away from the stoma, usually in the efferent loop.

Bryan⁶ has published a case of primary perforated jejunal ulcer without previous gastro-enterostomy. He mentions three other cases of this type, published by Van Roojen.⁷

The operative procedure depends entirely on the situation of the ulcer. It must be our object to deal

radically with the ulcer whenever possible, without endangering the life of the patient.

It is, indeed, fortunate that a large number of gastrojejunal ulcers are situated on the anterior wall of the stoma. This location lends itself to a rather conservative procedure. The ulcer is excised locally, the posterior suture line of the gastro-enterostomy is preserved, the narrowed stoma is widened by enlarging the opening in the stomach and jejunum, respectively, and the anterior wall of the stoma is resutured.

This comparatively simple procedure was employed in more than 40 per cent. of our cases. All these patients made an uneventful recovery. In one case (Case 8) the transverse colon was so densely adherent to the ulcer, that it was opened during the process of freeing it from the ulcer. The opening was immediately closed. This little accident did not interfere with the operative result. In another case (Case 12), the adhesions to the mesocolic vessels were so dense that an excision was inadvisable. In this case, the stoma was opened, the base of the ulcer was cauterized and circumcised and the intact mucosa of stomach and jejunum was sutured over it.

A somewhat different procedure was employed in Case 21. The defect in the jejunum was of considerable size after excision of the gastrojejunal ulcer.

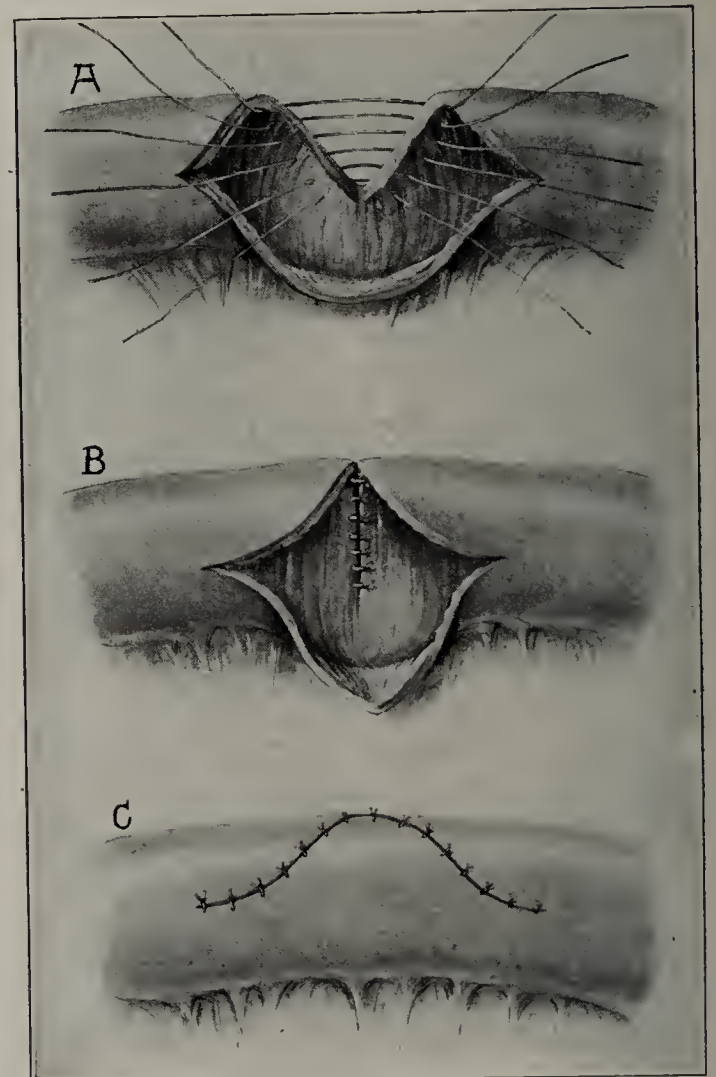


Fig. 3 (Case 21).—Closure of jejunal defect: A and B, posterior wall; C, anterior wall.

The opening in the jejunum was closed, and the opening in the stomach united with another part of the jejunum, a few inches away from the former connection (Figs. 1, 2, 3 and 4).

Of great technical interest is Case 13, in which it was feasible to include the gastrojejunal ulcer in the resected part of the stomach, the resection being indi-

6. Bryan, R. C.: Ulcer of the Jejunum, Surg., Gynec. & Obst. **22**: 279 (March) 1916.

7. Van Roojen: Ueber das Ulcus pepticum jejuni nach Gastroenterostomie, Arch. f. klin. Chir. **101**: 381, 1909.

cated on account of a penetrating ulcer in the lesser curvature of the stomach. Most of the stoma was thus preserved.

In two cases (gastrojejunal ulcer [Case 2] and perforated jejunal ulcer [Case 4]), the Roux operation was performed. As seen above, the Roux operation

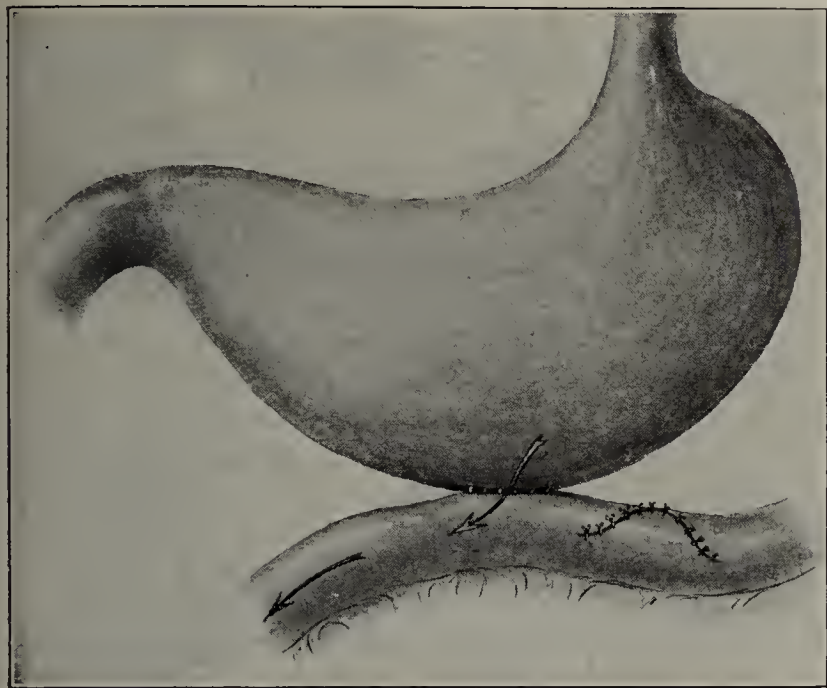


Fig. 4 (Case 21).—New gastro-enterostomy and jejunal defect closed.

is followed by a large percentage of recurrences, as the jejunum, attached directly to the stomach, receives the pure gastric juice without any pancreatic ferments. Furthermore, the technical difficulties are very large, as the upper end of the jejunum is very short on account of the previous no loop gastro-enterostomy. Both of these patients died. One patient (Case 4) succumbed immediately after the operation; another (Case 2) died subsequently from a carcinoma at the site of the new gastro-enterostomy, probably implanted on a recurrent gastrojejunal ulcer.

In three cases (9, 16 and 19) the ulcer was of such large size and so densely adherent to the mesocolic vessels that excision seemed inadvisable. As these patients had narrowing of the stoma, a new gastro-enterostomy was performed. I had occasion (in Case 9) to inspect subsequently the effect of this procedure on the original gastrojejunal ulcer. This patient required a third operation for suspected recurrent gastrojejunal ulcer. The operation revealed a jejunal ulcer, densely adherent to the abdominal wall (see below). Exploratory opening of the stomach revealed that the original gastrojejunal ulcer had entirely disappeared, following the second gastro-enterostomy.

Another patient (Case 18) is perfectly well since the second gastro-enterostomy. Another (Case 19) was suffering from a perforated gastrojejunal ulcer with peritonitis. The stoma was narrowed after closure of the perforation to such a degree that a second gastro-enterostomy was performed. I have seen this patient lately. He has a large atonic stomach. There is no residue after three hours. He will require medical treatment (lavage, etc.) in order to reestablish the tonicity of his gastric musculature.

In three cases (7, 14 and 17) a jejunostomy was added to the local excision of the gastrojejunal ulcer. This combination of local excision and jejunostomy not only safeguards the suture line, but enables us to feed the emaciated patients properly, immediately after

the operation. The tube is removed after two weeks. Simple jejunostomy was employed in two cases (10 and 11) with the object of sidetracking and thus curing the ulcer. The ulcer was so large and so densely adherent to the colon and mesocolon, that radical procedure was inadvisable. The first patient died following the jejunostomy from leakage.

The effect of a jejunostomy on a gastrojejunal ulcer could be studied in Case 11. This patient was reoperated on eight months later for suspected recurrent gastrojejunal ulcer. The symptoms were caused by extensive adhesions. The gastrojejunal ulcer had entirely disappeared, following simple jejunostomy. He has been perfectly well since his last operation two years ago.

It is evident from this survey that we have tried to be as conservative as possible in our cases of gastrojejunal ulcer. Some surgeons have taken a much more radical standpoint in dealing with these ulcers. For instance, Clairmont⁸ has reported three cases of gastrojejunal ulcers, combined with a colonic fistula, in which he performed partial gastrectomy and resection of the colon. The operations lasted seven, six and five hours, respectively. Though the patients recovered, the risks of such very extensive operations cannot be underestimated.

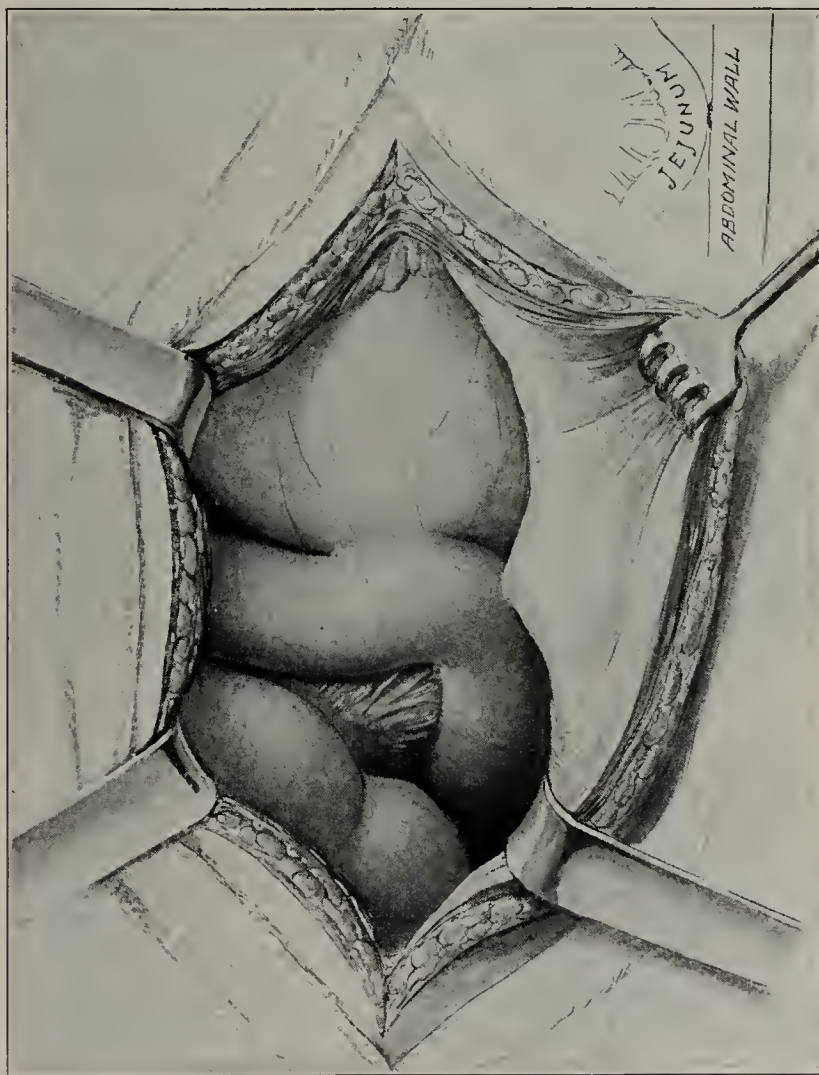


Fig. 5 (Case 20).—Jejunal ulcer adherent to abdominal wall.

The jejunal ulcers are much easier dealt with than the gastrojejunal ulcers. Simple excision and closure of the defect in layer suture is all that is required. This procedure was employed in our cases of jejunal ulcers (18 and 20). The operative procedure employed in Case 20 is illustrated in Figures 5, 6 and 7. The

8. Clairmont: Die Operation der Magen-Kolon-Fistel nach Gastro-enterostomie, Münch. med. Wchnschr. 65:1067, 1918.

ulcer was densely adherent to the left abdominal wall which explained the terrific left-sided pains from which this patient suffered. This case is of unusual interest. He had, in the course of five years, four operations for: (1) duodenal ulcer; (2) gastrojejunal ulcer (excision); (3) recurrent gastrojejunal ulcer (second gastro-enterostomy) and (4) jejunal ulcer (excision).

In Case 18 the base of the ulcer was adherent to the transverse colon. The ulcer was circumcised, its base left intact on the colon and the jejunal defect was closed. The patient has been free from symptoms since his last operation.

The operative mortality was small. Twenty-one operations were performed with two operative deaths (less than 10 per cent.).

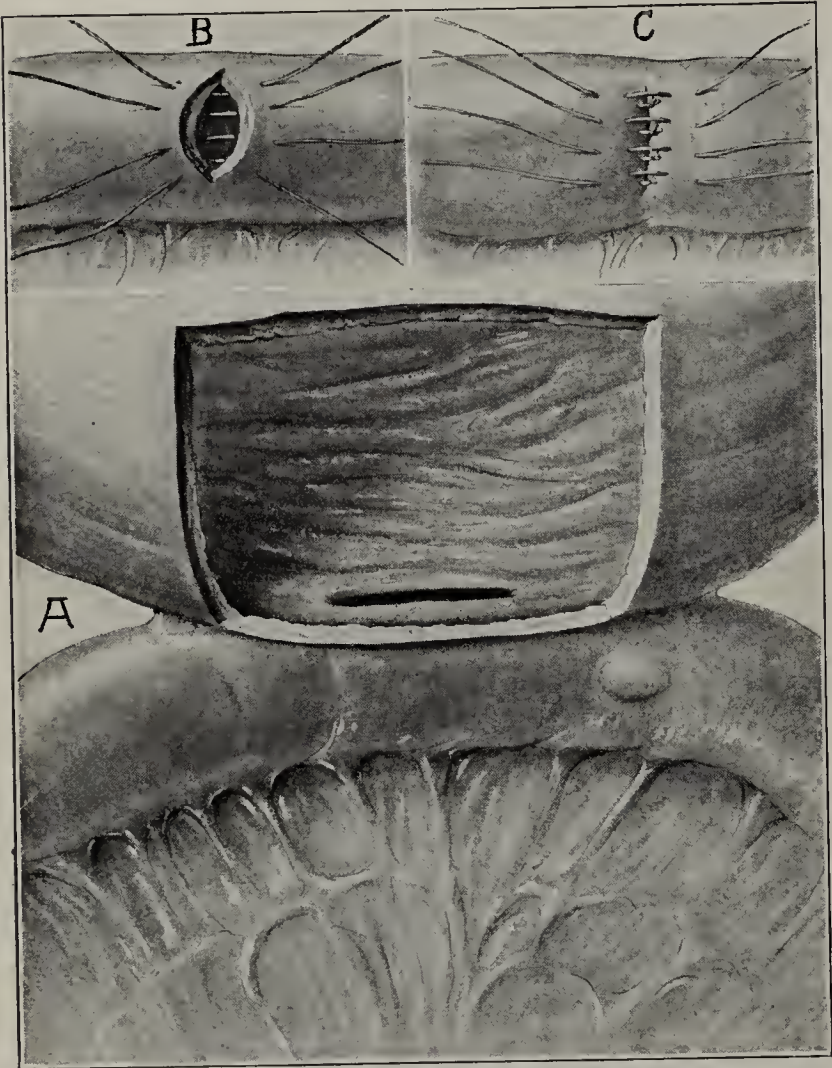


Fig. 6 (Case 20).—A, ulcer freed from abdominal wall; B and C, closure of defect.

It is very gratifying to record that the final results of surgical treatment of gastrojejunal and jejunal ulcers have been most satisfactory. As seen in Table 3, ten patients (83 per cent.) were cured. Two patients (Cases 15 and 19) are very much improved, though not perfectly cured. The ten patients are perfectly free from any gastric distress, though they do not keep any diet. They have gained in weight, some of them from 20 to 30 pounds.

It is possible that some of these patients may not be permanently cured, considering the fact that remissions are so common in gastric ulcers.

It is, of course, impossible to say whether all patients operated at Mount Sinai Hospital between 1915 and 1921 for pyloric or duodenal ulcer and requiring subsequent operations for gastrojejunal or jejunal ulcers are included in this list, as some patients may have been reoperated on in other hospitals. A definite state-

ment as to the frequency of this complication can only be made, if all patients are traced for many years after the operation by a perfect follow-up system.

The number of gastrojejunal and jejunal ulcers has increased very rapidly during the last ten years. This is entirely due to an improvement in our diagnostic methods. Cases which were formerly labeled as post-operative adhesion are now properly diagnosed. The vast majority of these patients can be cured by surgical interference.

TABLE 2.—METHODS OF OPERATION

Gastrojejunal ulcers	18
Excision	9
Excision and jejunostomy	3
Second gastro-enterostomy	3
Roux operation	1
Jejunostomy	2
Jejunal ulcers	3
Excision	2
Roux operation	1

It may be possible to reduce the number of gastro-enterostomies by a more direct attack of pyloric or duodenal ulcers. Excision of the ulcer with subsequent gastro-enterostomy is frequently performed, when the ulcer is situated on the anterior wall. When the ulcer was adherent to the pancreas and under surface of the liver, simple gastro-enterostomy with pyloric exclusion seemed the safer procedure.

TABLE 3.—SUMMARY OF RESULTS

Total number of patients	18
Operations	21
Operative deaths	2
Died subsequently	1
Not located	1
Too recent to draw conclusions	2
Reexamined (May, 1921)	12
Cured.....	10 (83 per cent.)
Improved	2

Haberer⁹, however, has reported eighty consecutive cases without a death of unselected cases of gastric and duodenal ulcers in which he performed resection (Billroth 1). This more radical procedure may mean a step in the right direction.

CONCLUSIONS

1. The cause of gastrojejunal and jejunal ulcers is probably based on the same factors (not definitely known up to the present) which cause pyloric and duodenal ulcers.
2. Suture material is of minor importance. If present, it may be considered as accidental finding. No suture material was found in the cases above described.
3. The proper diagnosis of gastrojejunal and jejunal ulcer can be made from the history and roentgen-ray examination in the vast majority of cases.
4. Frequency of cases recorded in the last decade is based on improvement of diagnosis, not on increase in occurrence of the disease.
5. Correct data as to the frequency of this disease cannot be obtained without a perfect follow-up system. Such follow-up systems, which are in existence in some hospitals, ought to be established in every hospital.

9. Haberer: Anwendungsbreite und Vorteile der Magenresektion Billroth I, Arch. f. klin. Chir. 114: 127, 1920.

6. Operative and final results are very good. The operative mortality was less than 10 per cent. and a cure was obtained in 83 per cent. The vast majority of patients can thus be permanently cured by a secondary operation.

7. It may be possible to reduce the number of gastrojejunal ulcers by a more direct attack of the pyloric and duodenal ulcers. Improvement of technic may show that a large number may be treated by resection (Billroth 1) rather than by gastro-enterostomy.

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ABSTRACT OF DISCUSSION

DR. EUGENE H. POOL, New York: Dr. Lewisohn referred to the causes of gastrojejunal ulcer. Unfortunately, with one exception, all of the theories as to etiology have little to support them. One exception he passed over too lightly; I mean, nonabsorbable suture material. Undoubtedly this has been the cause, or the underlying basis, in a considerable proportion of the earlier cases of gastrojejunal ulcer. In the first case I saw, an ulcer 1 cm. in diameter had on its floor the knot of a continuous silk suture which could not be cast off because the rest of the continuous suture was incorporated in the wall of the stoma. Undoubtedly irritation had occurred, with development of a fistulous tract from knot through mucous membrane; then erosion of the edges led to the development of a chronic indurated ulcer. There are enough such cases to indicate the observance of the rule laid down by the Mayos that nonabsorbable suture material, especially continuous suture, should not be employed in the performance of gastro-enterostomy. Another feature of some significance is the tendency, noted by most men who have collected these cases, to a recurrence of gastrojejunal ulcer after excision of the ulcer and reconstruction of stoma, or formation of a new stoma. In one case, to which Dr. Lewisohn referred, gastrojejunal ulcers developed twice and were excised. Finally, the patient died as the result of carcinoma at the site of the third gastro-enterostomy. A number of such cases have been cited. Therefore, it seems wise not to reconstruct the gastro-enterostomy or make a new gastro-enterostomy, but to separate the two viscera, jejunum and stomach, close them and, if possible, reestablish the normal conditions of the parts, that is, the continuation of stomach and jejunum. This can be done only if the jejunal ulcer has healed, or can be excised and if the pylorus is patent. One in every four cases is a symptomatic failure. In following the late results of gastro-enterostomies for the last six or seven years at the New York Hospital, we found that one in every three cases of parapyloric ulcer, in which there was no barium retention after six hours, was a symptomatic failure. This, therefore, is the type of case in which gastro-enterostomy should be done less often. We could more frequently do something less revolutionary, namely, a pyloroplasty, with excision of the ulcer, and cut down the actual number of gastrojejunal ulcers, though not the relative number, and we would at the same time reduce both the actual and relative number of symptomatic failures after gastro-enterostomy.

DR. J. SHELTON HORSLEY, Richmond, Va.: It is important to face squarely the cause of jejunal ulcers after gastro-enterostomy. This cause is obviously the operation of gastro-enterostomy, which places a great burden on the operation. Dr. Pool said that if we can do away with gastro-enterostomies, we shall have no gastrojejunal ulcers. When there is obstruction at the pylorus, gastro-enterostomy gives satisfactory results, probably because the obstruction prevents the exit through the pylorus of gastric juice and so the maximum alkalinity of the duodenal contents is preserved and will readily counteract the acidity of the gastric juice at the stoma of the gastro-enterostomy and so protect the mucosa of the jejunum. Too much stress has been placed on nonabsorbable sutures, turning in an unnecessary amount of tissue, and the use of clamps. These things usually give no trouble if used elsewhere in the gastro-intestinal tract.

Altered physiology of the jejunum by dumping strongly acid juice into it undoubtedly weakens the resistance of this tissue; and a small trauma, or a nonabsorbable suture, that could easily be taken care of elsewhere causes trouble here. Similarly, if we change the reaction of the urine to alkaline for any length of time symptoms are created and irritation is set up. There are doubtless many cases of irritation and congestion of the jejunum that produce symptoms for every jejunal ulcer that is found. W. J. Mayo said last year that his treatment of jejunal ulcer after gastro-enterostomy is to undo the gastro-enterostomy and perform a pyloroplasty. If this procedure is adopted by such an authority for the cure of jejunal ulcer, would it not be even better prophylactic treatment?

DR. MOSES BEHREND, Philadelphia: I still cannot be convinced that the nonabsorbable suture is the cause of gastrojejunal ulcer, because many gastrojejunal ulcers follow when

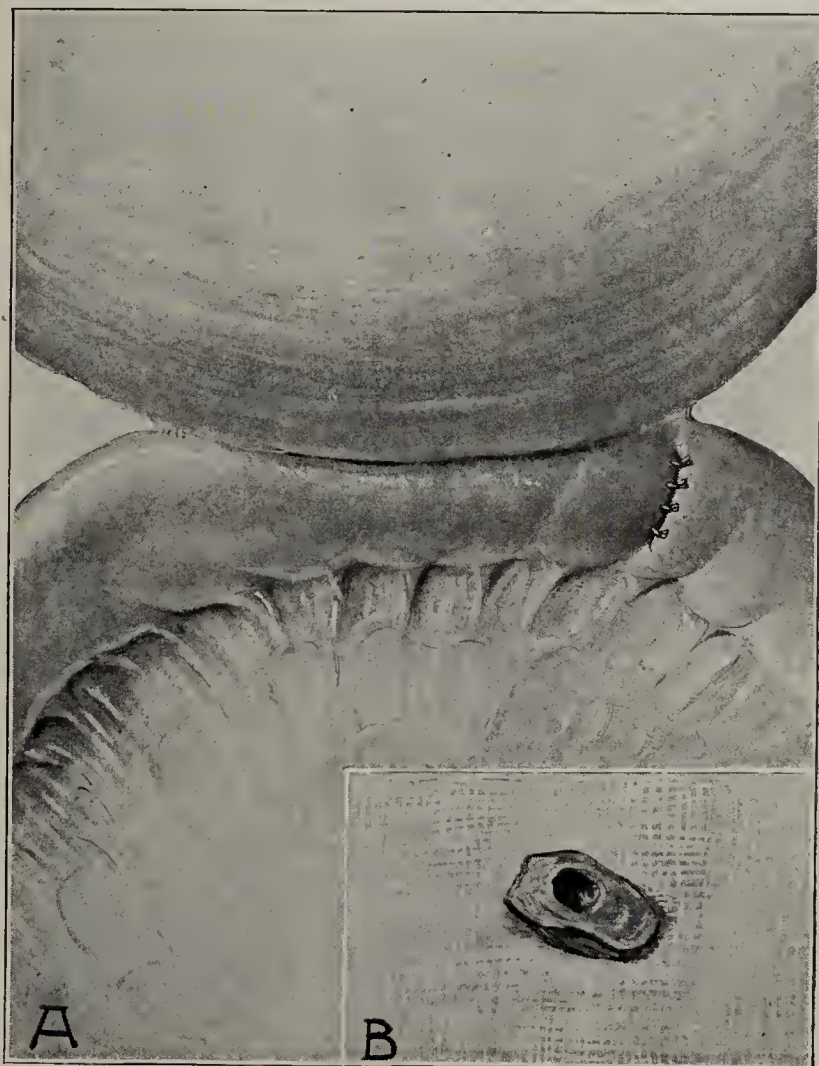


Fig. 7 (Case 20).—A, jejunal defect closed; B, jejunal ulcer with crater.

an absorbable suture has been used. While the nonabsorbable suture may act as a mechanical irritant, there is another factor which causes the gastrojejunal ulcer, and that is undetermined at present. The most important point that has been brought out in this paper is that we must do fewer gastrojejunostomies. We can select our cases better now than we did before, as, for example, cases of ulcer of the anterior wall of the stomach or near the pylorus that do not cause obstruction that do not require a gastrojejunostomy. The operation devised by Horsley should be carried out more frequently than it has been in the past.

DR. FENTON B. TURCK, New York: A great number of the animals on which I experimented, by causing tissue breakdown, liberating the tissue toxin from their own tissues, developed ulcers, which leads me to believe that peptic ulcer is connected with the absorption of the tissue toxins of the animal. I extracted the homologous tissue and injected it in lower concentrations into animals over a long period, and produced peptic ulcers. Then I partially starved the animals to force them to break down their own tissue. By feeding them with the usual food but adding substances

that break down the digestive apparatus, such as feeding extracts of beef and cultures of colon bacillus and fatty acids, it resulted in acute and chronic ulcers with perforation. This interfered with digestion and absorption, causing tissue to break down. The absorption of these toxic products of tissue breakdown resulted in thirty-six ulcers, both chronic and acute. It was therefore concluded that acute, subacute and perforated ulcers are the result of tissue breakdown and not the result of infection. When the animal loses its own protective power against its own tissue toxins, there is stasis in the blood in the submucosa which results in these ulcers. Every one of the secondary ulcer cases shows that these patients, when they had recurrences, were already in that latent ulcer condition, that is, lack of antibodies against their own tissue toxin. Whenever you allow such a condition to arise, secondary ulcers must necessarily result. When the condition of the normal antibody breakdown occurs, ulcers will form; and it requires no infection theory or other assumptions to explain the etiology of peptic ulcer.

PYRETHRUM DERMATITIS

A RECORD OF THE OCCURRENCE OF OCCUPATIONAL
DERMATOSES AMONG WORKERS IN THE
PYRETHRUM INDUSTRY

CAREY P. McCORD, M.D.

C. H. KILKER, M.D.

AND

DOROTHY K. MINSTER

CINCINNATI

Pyrethrum (Dalmation or Persian insect powder, or buhach) is the most commonly used household insecticide at this time. It is an efficacious and at the same time inexpensive agent. Consequently, an extensive industry has grown up around the manufacture of the powder. The extent of its use in this country is indicated by the importation in a single year (1917) of 1,504,000 pounds¹ of the crude material. With the recent introduction of large scale production methods in the manufacture of the powder has come the realization that the industry is subject to conditions of work that are inimical to the health of exposed workers.

TRADE PROCESSES

This powder is made from the flowers of three varieties of *Chrysanthemum* or *Pyrethrum*: (1) *cinerariaefolium*, (2) *roseum*, and (3) *marshallii* or *carneum*. The principal sources of these flowers are the Caucasus, Persia, Dalmatia, Japan, Montenegro and in recent years California. There are three grades of flowers which determine the value of the powder as an insecticide: (1) The open flowers make the poorest grade of powder; (2) the half closed flowers make a little better grade; (3) the closed flowers make the finest grade. In times past, the stems of these plants have been used; but they are now recognized as containing only slight traces of the active insecticidal substances. Formerly, adulteration with a variety of similar plants or with weight-giving chemicals, such as lead salts, was a common practice. These varying adulterants were constant health hazards. Today, adulteration is infrequent and health hazards center directly about the pure pyrethrum flowers. The flowers are picked and dried by the growers. The flowers com-

pressed into bales are supplied to the manufacturer. The further procedures, grinding to a fine powder, weighing, cartoning, etc., unless safeguarded, constitute the processes found to be harmful.

SUBSTANCES RESPONSIBLE FOR THE HAZARD

The precise principle contained in pyrethrum leading to its insecticidal properties is not definitely known. By Fujitani² it is believed to be "pyrethron," a neutral ester. Reeb³ found the active principle to be an acid which he called "pyrethrotoxic acid." More recently, McDonnell¹ isolated each of the two substances previously mentioned, together with other acids. It is tenable to attribute an insecticidal value to more than one of these isolated bodies.

The irritating action on the skin of the workers may not wholly be linked up with any of these chemicals, as other substances in pyrethrum having no known insecticidal value are well known local irritants. In addition to the foregoing insecticidal chemicals, analyses have shown the presence of pyrethrum camphor, $C_{10}H_{16}O$, an acrid resin known as pelletorin, essential oils, an alkaloid, inulin, tannin, etc. Resinous substances have been found in samples of pyrethrum flowers in as high a percentage as 13.76. The yield of alcohol-ether extractives is as much as 30.47 per cent. These ill classified resins, oils, camphors, etc., are accepted by us as irritants contributing to the etiology of the lesions observed.

CLINICAL CHARACTERISTICS

On the assumption of industrial medical work in a plant manufacturing insect powders, we were apprised of the long-standing occurrence of an unknown skin disease among the employees. A cursory investigation established that the condition prevailed only in those departments handling pyrethrum.

These departments employed approximately eighty-five men and women. Seventy-five women were engaged in filling, weighing and sealing the containers. The grinding of the material was done by eight or ten men on another floor. The conduct of the work resulted in a coating of pyrethrum dust on the arms, faces and other exposed parts of the workers. In addition, all workers were exposed to the dust in suspension in the air of the workrooms.

Occasional cases of this insecticidal dermatitis may occur during the cold months of the year. In summer months, the incidence is greatly increased, owing to the apparent solubility of the toxic substances in the perspiration of the workers' bodies. During the months of April, May and June, eighteen workers handling this insecticide have reported to the dispensary for treatment. We believe that the cases observed exhibit but one primary condition, a dermatitis venenata (pyrethrum dermatitis) which, however, presents variations permitting four groupings:

1. *Erythema Venenatum*.—This type is so common and so trivial that many workers thus affected have not reported to us because of the mildness of the condition. Approximately, 30 per cent of all workers are known to have been affected with this type of skin lesion. It is prone to occur on the face and forearms, being generally distributed. The skin is roughened and an

2. Fujitani, J.: Chemistry and Pharmacology of Insect Powder, Arch. f. exper. Path. u. Pharmacol. **61**: 47-76, 1909; Chem. Abstr. **5**: 966, 1911.

3. Reeb, E.: Principes actifs de la poudre insecticide, J. pharm. Elsass-Lothringen **35**: 267 (Dec.) 1909, cited in Bull. 824 (Footnote 1) p. 72.

1. McDonnell, C. C.: Insect Powder, Bull. 824, U. S. Dept. Agric., June 3, 1920.

erythema pervades the entire area. In a few days the superficial layer of the epidermis desquamates. During the entire period, the pruritus is very annoying, unless relieved by medication. In some of the workers this dermatitis continually reappears during the entire period of exposure, clearing up, however, on removal from the source of irritation.

2. *Vesicular Dermatitis*.—This frequently observed lesion is more specifically peculiar to pyrethrum. The first manifestation is a few superficial, fine papules, grouped in widely separated areas about the size of a dime. In from twenty-four to forty-eight hours the papules become vesicular, even approaching blebs or bullae in size. One case warranted a diagnosis of dermatitis bullosa. The tissue surrounding the vesicles may show a moderate erythema. The vesicles break or are absorbed, and do not go through a pustular stage under ordinary circumstances. With or without treatment, these vesicles disappear in two or three days when irritation is removed. Such cases as have come under our observation have presented eruptions only on the hands, forearms, faces and ankles. The pruritus in this type of lesion is intense.

3. *Papular Dermatitis*.—This affects especially those exposed parts of the body where moisture collection is facilitated, such as the eyelids and folds of the skin of the neck. The lesion resembles Type 1, but in addition, superficially seated papules in large numbers are prone to occur. These papules do not become vesicular, and disappear quickly under treatment. The pruritus constitutes the chief cause of complaint, and the entire condition is much aggravated by scratching.

4. *Anaphylactic Type*.—Only one case of this kind has come to our attention. The plant engineer is at infrequent intervals called on to adjust machinery in the pyrethrum grinding room. Whenever thus exposed to this dust, there immediately is begun a condition resembling in part the skin conditions described above and in part resembling an intense local anaphylaxis.

The site and nature of the lesions are identical during every attack, but they are more easily induced when the patient perspires freely. Shortly after entering the dust-laden room, the skin of the face is reddened, burns and itches. Very rapidly the cheeks, especially below the eyes, become swollen, indurated and erisypeloid in appearance. The affected areas are raised and indurated, with fairly well outlined edges. Soon the eyelids become swollen; the lids may even be entirely closed. The pruritus becomes very intense. The entire condition disappears in two days if the patient is removed from the dust irritant.

TREATMENT

After removal from the irritant through replacement of the patient at other work in the plant, or through protection of exposed parts with bandages or suitable garments, this dermatitis tends to disappear speedily. Removal from the irritant, followed by the use of any bland ointment, has been found efficacious. The relief from the distressing pruritus is the chief demand made by the patients. As the eruption is likely to reappear soon after reexposure, preventive measures are regarded as the best avenue for the elimination of these conditions.

PREVENTIVE MEASURES

It is being demonstrated in the plant under observation that all the dermatitis-producing hazards may be avoided through the introduction of machinery. Dust-

proof grinding, automatic filling and weighing devices, etc., have resulted in the prosecution of this work without contact between the workers and pyrethrum materials.

In the absence of such machinery, the following protective measures may be found helpful:

1. Scrupulous personal cleanliness of the worker is requisite. In the plant this can be facilitated by adequate washrooms, frequent change of work garments, cleanliness of work tables, seats, etc., together with general cleanliness of the workroom.

2. On starting work in the morning and at noon, cold cream, petrolatum or the like should be applied to the exposed parts of the body.

3. At night, the arms, hands and face should be bathed in water containing sodium bicarbonate, approximately in amounts of 1 teaspoonful to 1 gallon of water. There is some reason to believe that the irritating substances are acid and are thus neutralized by the sodium bicarbonate.

SUMMARY

An occupational dermatitis has been found to occur among the workers engaged in the manufacture of pyrethrum insect powder. Chemical analyses of pyrethrum have established various constituents having irritant properties. The lesions noted are, essentially, various forms of dermatitis venenata. They are of mild severity and quickly disappear under ordinary treatment. Reexposure frequently leads to the reoccurrence of the disease. This dermatitis may be prevented by the introduction of trade processes that eliminate the necessity of exposure of workers to pyrethrum dust and powder.

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TRANSPERITONEAL CESAREAN SECTION

HIGH OPERATION—COPELAND TECHNIC *

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On examining many modern textbooks on obstetrics for the technic of transperitoneal cesarean section, I have been impressed by the lack of many essential details, notable variations of opinions, and much vagueness. Observations on the operating technic of various surgeons and the apparent lack of a clear mutual understanding among the individuals composing their operating teams, and numerous discussions with many physicians and nurses concerning the actual performance of this operation convinced me that there was still much room for improvement. Having studied this operation for about ten years, and having developed a technic which is safer, swifter and surer than any other of which I know, one which has safely stood the test of subsequent labors, I have felt that you might be interested in hearing of it.

The late Professor Cragin said in his "Practice of Obstetrics," "The question is often asked, What is the advantage of a quick operation in the performance of a cesarean section? Why is a fourteen and two-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

third minutes completed operation" (Cragin's fastest) "better than one consuming an hour? All surgeons realize that any operation in which careful technic is sacrificed to time, is faulty in the extreme. However, in a cesarean section, a careful technic coupled with a short time, is preferable to a careful technic coupled with a long time, for these reasons: From the first cut in the uterus, until the uterine incision is closed and the uterus replaced in the abdominal cavity, the woman is losing blood from the uterine sinuses. The loss of blood means lessened resistance to infection, and a slower convalescence. Hence, if performed with the same care, a short cesarean section is better for the woman than a long one." I would add to this, that the faster the operation, the easier it is to obtain good apposition between the cut edges of the uterus. There is a primary and very uniform contraction of the uterus as soon as it is emptied. This is the optimum time to suture the several layers of the uterine muscle with an inclusive bite of the needle through all the layers when using a running suture. (Original) Irregular contractions appear rather quickly following uneven massage, and loss of tone, and good apposition and hemostasis become increasingly difficult. A rapid operation markedly lessens shock, hemorrhage, exhaustion, chilling, handling of abdominal contents, and poisoning from the anesthetic. Hence, any *safe* technic which shortens the time of operation, and is so simple of execution that any one with fair surgical training can readily employ it, is worthy of careful consideration. For, while the margin of safety is wide in the average case, a surgeon with a slow and complicated technic can never speed up without danger of losing something essential in an urgent case, such as a central placenta praevia with severe hemorrhage, when a swift operation might well be life-saving.

Preoperative precautions should include a careful selection of cases, elimination of all vaginal examinations and manipulations when cesarean section may later become necessary. Trial by labor in border-line cases should be short, unless reasonable progress, as determined by abdominorectal examination, is being made. Exhaustion of the mother and child should be forestalled. Operation should be performed early. In definitely contaminated cases extraperitoneal cesarean section or some procedure other than the classic operation should be employed, Brouha¹ to the contrary, notwithstanding. The patient should be encouraged. Watson has ably described "The Indications and Limitations of Caesarean Section,"² and has shown how dangerous this operation is, even today, unless properly performed. In cases that are not of an emergency nature the patients should have a high carbohydrate diet for a few days if possible, and a guaranteed sleep the night previous to the operation. No purgation is given except for complicating toxemia.

Having critically examined various types of cesarean section, I reached some important conclusions, only two of which I shall discuss here.

First, if several methods of suturing the uterus and abdominal wall give equal end-results, but if one method is outstandingly simple and swift, obviously it is the one to adopt. The continuous or running suture is safe as proved by the work of Cragin, De Lee and

others, and is much simpler and faster than numerous interrupted sutures. Nonessentials, such as eventrating the uterus, or packing it off before opening, dilating the cervix, clamping the broad ligaments and silk sutures, I eliminated.

Second, the psychology of teamwork in this operation has not been adequately applied among the profession at large. To those of you with a well organized and permanent operating staff, the following remarks may seem trite, but I work with a rapidly changing personnel, as most of us do. I gradually realized how important it was to overcome the nervousness of a willing, but inexperienced, nurse assisting at, perhaps, her first cesarean section. I now, therefore, just before the operation, explain carefully and fully to the instrument nurse, in a friendly way, exactly what I wish her to prepare, and the order in which I shall ask for needles, sutures, etc. Should a nurse fail to read the mind of the surgeon, and hand the wrong instrument, and if he starts to shout at her, she becomes confused, the surgeon fails to get the best possible service, the operation is delayed, and the patient suffers. I believe firmly that the human element in the operating team has been very much neglected—it is the weak link. I strengthen this link and expedite the operation at least a quarter of an hour.

COPELAND TECHNIC

I carefully explain to each of my various assistants before each operation, the exact procedures I will probably perform, and how and when I will expect them to carry out the particular parts I shall assign to each of them. The time I spend in instructing and coaching the operating team before the operation starts is time that many surgeons lose at the expense of the patient during the actual performance of the operation, because they have failed to grasp the great importance of this point. This is an absolutely essential part of my technic.

The following instructions, necessarily brief in this paper, are varied to suit each individual operation. I explain the whole operation, and then assign special duties to each assistant.

Instrument Nurse.—All needles are to be large and curved. Needles for the uterus and peritoneum must not have cutting edges, but for the fascia and skin cutting edged needles are used. All sutures, except the silkworm gut tension sutures for the skin, are to be long, double and knotted. First, for suturing the uterus, thread three large muscle needles with medium tanned, chromic catgut, No. 1. Hand the needles to me without any needle holder, as I ask for them, as soon as the baby is removed. Second, for the peritoneum, thread one large muscle needle with plain catgut, No. 0. Verify sponge count. Third, for the fascia, thread two large cutting edged needles with chromic catgut, No. 2. Fourth, for the skin, thread four large cutting edged needles with silkworm gut and hand to me on needle holders. Have ready Richter's magazine holder loaded with Michel clips to close the skin; instruments, apparatus and drapings as for ordinary laparotomy; special, McDonald's solution for abdomen and hands of operating team, no iodine; Crossen's continuous gauze sponge. I confirm all this before starting.

Anesthetist.—I prefer nitrous-oxid with the maximum of oxygen and a little ether, or what is more convenient, and very satisfactory is the specially purified Dupont ether invented by my friend, Dr. James Cotton of Toronto. *I want the minimum of anesthetic, consistent with complete loss of pain and absence of straining.* When I am ready to start the skin incision, flood the mother with several breaths of pure oxygen to hyper-oxygenate the baby, as I have described elsewhere.³ This is

1. Brouha: Cesarean Section in Infected Cases, *Gynec. et Obstet.* 2: 385, 1920; abstr., *J. A. M. A.* 76: 1283 (April 30) 1921.

2. Watson, B. P.: The Indications and Limitations of Cesarean Section, *Canad. M. Monthly* 4: 89 (April) 1920.

3. Copeland, G. G.: Nitrous Oxid-Oxygen Analgesia and Anesthesia in Obstetrics, *Canad. M. J.* 1: 405 (May) 1917.

valuable, as it guarantees the baby's being in the best possible condition on extraction from the uterus and usually immediate crying. As soon as the baby is removed, give by hypodermic, $\frac{1}{4}$ grain morphin sulphate, and $\frac{1}{150}$ grain atropin sulphate.

Resuscitator of Baby.—To be aseptic; no mask; to stand at foot of table to my right. Wrap sterile towel around the legs of the baby, and grasp it firmly to prevent slipping. The steps I usually employ to start the baby breathing are: inversion, clearing the throat, spanking and hot bath. These failing, perform direct mouth to mouth insufflation through sterile gauze first filling your own lungs with pure oxygen (original), pressing on stomach to prevent the entry of air except to lungs. Cragin's⁴ throw is valuable. A personal explanation of the value of this method of resuscitation is that the sudden throw upward notably increases the blood pressure; the return should be rather slow, since, if too rapid, it lowers the blood pressure (Personal experiments).

First Assistant.—The best available surgeon: Please sponge, help me open peritoneum, and when I remove the baby, clamp cord with two forceps and cut between. As I remove the afterbirth, inject into several places in the fundus uteri, parts of 1 c.c. of pituitary extract from an all sterile syringe till all is given. If I ask you to remove the afterbirth, avoid the cervix, which is probably not sterile and which always opens promptly as soon as the uterus is emptied. Redrape, sponge cut edges of the uterus, tie sutures, follow me up, pulling suture snugly but not tightly, push edges of uterus together to minimize tearing effect on the muscle. Cut loose ends. Lift abdominal walls when uterus is closed so I can replace it. Pick up peritoneum on my side with Kocher's forceps, I will do the same on yours. Hold peritoneum together while I sew it up. Similarly, assist me with the fascia. While I am closing the upper half of the fascia, you insert the silkworm gut tension suture at the bottom of the cut, being careful to avoid cutting sutures already in the fascia. Go through the skin and fascia, and leave the ends loose; I will tie them. Cut all loose ends at the bottom, the second assistant will cut all the upper loose ends. You hold the skin edges together and slightly everted while I place the Michel skin clips. Apply McDonald's solution and dressing.

Second Assistant.—Usually a house surgeon: Press sides of abdomen so as to push the uterus tightly against the midline. The baby removed, cover upper half of cut with a hot wet sterile towel to protect the intestines. Grasp the uterus at the cervix with both hands, thumbs under and behind, fingers at side. Bring uterus out of abdomen and hold up, handy for surgeon to suture. Cut all upper loose ends of suture about one-fourth inch from the knot. Sponge, as suturing is done. Keep bowels back. Pull Crossen sponge toward you.

Timekeeper.—Call out the time taken from the instant of the first cut, when the baby is removed, when the afterbirth is removed, when the uterus is completely sutured, when the skin is completely closed.

Surgeon.—I stand on the right side of the patient, assistants on the left, resuscitator to my right. McDonald's solution is applied to the abdomen, then sterile drapes. I pin an open bag of Crossen's continuous gauze sponge on the right side of the drapes. When the patient is ready, she is flooded with oxygen.

Operation.—Time: I make a rapid incision from above downward for about 5 inches, more or less, depending on the patient. The incision is started about an inch above and an inch to the right of the umbilicus to compensate for the usual dextrorotation of the uterus, and also to prevent the wound's being drawn down into a hole, which happens if the cut is too close to the umbilicus, which sinks in during convalescence. I bring the lower end of the cut to the midline. Keeping the incision away from the umbilicus lessens the chances of maceration and infection. (Original) The peritoneum is carefully opened with scissors between the fingers. The uterus, still in the abdomen, is opened in its anterior upper third in its midline, using a fresh knife. Generally, three strokes are employed in making the 5 inch opening. The last stroke is made very carefully to avoid cutting into the membranes which usually promptly bulge at this stage and are carefully nicked and opened by the fingers, or if the

placenta is encountered, I shell it off the uterus upward with the fingers, till the membranes are reached. These are then opened, and a foot grasped and the child carefully extracted. Up to this stage, I proceed cautiously to avoid cutting a chance loop of bowel, cutting the baby or injuring it by forcibly jerking it out of the uterus, the three real dangers. After that I proceed as fast as I can, consistent with a good technic. Handing the child to the resuscitator, after the first assistant has cut the cord between the clamps, I remove the afterbirth, keeping away from the cervix as much as possible, unless a placenta praevia forces me to go to that locality. After rinsing my hands, I take a Copeland tissue forceps in the left hand and the large muscle needle in the right hand threaded with chromic catgut, double and long. The assistants have meanwhile put in the pituitary extract and applied fresh drapes, and are holding the uterus up accessible and sponged. Starting at the bottom of the uterine cut, I take deep bites through the whole of the uterine muscle down to the mucosa. The value of this is shown by De Lee. I use only my fingers as needle holders, thereby saving at least a hundred needless steps which would be necessary if I used a needle driver. I use a running suture, taking from five to ten stitches, depending on the length of the uterine incision and the condition of the muscle; the firmer the muscle, the fewer the stitches. Usually one layer to the muscle is sufficient, occasionally two. The peritoneal surface of the uterus I invert with a Cushing suture, taking bites about one-fourth inch to one-half inch long, parallel to and one-fourth inch from the cut edge. When finished, no sutures show, the uterus is quite smooth, only two knots are visible. Adhesions are minimized. In the average operation, I have now taken five minutes from the time of the first skin cut.

If only a little blood remains in the abdomen, it is not sponged out, as sponging favors adhesions. Leave it. I return the uterus to the abdomen and watch for bleeding. If oozing has occurred, I have tried hot towel compression; this failing, a mattress suture. I here make sure that no foreign body is left behind; the peritoneum is secured and closed with plain No. 1 or No. 0 catgut on a large muscle needle. The fascia is closed with No. 2 chromic catgut, double, locking frequently, and using a large cutting edged needle. I then go to the bottom of the cut and tie the silkworm gut tension sutures, placed by the first assistant while I was finishing the closure of the fascia. This done, I bring the skin together with Michel clips. Time. McDonald's solution and dressing.

RESULTS

I have performed cesarean sections about twenty-nine times, as well as assisting at about as many more. There have, fortunately, been no deaths due to the operation in my series.

Two women died who were operated on. Death in both these cases was prognosed before the operation as highly probable, but two babies were saved, otherwise positively doomed. The first woman to die was a primipara, at full term, not in labor, with a rigid cervix and who was having convulsions alternating with coma. The immediate operative recovery was good; but she died in thirty hours, quite suddenly, immediately following a hemiplegia. She never came out of the coma in which I saw her for the first time in consultation. The case is more fully described in my last article on eclampsia,⁵ and forms one of the very few deaths in a large series of eclamptic patients. The second death was in a primipara, a rachitic dwarf, sent into my service after thirty hours' futile labor, the head not even being engaged. She also had influenza complicated by universal bronchopneumonia during the height of the 1918 epidemic. Immediate operative recovery was good, but the lungs filled up. Death was from the progressive pneumonia, and occurred in twenty-four hours after operation.

Twenty-three of these women had contracted pelvis. The operation was performed for the second time in four cases, and for the third time in one. Steriliza-

4. Cragin: Practice of Obstetrics, Figs. 256 and 257, 1916, Lea & Febiger.

5. Copeland, G. G.: The Treatment of Eclampsia: Observations, Methods and Results in Some Fifty-Three Consecutive Cases, with 3.7 per cent. Mortality, Canad. M. Monthly 4: 106 (April) 1920.

tion has been done in addition to the cesarean in five cases. In several of these women, there were other complications, such as preeclamptic toxemia, advanced age and weak heart. One woman had central placenta praevia with massive hemorrhage. Both the mother and child were saved. There was one case of obstructed labor from congenital pelvic kidney, fuller report later; two cases of spondylolisthesis of the fifth lumbar vertebra; two women with normal pelves, but histories of previous severe labors, serious lacerations followed by extensive operations, to avoid a repetition of which they asked me to perform cesarean section.

While this is a small series compared with the experience of some surgeons, yet the improvements in my operating methods have been progressive.

Since standardizing my technic, I have performed about twelve completed cesarean sections in about fifteen minutes or under. The fastest cesarean section, combined with sterilization attained by excising wedges of the uterus containing the tubes, from the instant of the first cut till the abdomen was completely closed and a dressing applied, was fifteen minutes and forty seconds. The other operating times were: fifteen, fifteen, fourteen, twelve and one-half, eleven and three-quarters, ten and one-third, ten, and nine and three-quarters minutes. The last group of three were performed within twenty-four hours, Cotton process ether being used, and two being performed for the second time, which caused some delay owing to some adhesions, as I had used iodine at the first operations. The last three consecutive operations, with the aid of good assistants, I performed in nine minutes and forty seconds, eight minutes and fifty seconds, and my fastest time to date is *eight minutes thirty-five seconds for the completed operation*. In all of these the child took more than a minute to extract, while my fastest extraction was twenty-five seconds. Flooding the mother with oxygen prevents any need for haste. Almost as good speed has been made in the performance of the actual cesarean part of other operations, but the presence of complications has increased the total time. When a uterus bleeds abnormally, time *must* be spent to make sure of hemostasis. I wish to state most emphatically that in all these fast operations, safety has been of first importance, and speed has been attained not by reckless slashing, lightning-like movements, or genius, but by hard won experience and skill, to some extent. Mostly, however, it has been attained by loyal cooperation on the part of my assistants as a result of mutual preoperative understanding, by the elimination of nonessentials, which I studied to some purpose under Sir John Bland-Sutton. The ultimate good results depended in no small measure on the attainment of the aseptic technic so well taught me by Dr. Wilbur Ward of New York in Sloane Hospital, and the careful selection of cases as was impressed on me here at Harvard.

A careful preoperative preparation, a capable anesthetist, giving a minimum of anesthetic, a simple, rapid operation with the least possible handling, and good postoperative care have resulted in my patients having as a rule, a remarkably smooth recovery.

If I shall have impressed the men who performed only an occasional cesarean section, with the great value of a preoperative discussion, I shall feel justified in reading this paper.

While I know that I have not yet performed a perfect operation, yet nothing but the best surgical prac-

tice has been followed, nothing essential has been omitted, nothing unnecessary done. To have taken a longer time would not have guaranteed greater care, nor better work; but I assure you these speeds have not been reached in a day. Several of the women operated on have subsequently had severe labors under other physicians, with bad results, but the uterine suture has stood firm. I always feel that my methods are not final, but in a state of evolution, ever striving toward that impossible perfection so well described by Monte Cristo, "Human inventions march from the complex to the simple, and simplicity is always perfection."

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ABSTRACT OF DISCUSSION

DR. WILBUR WARD, New York: The particular merit of Dr. Copeland's procedures is their utter simplicity. I am not quite in accord with the present day tendency of the multiplicity of drapings of the abdominal wound—abdominal pads, retractors, etc. Dr. Copeland uses no pad, except for the purpose of retaining the intestines at the upper angle of the wound after the uterus has been delivered and is everted for purposes of suture. He does not protect the abdominal incision with sterile drapings prior to incision of the uterus. I have seen quite a few operators do cesarean sections under varying conditions, and some of them have been most elaborate in their technic. They have made slow incisions through the abdominal walls, have put on sterile towels to protect the edges of the incision, have carefully walled off the uterus with pads so as to protect the adjacent viscera, have in certain cases even put in sutures in the interior surface of the uterus prior to its incision, so as to make sure the incision should be in the midline. I have seen these patients in their convalescence, and there is no question in my mind that convalescence is much more stormy, as expressed in the usual terms of nausea and vomiting, distention, pain and even fever. Dr. Copeland's method is very simple. Frankly, I do not think it makes much difference whether one uses a needle holder or not; whether one uses a large needle with No. 1 catgut or a smaller needle with No. 0 catgut, or whether the catgut is plain or chromicized. The incision in the uterine wall falls together quite naturally and very well even without sutures. Of course, one would not advocate the omission of sutures. The point is that the suture of the uterus should be clean and neat, but it does not make a great deal of difference as to what sutures are used, whether two layers or three layers for the uterine musculature. I disagree emphatically with Dr. Copeland on the question of time. I do not think it possible for any one to time operations with a watch and not miss a trick. To attempt to hurry, or to beat a previous record is poor surgery. A fifteen minute operation is better than one taking an hour, but the extra two or three minutes will not count in the long run.

DR. W. M. BROWN, Rochester, N. Y.: I agree with Dr. Ward in his criticism of the dangers of too much speed in these operations. Of course, speed in all surgical work is to be sought, but certainly not at the expense of careful surgical technic. The convalescence and the after-result in these cases depends on the careful technic with which the closure is done. The technic has evolved from the old long incision, eviscerating the abdominal cavity, packing off the intestines, and then opening the uterus, to the Davis operation, with a very short supra-umbilical incision, and later the admirable operation suggested by De Lee. A low incision, practically a cervical cesarean section, which has some of the benefits of the extra-peritoneal and the transperitoneal operation at the same time, will ultimately be the operation of choice. Speed is desirable in getting the uterus emptied and the preparations made for the closure. After that time should be taken to do the work carefully and with minute attention to detail. The question of assistants is of importance. I have chosen one man who acts as my first assistant, who always is there, and who knows the work. He can do it just as well as I can. There is practically never a word uttered during the operation. The assistant motions to the nurse, who has been trained so that

she knows beforehand. They know just what sutures and what needles and everything else are required. I seldom do a cesarean section in twenty minutes, but I usually have the baby in the next room in from two to two and one-half minutes. For anesthesia I am using Cotton ether. Generally I operate under a very limited amount of gas, really a state of analgesia—plus 0.5 per cent. of procain locally, and the convalescence of the patients is marvelously better under those conditions. As soon as I have opened the peritoneum, the uterus is held firmly against the abdominal wall by pressure, making a partial incision through the uterine muscle; and then before I have gone into the uterine cavity I take the ordinary towel clamps and just snap the uterine incision right up to the abdominal incision, which holds the uterus. The incision is finished through the uterus. The baby is lifted out, and the placenta delivered, and then the intramuscular sutures are inserted before those clamps are taken off. In that way I do not use any packing at all. The result is that I do not have to attend to any peritoneal toilet at all, and that is of great value. It saves time, and certainly does not interfere with convalescence.

DR. P. B. SALATICH, New Orleans: In a clean case, it does not make much difference what form of operation is performed. In a septic case conditions are different. On the method I have followed, and one most of us use at the Hotel Dieu, we have made, ahead of time, a large rubber sheet. In the center, about 8 by 10, we have sewed a piece of rubber tissue, and a small opening (2 by 2) is made in this rubber tissue. This is only for septic cases. We make an incision sufficiently large to deliver the uterus, and then we slip this piece of rubber tissue over the uterus, and that completely isolates and cuts off the abdominal cavity. Then we incise the uterus and remove the baby, sterilizing as well as possible the uterus before we return it into the abdomen.

DR. JOSEPH B. DE LEE, Chicago: It is time for us to unite on a set of names for the various forms of cesarean section which are now being promulgated. I rather dislike the term "transperitoneal" as applied to the old operation, the old classic cesarean section. I think we ought to distinguish two general types of cesarean section—the high and the low. The high cesarean, the old classic cesarean, through the fundus of the uterus, we might call fundal cesarean sections. The new operations—they are old, too, but recently revived—are the low, sometimes called the cervical or lower uterine segment cesarean section. Nowadays, when a man is going to do an abdominal delivery, he should say he is going to do an abdominal delivery. Which form of cesarean section or abdominal delivery will he make? The fundal or corporeal, the high, old-fashioned classic, or the new operation, the low cesarean? If the low operation, he has two courses: the extraperitoneal, in which the peritoneal cavity is not opened, and the low cervical intraperitoneal, or transperitoneal—better intraperitoneal—in which the incision is made in the lower part of the abdomen and the lower part of the uterus, but the fundus is not invaded. Dr. Copeland's operation is the old classic cesarean section. I am opposed to hurrying in cesarean sections. I once delivered a baby in thirty-nine seconds. It is absolutely foolish and fatuous. Thirty-nine seconds is not time enough to open the abdomen and deliver the baby in safety to the mother or child. Why should we hurry? The few minutes of anesthesia are negligible. If we take longer time we avoid the dangers of hernia. We are able to make that incision through the skin and fascia, and shell out the rectus muscle from its sheath, and make the incision in the peritoneum in another place, so that later on the muscle acts as a dam to prevent hernia. We can therefore guarantee the woman's future comfort and ability to work. Secondly, we can take time to extract the baby, and thus prevent postpartum hemorrhage. The uterus should have time to contract and retract. Then, too, a sufficient number of layers of suture should be applied. It is a positively demonstrated fact that on the fifth day postpartum the uterine cavity is invaded by bacteria from the vagina. Even if we do not have a leaky line of incision, in the presence of bacteria this point becomes of danger to the mother. There will occur adhesions in the milder cases and peritonitis in the severer cases. The doctor has had

twenty-nine cases without a death, but he will have a death sooner or later. I have had one. Everybody who does a large number of cesarean sections will have a death even in a clean case. We must prevent those accidental deaths, and one of the strongest precautions against them is a properly applied uterine suture. I use four, and sometimes five rows of sutures in the uterus, taking care to apply them so that they do not produce necrosis. I suture each layer of the uterine muscle individually. No one can put those sutures in in the time specified by the essayist. You will be surprised at the number of cases of rupture of the uterus, not reported in the literature. One or two rows of sutures hastily applied cannot guarantee against this accident. Every once in a while we hear of a death from postpartum hemorrhage after cesarean section. Rapid emptying of the uterus conduces to postpartum bleeding. Most of the evils of the old classic cesarean section are avoided by the new low cervical operation.

DR. GORDON G. COPELAND, Toronto, Canada: I am afraid I went a little too fast in my paper to bring out the point Dr. Ward called to your attention. I do use very careful aseptic technic and use sterile "drapes," and have them pinned into place with towel clips before I start the operation. Possibly an inch width of the skin shows when I start the incision. The amount of anesthesia is one of the big factors in the danger of postpartum hemorrhage. If you cut down the anesthetic, the uterus will contract very much better. The elimination of needle holders cuts out practically ten minutes of time. If Dr. De Lee puts four or six layers of sutures in the uterine wall and uses a needle holder to put them in, it means he must use from two to three hundred separate operations to adjust that needle holder to the needle. That takes time. That time is not spent in suturing the uterus. It is spent in fussing with the needle holder. I wish to make emphatic the point that I have never tried to make a record. These fast times have been made with great safety. I take a minute, sometimes much longer, to get the baby out. I go slowly where the danger points lie. I make speed, but not at any loss of essential details of technic. I am not a fast operator, and I get this great saving in time simply by thorough work and the elimination of nonessentials. I agree with Dr. Brown about elimination of packing, and so forth. I agree with Dr. De Lee as to the title of the paper and his method of using the low operation for potentially or actually infected cases. I am not discussing that operation at all. I am discussing Dr. De Lee's operation, which is an excellent operation, and much better than the high operation in those cases in which it is indicated. As to suturing the uterus in several layers, we cannot say in advance in a given uterus how many layers we ought to put in. What is important is good apposition. If you can get good apposition with only one layer, it is sufficient. To put more in is to invite trouble from catgut. Bland Sutton has shown conclusively the value of a minimum amount of foreign body in muscles. I believe that if we can get thorough apposition with one or two layers, that is far better than putting in two or three more layers, and saves a great deal of time to the patient, and that time means absence of danger of postpartum hemorrhage and a much smoother convalescence. No attempt is made to attain speed at the risk of safety. But I do get speed by eliminating, if I may use the word, "junk," and by having thorough cooperation with the operating team.

Federal Eugenic Law.—The federal government has exclusive jurisdiction over immigrants, and it controls interstate and foreign quarantine. It has also exclusive jurisdiction, either direct or final, over the socially inadequate, both within and outside custodial institutions, in the District of Columbia, the Indian reservations, and the territories which have not yet been admitted to statehood. It controls the twenty-four federal custodial institutions for various types of the socially inadequate. Thus a federal law would be needed in order to cooperate effectively with the eugenical efforts of the states, should the latter generally determine upon sterilization as a means for cutting down the birth rate among degenerates.—H. H. Laughlin, *Social Hygiene* 6:532 (Oct.) 1920.

THE INCIDENCE OF CANCER IN THE SECOND BREAST

AFTER RADICAL REMOVAL OF ONE BREAST
FOR CANCER*

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The appearance of cancer in the remaining breast after radical removal of one breast for cancer is of interest both on theoretical and on practical grounds: first, on account of its bearing on the problem of individual susceptibility to cancer, or the existence of a "cancer diathesis." Is cancer a pure accident, or does its occurrence mean that the person affected is more susceptible to it than another, and therefore more likely to be attacked again if cured of the first tumor? In the second place, the practical question is raised of the advisability of removal of the second breast to protect against cancer.

A discussion of the first problem, that of a "cancer diathesis," or individual susceptibility to cancer, is made difficult by the impossibility of deciding with certainty, in a given case, whether a cancer developing in the second breast after an interval of years is a true primary growth, or simply a late metastasis; since late metastases in organs in which primary tumors could not arise are well known. It will be shown, however, that many of the cancers in the second breast behave as if they were primary; they arise independently of metastasis in other regions and run courses exactly comparable to the expected course of primary breast cancer in the matter of length of life, occurrence of axillary metastases only on the side of the second tumor, etc.

While the cases studied for this paper have been grouped, as a matter of interest, according as their histories suggested a primary or a metastatic nature of the second cancer, no attempt will be made to elaborate on this point; but the practical side of the problem only will be discussed. Is the incidence of cancer in the second breast high enough to warrant removal of the breast as a prophylactic measure, either at the time the first breast is removed, or later? If the cancer arising in the second breast behaves clinically like a primary tumor, and the metastases of which the patient dies come from it, the patient is little benefited by a discussion of the academic question of the true primary or recurrent nature of the second cancer. In other words, even if all the cases are recurrent—we dissect the axilla to prevent death from metastasis—we should excise the second breast if a sufficient number of primary or recurrent cancers occur in it to justify the procedure.

This investigation, therefore, has been undertaken to ascertain the frequency of cancer appearing in the second breast and behaving clinically as if it were a new and independent growth. The subject has been studied with particular reference to the important element of time interval between the first operation and the development of cancer in the second breast. From 50 per cent. to 75 per cent. of breast cancer patients die in from three to five years after the first opera-

tion, and would not be saved in any case by attention to the second breast. It is obviously of much less importance to know what percentage of a total initial series of patients will develop cancer in the second breast than it is to know what percentage of the patients remaining well after from three to five years will do so.

BILATERAL BREAST CANCER IN LITERATURE

Brief mention of cancer of both breasts, either coincidently, or first in one breast and later in the other, has been made by many authors. Rodman¹ states that he has seen only two cases of coincident cancer of both breasts, and quotes statistics of several continental authors giving percentages varying from 1 to 15 per cent.² of all breast cancers. He believes that the cancer of the second breast is usually, if not always, metastatic from that in the first breast.

Willard Parker,³ reported cancer of both breasts in fourteen out of 397 cases, 3½ per cent.

Judd and Sistrunk⁴ "have had several with both breasts involved, either coincidently or later." Lockwood⁵ mentions an incidence of cancer of both breasts of eight in 166 cases, 5 per cent.

Davis⁶ reports 166 cancers. In one case, cancer of both breasts occurred simultaneously. In seven cases, the patient returned subsequently with cancer of the opposite breast. Of these, five died and two were living six and one-half and seven and one-half years after the second operation.

The largest series of cases from which statistics were drawn was that of Judd and Sistrunk, 609 cases. They operated for recurrence in the opposite breast in two cases, nine and twelve years later, and state that in "several cases" both breasts have been involved, either coincidently or later.

It will be noted that in these reports, little study has been made of the *interval of time* between the first operation and the appearance of the second cancer. The percentages noted are percentages of the entire series of cases of breast cancer in each author's experience, and take no account of the percentage of patients living, three, five, or more, years after the first operation, who develop cancer of the opposite breast.

RESULTS OF STUDY OF ONE THOUSAND ONE HUNDRED CASES OF CANCER OF BREAST

I have had the opportunity to study from this point of view the material of the surgical service of the University of California Hospital, by permission of Dr. W. I. Terry, chief of service, and in the surgical pathology laboratory of the Johns Hopkins Hospital, through the courtesy of Dr. Joseph Colt Bloodgood, director. The records studied from these sources contained histories of 1,100 unselected breast carcinomas, and of these, the results in 659 cases were known for three years or more after operation.

In the entire series, thirty-seven instances of cancer in both breasts were recorded (3.36 per cent.). In thirteen of these, the patient presented herself with both breasts already involved, the histories in the

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Rodman, W. L.: Diseases of the Breast, Philadelphia, P. Blakiston's Son & Co., 1908, p. 183.

2. Rodman, W. L.: Diseases of the Breast, p. 202.

3. Parker, Willard: Cancer, New York, 1885, p. 8.

4. Judd and Sistrunk: End-Results in Cancer of the Breast, Surg. Gynec. & Obst. 18:7, 1914.

5. Lockwood: Cancer of the Breast, London, Oxford Med. Pub., 1913, p. 37.

6. Davis, B. B.: Operative Results in 200 Breast Tumors, Ann. Surg. 71:270 (March) 1920.

majority suggesting that cancer arose in one breast and metastasized to the other, rather than that tumors arose simultaneously and independently in each breast.

Of the remaining twenty-four cases, in eleven the postoperative history suggested that the second breast cancer was metastatic, on account of its appearance within a short interval of time after removal of the first breast, or its development coincidently with other metastases in the axilla on the side of the first cancer, or in other organs. The interval between operation and the appearance of the cancer in the second breast in these eleven cases varied from two to thirty months, averaging twelve and one half months.

In thirteen cases, the cancer in the second breast presented a clinical history suggesting a new and independent neoplasm, on account of a long interval of time after removal of the first breast with freedom from other metastases, or (in two instances) a comparatively short interval, but freedom from other metastases, and cure by operation on the second breast. As stated at the beginning of this paper, no discussion will be entered into as to whether these were actually new primary growths or simply late recurrences. Attention is simply directed to the fact that they behave clinically as if the second tumor were primary, and the reasonable presumption is that prophylactic removal of these breasts would have saved the patients from cancer.

TABLE 1.—INCIDENCE OF CANCER IN SECOND BREAST BY TIME INTERVALS AFTER FIRST OPERATION *

Years After First Operation	Number of Patients Living	Number Who Eventually Developed Cancer of Opposite Breast	Per Cent. of Number Living at This Interval After First Operation	
5	162	12	7.3	Of these 12, 8 died of the second cancer; 1 died of other causes 8½ years later; 2 have been traced only a short time; 1 is well 10 years after
8	96	9	9.5	Six died of second cancer; 1 of other causes; 1 traced short time only; 1 well 10 years after
10	60	5	8.3	Three died of second cancer; 1 well 10 years after
15	22	1	4.5	

* End-results traced five years or more in 659 cases.

Twelve of this group of thirteen cancers which behaved as if they were primary tumors in the second breast, occurred in patients living five or more years after the first operation. The numerical relation of these second breast tumors to the number of patients living at various intervals after the first operation is shown in Table 1.

The expectancy of cancer of the second breast in women who live five years or more after the first breast cancer has been removed is shown in this table to be from 7 to 10 per cent. In order to compare this with the expectancy in normal women, Table 2 has been constructed from the Census Bureau Reports⁷ to show the expectancy of cancer of the breast in women of all ages.

Thus, of all women between the ages of 25 and 29, one in fifty-eight will at some time in her life develop cancer of the breast, a percentage of 1.7 per cent. It will be seen that at no period of life does the ratio rise to more than one in fifty-two, or about 2 per

cent. The comparison between this percentage (2 per cent., or less) and the percentage shown in Table 1 for patients in this series living from five to ten years after the first operation (7 to 9 per cent.) is very striking. The difference is probably even still greater than indicated here, for the reason that at the time of collecting the statistics there are a number of patients alive and well five years after the first operation who will yet in the course of time develop cancer of the second breast, thus increasing the actual percentage expectancy shown.

TABLE 2.—EXPECTANCY OF CANCER OF THE BREAST IN WOMEN OF ALL AGES

	Per Cent.
Of all women over 25, one in 58 dies of cancer of the breast,	1.7
Of all women over 30, one in 54 dies of cancer of the breast,	1.8
Of all women over 35, one in 52 dies of cancer of the breast,	2.0
Of all women over 40, one in 52 dies of cancer of the breast,	2.0
Of all women over 45, one in 54 dies of cancer of the breast,	1.8
Of all women over 50, one in 58 dies of cancer of the breast,	1.7
Of all women over 55, one in 65 dies of cancer of the breast,	1.5
Of all women over 60, one in 75 dies of cancer of the breast,	1.3
Of all women over 65, one in 87 dies of cancer of the breast,	1.1
Of all women over 70, one in 97 dies of cancer of the breast,	1.0
Of all women over 75, one in 113 dies of cancer of the breast,	0.8
Of all women over 80, one in 128 dies of cancer of the breast,	0.7
Of all women over 85, one in 141 dies of cancer of the breast,	0.6
Of all women over 90, one in 190 dies of cancer of the breast,	0.5

The records have been studied still further to see in how many cases and at what intervals following first operation, removal of the second breast might have saved later death from cancer. It is, of course, impossible to decide this point with absolute certainty in any individual case. When, however, a patient is free from metastasis for five or more years, develops cancer of the second breast, is operated on and in the course of from one to three years develops metastases or recurrences on the side of the second breast and dies after about the usual length of life for primary cancer, the reasonable presumption is that this patient's life might have been saved by removing the second breast before cancer developed in it. Certainly this would be true if the second cancer were primary, and probably the patient's life would have been saved had the second cancer been recurrent, inasmuch as other metastases developed only after an interval of time following the incidence of the second breast cancer and apparently came from it.

TABLE 3.—STUDY OF POSSIBLE LIFE-SAVING IN THIS SERIES BY PROPHYLACTIC REMOVAL OF SECOND BREAST AT VARIOUS TIME INTERVALS

Years After First Operation	Number of Patients Living	Number of Lives Which Would Probably Have Been Saved by Amputation of Second Breast at Time Indicated
At time of first operation; no interval	649	10
3 years.....	257	10
5 years.....	162	6

Such a study of the records suggests that if both breasts had been removed at the first operation, thirteen cancers and at least ten deaths might have been prevented. If the patients living after a three-year interval had had their second breasts removed, then the records still suggest that ten deaths from cancer in the second breast might have been prevented. After a five-year interval, this number has dropped to six possibly preventable deaths.

As only 257 of the 659 patients traced were living at the end of three years, it would be necessary to

7. Mortality from Cancer and Other Malignant Tumors in the Registration Area, 1914.

perform but 257 breast excisions at this interval to save ten lives; therefore, if we had absolute and ideal control of our patients we could amputate 250 breasts within three years, instead of 650 at the time of the first operation and save as many lives.

It is realized that removal of all second breasts, three years after the first operation for mammary cancer, is not feasible, for the reason that not all patients can be brought back to the clinic in three years, nor will many of them permit prophylactic removal of the second breast. The facts presented here, however, indicate that the woman who lives five years after a complete operation for cancer of the breast is approximately four times as likely to develop cancer in the second breast as is the previously normal woman of the same age to have cancer in either or her two breasts (7 to 9 per cent. expectancy against 2 per cent. or less in normal women).

One of the most discouraging features brought out by this study is that the mortality of cancer in the second breast corresponds closely to that of all breast cancer—from 70 to 80 per cent. Far from being put on their guard by one experience, several of the patients observed tumors in the second breast from two to nine months before coming for treatment.

It would greatly simplify the problem if we could tell from an examination of the first breast removed whether the second breast is more than ordinarily subject to cancer, and this question has been investigated in the cases reported here. In the first place, no significance could be attached to the type of cancer. All of the cancers, both in the first and second breasts, were fully developed scirrhous or medullary cancers, which, of course, are the ordinary forms of breast cancer. In the histology of the breast tissue removed with the first cancer, there is but one precancerous condition which might occur which is commonly bilateral, namely, the productive type of chronic cystic mastitis, the adenocystic breast or Schimmelbusch's disease. Neither this condition nor any other suggestive, frequently occurring histologic picture was found in the first breast removed in these cases, but only the slight changes of adenoma formation and dilatation of ducts and acini commonly observed in senile breasts.

CONSIDERATIONS IN PROPHYLACTIC REMOVAL OF SECOND BREAST

The object of this paper is distinctly not to lay down as a surgical principle the prophylactic removal of the second breast. The simple facts of the increased incidence of cancer in the second breast are sufficiently interesting to demand attention. What surgical procedure these facts justify must be a matter for individual judgment. We may decide that prophylactic removal of the second breast is indicated in a selected group of cases. If not, we at least owe it to our patients to explain to them the increased risk they run even over normal women. If they are from three to four times as likely to have cancer in the one remaining breast as is a normal woman in either of her two breasts, we should keep them at least four times as carefully under observation.

With this definite understanding, there are certain considerations to be presented in case we consider prophylactic removal of the second breast justified.

In the first place, it would obviously be poor judgment to subject every patient at the primary operation

to a resection of the second breast. As pointed out in this study, removal of the second breast at any time within three years of the first operation is nearly as efficient a life-saving measure as immediate excision, and by that time a large number will have died or developed other metastases from the first breast. These patients would not have been benefited by excision of the second breast. Only those patients who are "cured" by the first operation are we anxious to save from cancer in the second breast.

Can we form any judgment at the time of the primary operation as to which patients are going to be living and free from recurrence in three years? As is well known, the percentage of cures in patients whose axillary glands show no involvement at the first operation is nearly three times as high as in those with axillary metastasis. On going over the cases of cancer in the second breast studied for this paper, we found that in 75 per cent. the axilla was not involved at the first operation. Therefore, excision of the second breast in patients who showed no axillary involvement would include three out of four of those who would develop cancer in the second breast after an interval of from three to five years. Going over the entire series of 1,100 breast cancers, we found that in only 22 per cent. was the axilla free from involvement at the time of the first operation. Therefore it would be necessary to excise the second breast in only one case out of five as they come to the clinic in order to prevent three fourths of the cancers in the second breast in otherwise cured patients.

We believe, therefore, that if prophylactic resection of the second breast is performed, the best procedure is to determine from pathologic study whether the axilla is involved from the first breast, and in those cases in which it is not involved, resect the second breast as soon as convenient after the first operation. Those patients who have axillary involvement at the first operation should be urged to return within three years and then if free from recurrence, have the second breast excised.

SUMMARY

1. The patient who has had one breast amputated for cancer is, if she survives five years, from three to four times more likely to develop cancer in the second breast than a normal woman of the same age in either of her two breasts.
2. The majority of cancers in second breasts, arising three or more years after the first operation, behave clinically at least like primary new growths—not like metastases from the cancer in the first breast.
3. These facts demand recognition, either in the form of prophylactic removal of the second breast or in redoubled care in observation of the second breast after operation on the first.
4. The records in this series suggest that if the 257 women living three years after the first operation had submitted to prophylactic resection of the second breast, twelve cancers and ten deaths from cancer in the second breast would have been prevented.
5. One patient in five has no involvement of the axilla at the time of the first operation, and if these patients had their second breasts excised, three out of four cases of late cancer in the second breast would be prevented.

391 Sutter Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH C. BLOODGOOD, Baltimore: This investigation is a contribution to our endeavors to increase the number of permanent cures of cancer. The final conclusion, however, will not be based on the percentage of cures from surgical clinics, but on the report of the United States Census Bureau that the number of deaths from cancer is on the decrease. I am informed that Mr. Hoffman of the Prudential Life Insurance Company has expressed the opinion that the curve of deaths from cancer in this country is not rising, but is falling. This is the first concrete evidence that the educational propaganda of the American Society for the Control of Cancer is having its effects. In a recent restudy of almost 2,500 cases of cancer of the breast, we have found that the percentage of five-year cures has been exaggerated by placing among the cancers cases previously incorrectly diagnosed adenocarcinoma instead of adenoma. Before this restudy our figures showed 80 per cent. of five-year cures of cancer of the breast when the axillary glands were not involved. This has been reduced to about 60 per cent. by excluding these benign cases. Kilgore has apparently demonstrated that a woman who is free from evidence of recurrence from three to five years after the complete operation for cancer of one breast runs a larger risk of cancer of the remaining breast than a woman of the same age who has had no trouble in her breasts. It seems, therefore, justifiable to conclude that we should consider seriously advising women in this group to have the remaining breast removed. I am confident that we need more studies similar to Kilgore's to help us to increase the number of permanent cures of cancer.

DR. R. B. GREENOUGH, Boston: The question is whether the disease in the second breast is a recurrence or a reoccurrence of cancer. The figures Dr. Kilgore has given would seem to indicate that a reoccurrence of cancer is relatively common. Out of 639 cases of breast cancer, I found thirty-five cases showing cancer of both breasts. In nineteen of these the disease in the second breast occurred only after definite signs of recurrence elsewhere, as a sequel to the first operation. In other words, the second breast was involved only as part of a metastatic process. In six cases a tumor of the other breast was the first evidence of a return or a reoccurrence of cancer, but in only two of these cases was a reoccurrence as late as after three years following operation, and one of these patients is now living and well over three years after the second operation. In five cases both breasts were involved at the time of the first operation, and two of these patients are now well and free from recurrence seven and seventeen years after operation. There were three cases of involvement of both breasts that were considered inoperable. Thus, the tentative proposal of Dr. Kilgore to remove the second breast as a routine measure at a period of three years after the first operation would have benefited only two of these 639 patients, and of these two, one was successfully treated by operation as soon as the positive indication was obtained. Dr. Kilgore deserves great credit for presenting so forcibly the necessity for repeated and periodic reexaminations of patients after operation for cancer. As a fact, the treatment of such a case is only begun at the first operation. This applies with equal force to all the forms of malignant disease which are susceptible of treatment by radical operation. Such a patient should never be discharged, and the importance of periodic examination should be emphasized as a matter of common precaution.

DR. M. RUBEN, Stockholm, Sweden: I have seen a case of multiple primary carcinoma of the pylorus and of the gall-bladder, in which I operated. Looking up the literature I found that the frequency of multiple carcinoma given in the different statistics is from 0.3 (by Riechmann) up to 2 per cent. (Feitchcufeld). These figures show that the possibility of two different carcinomas in same patient is something for the surgeon to have in mind. Some years ago I saw the Swedish surgeon Borclius performing an amputation of the right breast, and at the same time excise an "adenoma" on the left side. Some days later he was compelled to do a radical operation on the left side also, because after careful microscopic examination, the excised adenoma was found to be an independent primary carcinoma. From 1898 to 1915,

297 patients were operated on. Only two died, one from pulmonary embolism, and one from decompensated heart, a mortality of 0.67 per cent. Of the 295 surviving, 256 could be traced. Of these 29.2 per cent. were living after three years; 23 per cent. after five years; 12.1 per cent. after ten years, and two patients were living after twenty years. Of the seventy-five cases free from recurrence after three years, twenty-two (29.3 per cent.) had metastases in the axillary glands at the time of operation. Of the thirty-one free for more than ten years, five (16.1 per cent.) were similarly affected at the time of operation. That shows that prognosis, even in these cases, is not very bad. During the last two years systematic roentgen-ray treatment has been given before as well as after operation.

DR. ALSON R. KILGORE, San Francisco: Dr. Greenough has suggested that cancer in the second breast may sometimes be retrograde metastasis from recurrence in the axilla on the side of the first cancer. He has seen two such cases. The percentage incidence of cancer in the second breast is frankly lower in Dr. Greenough's series than in mine; yet, considering the number of five-year cures in his series, the two cases of second breast cancer represent an incidence still twice or more as great as in normal women. I want to repeat again that I am not advocating prophylactic removal of the second breast. My object was to present the facts as I found them, and certainly these facts deserve serious consideration and demand careful postoperative observation with second breast cancer in mind. One of the most discouraging facts brought out in the study was that the mortality of second breast cancer was nearly as high as in all cases of breast cancer. Far from being warned by one experience, many of these patients delayed from three to nine months after the onset of their second breast cancers, and the mortality was about 80 per cent. Out of a total of 1,100 patients, twelve cases of second breast cancer does not seem like a large number to get excited about; but we must remember that if we had succeeded in making five-year cures of the entire 1,100, which is our ultimate object, and the percentage incidence had remained the same in them as in the actual five-year cures of this series, seventy or more patients would have developed cancer in the second breast.

END-RESULTS OF PRENATAL CARE*

ALFRED C. BECK, M.D.

BROOKLYN

This study of the results of prenatal care is based on 1,000 consecutive deliveries. All of these patients were supervised during pregnancy by the ante partum clinic and were subsequently confined either in their homes or in the hospital by the obstetric service of the Long Island College Hospital. Before discussing the results, I shall briefly describe the plan of organization and the prenatal routine of that institution (Table 1).

PLAN OF ORGANIZATION

Since good judgment in obstetrics is as essential in the prenatal clinic as it is in the delivery room, the attending obstetrician of the hospital is also chief in the ante partum dispensary. His assistants are the resident and intern obstetricians. The same men, therefore, do all of the hospital and prenatal work, and as a result, our ante partum clinic is as intimately connected with the hospital maternity department, as is the delivery room. This unification of departments not only avoids friction, but gives the patient the benefit of the attending obstetrician's opinion long before she falls into labor.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

The medical personnel is assisted by three graduate nurses, two of whom are members of the Visiting Nurses' Association. These nurses devote all of their time to our work, alternating daily between service in the clinic and follow-up work in the patients' homes.

TABLE 1.—PLAN OF ORGANIZATION OF THE LONG ISLAND COLLEGE HOSPITAL MATERNITY SERVICE

	Prenatal Clinic	Maternity Ward
Intern	Physical examinations Abdominal palpation	Delivery of normal cases Ward routine
Resident	Pelvic measurements Abdominal palpation	Abnormal deliveries Supervision of ward
Chief of Clinic	Histories Verifies measurements of contracted pelvis Final instructions to all patients	Major operations Supervision of all patients

PRENATAL ROUTINE

History.—At the time of the patient's application for care in the prenatal clinic, a careful history is taken. The presence or absence of tuberculosis, insanity or hemophilia in her family is ascertained. We then inquire as to the possibility of her having had rickets, scarlet fever, diphtheria, rheumatism, syphilis, gonorrhea, cardiac disease, nephritis or a gynecologic operation. Her previous pregnancies are investigated from the standpoint of toxemia, hemorrhage and infection. Each labor is considered separately, and abnormal ones are noted. Under miscarriages are recorded the date, the duration of the pregnancy and the cause. An effort is made to ascertain the size of the previous children at birth and their health, subsequent to delivery. If any children have died, their age and the cause of death are noted. From the date of the last menstruation and quickening, the expected date of confinement is estimated.

Physical Examination.—Following the taking of the history a thorough physical examination is made. This includes an examination of the heart, lungs, breasts, abdomen, vagina and extremities, urinalysis, blood pressure determination and pelvimetry. Blood for the Wassermann reaction is taken from each patient.

Instructions to Patients.—If nothing abnormal is anticipated and the patient is a multipara, she is informed that she will be cared for during confinement in her home. All primiparas and patients with anticipated abnormalities come to the hospital for delivery.

Before leaving the clinic, each patient receives a pamphlet containing instructions as to the hygiene of pregnancy. In simple language, the following items are discussed: the care of the mouth and teeth, diet, bathing, rest, exercise, clothing, sexual intercourse, the care of the bowels and the schedule of return visits with directions for collecting and measuring the specimen of urine which is to be examined. In addition, the things needed for a delivery in the home are noted, and a list of necessities for the baby is given.

Home Visits by the Prenatal Nurse.—Within a few days, the patient's home is visited by the nurse who was present during her examination. If our instructions were not clearly understood, the nurse carefully explains whatever is necessary, and in addition renders such social service as is possible.

Return Visits.—During the first five months, return visits are made monthly. These are increased to biweekly during the sixth and seventh months, and weekly during the last two months. About 80 per cent.

of our patients return at the specified time. Those who do not come back are seen by the visiting nurses, who make monthly calls on each patient.

At each of these return visits, the symptoms of toxemia and hemorrhage are considered. The blood pressure is taken and the urine examined. One month before the estimated date of confinement, an abdominal examination is made to determine the presentation, size and condition of the fetus.

Several times before delivery the patients return to what are called the "show clinics." These are held twice weekly and consist of demonstrations by the nurses.

Figures 1 and 2 are a reproduction of a specimen record from the prenatal clinic.

THE LONG ISLAND COLLEGE HOSPITAL

DEPARTMENT OF OBSTETRICS

No.

PRENATAL RECORD

Name JOHNSON, MARY Date MAR-3, 1921.
 Address 131 BUTLER STREET Near COURT ST. Floor 2 Room REAR
 Age 24 Nation U.S. Color B. W. Para 2 Occupation H W
 Previous Admissions NONE
 By whom referred FORMER PATIENT Date of marriage JUNE 1918
 Family History NO INSANITY ? TUBERCULOSIS OR HEMOPHILIA
 Personal History: Rickets, Scarlet Fever, Diphtheria, Rheumatism, Syphilis, Gonorrhea, Pelvic Trouble, Heart, Lungs, Kidneys, Operations
 Previous Obstetric History: Vomiting, Headaches, Oedema, Hemorrhage, Eclampsia, Infection
 FIRST PREGNANCY TERMINATED SPONTANEOUSLY
 Labors {normal AT THE SEVENTH MONTH. STILL BIRTH MACERATED
 {abnormal FETUS.
 Miscarriages NONE
 Children—Weight at birth SMALL Age of oldest ---- Age of youngest ---- No. Dead 1
 Cause of death STILL BORN, MACERATED, SEVENTH MONTH
 Menstrual History—Type 28 day Duration 5 DAYS Pain NONE First 14 YR.
 LAST MENSTRUATION Sept. 12, 1920 Quickening 4½ MONTHS
 Estimated Date of Confinement JUNE 19, 1921.
 EXAMINATION By Whom DR. BECK
 Heart Normal in size, no murmur, sounds clear.
 Lungs NEG.
 Breasts LARGE Nipples GOOD Colostrum PRESENT
 Abdomen XS OF FLUID Striae MANY
 Foetal Movements PRESENT Contractions PRESENT

Date	Pren. Posit.	Foetal Heart	Size of foetus	Height of fundus	Engagement
MAR-3, 21	????	L.L.Q. 140	6½ MO.	17 cm.	NONE
MAY-19 '21	L.O.A.	L.L.Q.	36 wks.	24cm.	NONE

Measurements
 Interspinal 23 cm. Intercristal 25 cm. Intertrochanteric 29 cm.
 External Conj. 16½ cm. Diagonal Conj. 9 cm. Bisischial 8½ cm.
 Diagnosis of Pelvis GENERALLY CONTRACTED

Fig. 1.—Reproduction of specimen record from prenatal clinic of the Long Island College Hospital.

SPECIAL ROUTINE DURING THE FIRST TRIMESTER

During the first trimester, an effort is made to anticipate and prevent abortion and excessive nausea and vomiting.

Nausea and Vomiting of Pregnancy.—Nausea and vomiting of pregnancy are minimized by giving special care to the diet and elimination. Patients are urged to drink at least 8 glasses of water daily. The bowels are regulated by the employment of mild laxatives. Hyperacidity is combated by the use of antacids, and a diet rich in carbohydrates is given. These simple measures, when used prophylactically, have greatly diminished the nausea and vomiting in our cases. Dur-

ing the last nine years, it has been necessary to refer only one patient to the hospital from the prenatal clinic because of hyperemesis. In her case, the presence of a multiple pregnancy was a causative factor, and she subsequently gave birth to triplets.

Abortion.—With the exception of the correction of misplacements, very little is accomplished in the prophylaxis against the underlying or predisposing causes of abortion. All patients are warned of the common exciting causes of this condition. They are urged to avoid exertion, strap-hanging in street cars and sea bathing, and are told to remain in bed whenever a blood stained vaginal discharge is observed. Because of our inability to eliminate the predisposing causes and the patient's difficulty in avoiding the exciting causes, our results have been very discouraging.

SPECIAL ROUTINE DURING THE SECOND TRIMESTER

In our experience, syphilis, toxemia and cardiac disease have been responsible for most of the interruptions of pregnancy during the second trimester. I shall, therefore, outline our routine in each of these conditions.

Syphilis.—We are unable to obtain a history of the common symptoms of syphilis in most of our patients who are afflicted with this disease, therefore, blood for the Wassermann test is taken from each applicant to our clinic at the time of her first visit. If the Wassermann reaction is positive, it is repeated in order that the possibility of laboratory error may be eliminated. Whenever the repeated Wassermann reaction is positive, intensive treatment is instituted. This consists of weekly intravenous injections of arsphenamin and intramuscular injections of mercury for six weeks, followed by six weekly injections of mercury. If after these six arsphenamin and twelve mercury injections, the Wassermann reaction is still positive, a second similar course of the same drugs is given. We not only have no fear of causing a miscarriage or premature labor by this procedure, but we believe that we have prevented the latter in many cases by prompt and active treatment. Thirty cases of syphilis are included in the series herein analyzed. One of these terminated in a stillbirth, one infant died within twenty-four hours after birth, and one died of pneumonia in its seventh week. The remaining twenty-seven are living and doing well, only six of them having shown any evidence of syphilis.

Toxemia.—In the diagnosis of toxemia, we depend on the urine findings, the blood pressure and the usual symptoms—headache, vomiting, edema and visual disturbances. Whenever this condition is suspected, our patients return daily for observation until we are able to tell from which type they are suffering. In the slowly progressing type, we are able to keep them relatively free from symptoms by the use of a low protein or milk diet and increased elimination. During the last weeks of pregnancy, these patients are admitted to the maternity ward where daily blood pressure and albumin determinations are made, in addition to weekly blood chemistry observations. We seldom have any anxiety concerning the immediate maternal result in this group. Occasionally, however, the infants are stillborn. At times we have felt that a warning of the approaching death of the fetus was given by a sudden increase in the blood pressure and albuminuria. In the hope of saving the infant, it, therefore, is our practice to induce labor in these cases

in the last few weeks, whenever this sudden increase is observed.

In the rapidly progressing type, the patients are sent to the hospital at once. Eliminative measures are continued, but in the great majority of cases no improvement is noted. If, in spite of treatment, the blood pressure and albuminuria increase and the symptoms progress in severity, the pregnancy is terminated.

Thirty-seven cases of toxemia are included in this study. None of these reached the stage of eclampsia, and all of the mothers recovered. Four infants were stillborn.

Cardiac Disease.—The department of internal medicine cooperates with us in the care of all patients with cardiac disorders. Under their supervision, cardiac

Vaginal Examination

Perineum

Intact
Lacerated

Cystocela
Rectocela

Cervix

Condition

Intact
Lacerated

Position

Ant.
Post

Consistency

Soft
Firm

Portio

Exposed
Intact

Ballotement

Present

Secretion

PATIENT HAS NO PRIVATE PHYSICIAN

Occupation of Husband

LABORER

Wages \$

18

Total income \$

18

Rent \$

15

per month

2

Rooms

No. in family

2

Promises to Pay \$

000

Date	1921	3/3	3/7	3/14	21	28	4/4	4/11	4/18	4/25	5/2	11	19	26
Wasserman		4 ±	4 ±											
Vomiting		0		0		0	0	0	0	0	0	0	0	0
Headaches		0		0		0	0	0	0	0	0	±	0	0
Oedema		0		0		0	0	0	0	0	0	0	0	0
Visual Disturb.		0		0		0	0	0	0	0	0	0	0	0
Bowels		OK		OK		OK	OK	OK	OK	OK	OK	OK	OK	OK
Hemorrhage		0		0		0	0	0	0	0	0	0	0	0
Pulse		90		86		84	86	88	84	86	86	88	84	86
Blood Pressure		100		95		105	95	100	105	110	95	110	120	115
Urine S. G.		1018		16										
Reaction		Acid												
Albumen		0												
Sugar		0												
Acetone		0												
Casts		0												
Blood		0												
Medication														
Name of Doctor		B												

Visited by Nurse

Miss R.

Date

3/9

Statement of social condition

Verified

Report of Nurse

PROMISES TO RETURN FOR ARSPHENAMIN

Not Verified

Fig. 2.—Reproduction of reverse side of record.

tonics are prescribed. Warning against exertion is repeatedly given, and rest in bed one week out of every four is urged. Should dyspnea occur the patient is brought to the hospital. In those cases that are well compensated, it is our custom to allow the pregnancy to go to term irrespective of the lesion. Delivery usually is spontaneous under morphin and scopolamin. In the event of a break in compensation, medical treatment is employed until sufficient improvement is obtained to permit of the termination of the pregnancy. In these cases, we prefer to perform a cesarean section under gas anesthesia whenever possible, in order that sterilization may also be accomplished.

SPECIAL ROUTINE DURING THE LAST TRIMESTER

During the last trimester, in addition to increased watchfulness for early symptoms of toxemia, our efforts

are directed toward the prophylactic care of the breasts, the relief of pressure symptoms, the prevention of premature labor and the recognition of abnormal presentation and its causes.

Routine Care of Breasts.—Eight weeks before the expected date of confinement, prophylactic care of the breasts is begun. This consists of the application of liquid petrolatum to the nipples after a careful preliminary cleansing with soap and water. As most of our patients live in the tenements where ordinary cleanliness is absent, the details of this technic are carefully demonstrated by the nurses.

1000 CASES UNDER PRENATAL SUPERVISION 25 INFANT DEATHS

1000 CASES UNDER PRENATAL NURSING SUPERVISION 47 INFANT DEATHS

1000 CASES WITH NO PRENATAL CARE 76 INFANT DEATHS

Fig. 3.—Infant mortality in three series of cases.

Pressure Symptoms.—Our nurses aid materially in the relief of the distressing pressure symptoms by furnishing, whenever possible, proper abdominal supporters and correcting faulty habits of dress.

Premature Labor.—In addition to receiving the printed instructions concerning the hygiene of pregnancy, the patients are repeatedly advised by the visiting nurses of the possibility of premature labor whenever their habits are faulty. This is work that must be done in the homes, and good results can be accomplished only by those nurses who can gain the confidence of the patients. We ascribe the great diminution in premature deliveries largely to the conscientious efforts of our prenatal nurses.

TABLE 2.—ANALYSIS OF ONE THOUSAND CONSECUTIVE CASES *
CONTRACTED PELVIS

	Number
Generally contracted	36
Flat	27
Funnel	43
Total.....	106
Diagonal conjugate 10.5 cm. or under.....	20
Bisischial 7.5 cm. or under.....	14

* These were the contracted pelvis which were observed in the series of 1,000 cases, not a series of 1,000 contracted pelvis. The same is meant in the headings of the following tables.

Abnormal Presentation.—Four weeks before term, the presentation, size and condition of the fetus are determined by abdominal examination. Breech and transverse presentations are corrected, whenever possible, by external version. If the abnormal presentations recur, we insist on hospital care during confinement. Patients with marked obliquity of the uterus are instructed to lie on the side which is opposite the obliquity from the onset of labor. If a patient has a pendulous abdomen or an excessive amount of amni-

otic fluid, the possibility of an abnormal presentation or prolapse of the cord is considered, and she is told to remain in bed throughout labor.

ANALYSIS OF CASES

One hundred and six of the patients included in this series had contracted pelvis. While most of these

TABLE 3.—ANALYSIS OF ONE THOUSAND CONSECUTIVE CASES
CONDITIONS COMPLICATING PREGNANCY AND LABOR

	Number
Mitral stenosis.....	4
Mitral regurgitation.....	3
Syphilis.....	30
Toxemia.....	37
Placenta praevia.....	2
Premature separation of the placenta.....	2
Twins.....	4
Large fibroids of the uterus.....	3

were slight, in twenty the diagonal conjugate was 10.5 cm., or less, and the bisischial was 7.5 cm., or under, in fourteen. Table 2 shows the frequency of the several types encountered.

Complications of pregnancy sufficiently grave to influence the end-results were observed in seventy-seven cases. Of these, toxemia, syphilis and cardiac disease were the most common. In Table 3 these conditions with their frequency are enumerated.

Table 4 gives the various abnormal presentations. In spite of our efforts to prevent their occurrence,

TABLE 4.—ANALYSIS OF ONE THOUSAND CONSECUTIVE CASES
ABNORMAL PRESENTATION

	Number
Breech.....	27
Face and brow.....	6
Transverse.....	4
Prolapsed cord.....	2
Complex.....	1
Total.....	40

abnormal presentations were observed in forty cases, an incidence of 4 per cent. While this high frequency does not look well from the standpoint of prevention, our prenatal work was sufficiently accurate to enable us to anticipate most of them, and as a result led to hospital care in all but four of the forty deliveries.

Operative interference was required in only sixty cases. The types of operation and their frequency are shown in Table 5. In addition to the procedures enumerated, median perineotomy was frequently performed in primiparas, especially if the fetal heart showed signs

TABLE 5.—ANALYSIS OF ONE THOUSAND CONSECUTIVE CASES
OPERATIONS

	Number
Forceps.....	22
Version.....	5
Introduction of bag.....	4
Conversion of face to vertex.....	2
Perforation of after-coming head.....	1
Cesarean section.....	8
Incidence of forceps.....	Per Cent.
Incidence of version.....	2.2
Incidence of cesarean section.....	0.5
	0.8

of asphyxia. All of these operations were performed in the hospital under the best possible conditions. The low incidence in the use of forceps is striking and shows how rare the maternal and fetal indications for this

procedure really are, when median perineotomy is added to the obstetrician's armamentarium.

The maternal morbidity and mortality are shown in Table 6. Seven patients had suppurative mastitis, and in fifty-nine the puerperium was febrile, an incidence of 5.9 per cent. Following the last epidemic of influenza, our maternity ward was visited by an epidemic of puerperal infection. Many of the cases of febrile puerperium occurred at that time. Patients who enter the hospital subsequent to prenatal supervision seldom have a temperature over 99 F. This absence of morbidity is due no doubt to the fact that our antepartum work eliminates the necessity of vaginal examinations. Unless operative interference is required, the progress of labor in these is followed solely by abdominal and rectal examination.

TABLE 6.—MATERNAL MORBIDITY AND MORTALITY *

Morbidity:	Number
Mastitis.....	7
Febrile puerperium.....	59
Pneumonia.....	1
Mortality:	
Pneumonia.....	1
Puerperal infection.....	3
Total.....	4 or 0.4%

* In 4,500 consecutive cases, similar to, and including, this 1,000, seven maternal deaths occurred, an incidence of 1 to 643 cases (0.15 per cent.).

Our maternal mortality, unfortunately, was higher than usual in this series. One fatality was due to influenzal pneumonia and three occurred during the epidemic of puerperal infection. In 4,500 consecutive cases, similar to, and including, the thousand which are analyzed in this paper, only three mothers died, in addition to the four above recorded, an incidence of one death in 643 cases.

Prenatal supervision leads to the anticipation of those abnormalities which are best cared for in the hospitals. These conditions are treated early in labor at a time

TABLE 7.—ANALYSIS OF ONE THOUSAND CONSECUTIVE CASES
INFANT MORTALITY

	Number	Per Cent.
Stillbirths.....	19	1.9
Breech—large head.....	3	
Placenta praevia.....	1	
Accidental hemorrhage.....	2	
Toxemia.....	4	
Syphilis.....	1	
Full term—macerated.....	3	
Full term—not macerated.....	1	
Second twin macerated, first living.....	2	
Version—cord complication.....	1	
Full term—cord around neck.....	1	
Deaths of infants under 14 days.....	6	0.6
Aerania, died three hours.....	1	
Premature, died four days.....	1	
Full term, died one day (syphilis).....	1	
Full term, died four days.....	2	
Umbilical hemorrhage.....	1	
Total.....	25	2.5

when the operative procedures accompanied by least risk are applicable; and as a result, maternal morbidity and mortality are reduced to the minimum.

As a result of the progressive increase in the efficiency of our prenatal organization and routine, the infant mortality grows less each year. Table 7 gives the stillbirths and the infant deaths which occurred in this series. Nineteen, or 1.9 per cent., of the pregnancies terminated in stillbirths and six infants died under fourteen days; a mortality of twenty-five, or

2.5 per cent. That this low rate is due largely to prenatal care is shown by a comparison of the three series of cases recorded in Table 8.

The first is the series reported in detail in this paper (Table 7). The second was furnished to me by the Visiting Nurses' Association and consists of patients that were under the prenatal supervision of their nurses

TABLE 8.—COMPARISON OF THREE SERIES OF CASES

	Cause of Death										Total
	Congenital Defect	Prematurity	Trauma	Syphilis	Toxemia	Miscellaneous	Unknown	Hospital	Physician	Midwife	
Series I *											
Stillbirths.....	1	1	3	1	4	5	6	19	..	..	19
Infant deaths.....	1	1	..	1	..	1	2	6	..	..	6
Total.....	1	1	3	2	4	6	8	25	..	..	25
Series II †											
Stillbirths.....	..	3	12	1	2	..	7	8	15	2	25
Infant deaths.....	5	5	1	1	2	..	8	11	8	3	22
Total.....	5	8	13	2	4	..	15	19	23	5	47
Series III ‡											
Stillbirths.....	..	6	12	..	3	..	14	4	26	5	35
Infant deaths.....	8	15	8	..	..	..	10	9	28	4	41
Total.....	8	21	20	..	3	..	24	13	54	9	76

* Series I. Infant mortality in 1,000 cases under prenatal supervision of the Long Island College Hospital.

† Series II. Infant mortality in 1,000 cases under nursing supervision of the Visiting Nurses' Association, with no systematic medical supervision.

‡ Series III. Infant mortality in 1,000 cases in which there was no prenatal care.

for periods of from one to seven months. Systematic medical supervision was lacking in this group.

The third series consists of 1,000 patients that received less than one month of prenatal supervision by their nurses, or none at all. Systematic medical attention likewise was not given. The infant mortality in these three series was 25 per thousand, 47 per thousand, and 76 per thousand, respectively. A graphic representation of this comparison is shown in Figure 3.

20 Livingston Street.

ABSTRACT OF DISCUSSION

DR. JOSEPH B. DE LEE, Chicago: We have tried to take care of women from the very earliest months of pregnancy, with a view of preventing abortion. I agree with Dr. Beck that it is almost impossible to prevent abortions. The habitual aborter is the bane of the obstetrician. At first I was very sorry that we could not prevent all abortions. When the embryologist showed that the majority of these aborted ova were abnormal, either microscopically or macroscopically, we did not regret this conservative act of nature. We try to make routine Wassermann tests. Let me warn you from deducing from a positive Wassermann reaction that a woman is syphilitic. Tell her the Wassermann reaction is positive but that that does not mean she has syphilis, since during pregnancy the reaction is equivocal. I do not underestimate the value of the Wassermann test. Within five years we shall have to reevaluate this test. Regarding a standard of morbidity: The doctor said he had fifty-nine cases of morbidity in 1,000 cases; 5.9 per cent. of puerperal women had fever. What we should have is a committee appointed similar to that of the British Medical Society to establish a standard of morbidity. At the Chicago Lying-In Hospital, our standard of morbidity is a temperature of 99 F. My own standard is 98.6. Any woman with a temperature above 98.6 is morbid. The British standard is 100.6. It is going to be very difficult to establish a standard of morbidity. Another point I wish to bring out is the low fetal mortality of these cases: 2.5 per cent. mortality in children that were

born after the seventh month. That is a wonderful result, probably unequaled. It certainly is not equaled by that practitioner who turns the babies around and draws them out by the feet when nature started them by the head. His mortality was nearly 8 per cent. Now, if a gross mortality of 2.5 per cent. can be accomplished by means of intelligent antenatal care and by means of conservative—we might say old-fashioned—methods of obstetric practice, we see no reason for introducing new methods carrying 8 per cent. mortality.

DR. EDWARD A. SCHUMANN, Philadelphia: One of the great problems underlying antenatal hygiene, in our great centers of population, is that of the young woman illegitimately pregnant, with a low standard of mentality, and afflicted with venereal disease. In Philadelphia we have just established a prenatal clinic at the Philadelphia General Hospital, which I think is destined to begin at least to solve this problem. The clinic is conducted much as any other prenatal clinic, but there is in constant attendance on clinic days a psychiatrist and a technician from the laboratory of the hospital. Any case presenting the slightest evidence of mental abnormality is studied coincidentally and concurrently by the psychiatrist and the obstetrician; the necessary laboratory work is done. We get a report quickly. The institutional care in mental deficiency cases can be carried on coincidentally with ordinary prenatal care. We hope great things for this clinic, although not much has been accomplished yet.

DR. HUGO EHRENFEST, St. Louis: The majority of physicians are more interested to know how far these very interesting rules for proper prenatal care as carried out by public clinics can be applied to private practice. Of course, there are distinct differences in the prenatal care of the private patients; however, the general principles as laid down by Dr. Beck should be followed. Under present housing conditions people are forced more and more to seek hospital accommodations for confinement. With the limitation of such accommodations in all larger cities, obstetric patients are forced to apply to their physician rather early in pregnancy. Probably 75 per cent. of my patients appear in the office about the third or fourth month of pregnancy. This is a factor which has some very important bearing on present day successful prenatal care also in private work. Outside of this rather beneficial effect on proper prenatal care, I have observed another influence of the housing problem, and that is on the development of hyperemesis. Young married couples are crowded into the so-called efficiency apartment, one or two rooms with a kitchenette off the supposed-to-be dining room. These women at the beginning of a pregnancy are forced to do their own cooking and smell the kitchenette odor while they are eating. I think that this represents an interesting and important factor in exaggerated vomiting now observed by me in more cases than ever before. It is a difficult problem to handle. I have made it a routine as soon as these patients begin to vomit to put them in a hospital under the care of the dietitian. Occasionally I used a little bromid. In the main, all we have to do is to serve these patients very small meals at short intervals. It is remarkable how quickly they will get over the nausea and begin to eat. We test them out on bigger meals and let them go home. This, to my mind, is a very interesting observation in view of the unsettled state of the nausea question. In private practice the Wassermann test as a routine is neither desirable nor necessary.

DR. ALFRED C. BECK, Brooklyn: Concerning the Wassermann reaction, our experience has been similar to that of Dr. De Lee. Recently I drew attention to the fact that in all probability we were being misled even in normal pregnancy cases by the Wassermann test. It is hard to say what we should do with the patients who have two positive Wassermann reactions and no other evidence of syphilis. Is it desirable to take the risk of having a child born with syphilis because we dislike to use intensive treatment in such cases? Dr. Schumann's suggestion is a very good one, and I hope that we may be able to get the cooperation of the department of psychiatry in our cases. With regard to nausea and vomiting: In all my work with clinic cases, I have noticed that the tendency toward this condition is very much less than with the private patients. So that while we have not

had these cases in the clinic, I certainly have had them in my private practice. But when these measures are used prophylactically, it does not cut down the incidence of the really troublesome cases.

THE REMOVAL OF BILE AND BLOOD FROM THE URINE

IN PERFORMING THE PHENOLSULPHONEPHTHALEIN
TEST OF RENAL FUNCTION *

C. SIDNEY BURWELL, M.D.

AND

CHESTER M. JONES, M.D.

BOSTON

As the phenolsulphonephthalein test for estimating renal function is based on a colorimetric determination, it follows that foreign coloring matter in the urine introduces an error, and that any considerable amount of coloring matter vitiates the test. Bile and blood are the two common sources of color in the urine that render the method inaccurate. Rowntree and Geraghty¹ observed that the urine could be rendered free of bile pigments, without the loss of phenolsulphonephthalein, by the addition of basic lead acetate, and subsequent filtration. The addition of basic lead acetate, however, does not precipitate hemoglobin from aqueous solution,² and no method has been as yet suggested which makes the test serviceable in the presence of hemoglobin.

The method here described does, however, remove both bile and blood. It consists in the precipitation of bile and blood by zinc acetate, and their removal by filtration. This procedure permits practically 100 per cent. of the phenolsulphonephthalein to remain in the filtrate. This modification of the usual phenolsulphonephthalein test is extremely simple, and should prove particularly applicable to cases of choluria and hematuria in which a study of the renal function is indicated.

The modified test is thus performed: Phenolsulphonephthalein solution (1 c.c.) is injected into the deltoid muscle in the usual manner, and the urine collected after the usual interval of two hours and ten minutes. This specimen of urine is diluted up to 500 c.c. with tap water. To 20 c.c. of this diluted urine are added 20 c.c. of a saturated alcoholic solution of zinc acetate, which precipitates out bilirubin and hemoglobin. Red cells are carried down with the precipitate. Filtration yields a clear solution, now free of bile pigments and hemoglobin. Twenty cubic centimeters of this clear filtrate is made alkaline with 5 c.c. of saturated sodium hydroxid solution to bring out the full color of the dye, and made up to 40 c.c. with tap water. This solution is clear and is read directly against a known standard solution of phenolsulphonephthalein. In order to correct for dilution, the percentage reading is multiplied by 2.

In order to establish the accuracy of this method it was necessary to show that the phenolsulphonephthalein was not removed by treating the urine with zinc acetate, and that bile and hemoglobin were entirely removed. The following determinations were accordingly made:

* From the Medical Clinic of the Massachusetts General Hospital.

1. Rowntree, L. G. and Geraghty, J. T.: An Experimental and Clinical Study of the Functional Activity of the Kidneys by Means of Phenolsulphonephthalein, *J. Pharmacol. & Exper. Therap.* 1: 579, 1909-1910.
2. Hammarsten, O., and Hedin, S. G.: A Text Book of Physiological Chemistry, New York, 1914, p. 281.

Known amounts of phenolsulphonephthalein were added to (1) distilled water; (2) normal urine; (3) urine from deeply jaundiced patients; (4) normal urine to which bile had been added; (5) urine from patients with marked hematuria, and (6) normal urine to which laked and fresh blood had been added. The method as described above was applied to each preparation, with these results:

1. In each case the loss of phenolsulphonephthalein, when the final filtrate was compared with a standard in the Duboscq colorimeter, was so small as to be negligible.

2. In those preparations containing bile, all traces of bilirubin had been removed, as demonstrated by the iodine test for bile.

3. In those preparations containing blood, all traces of hemoglobin or hemoglobin derivatives had been removed, as shown by the absence in the final filtrate of characteristic spectroscopic absorption bands.

4. All the resulting filtrates were clear.

5. In every case the final filtrate could be read directly and satisfactorily against standard solutions of phenolsulphonephthalein.

DIAGNOSTIC AND THERAPEUTIC POINT IN RETROCALCANEAN BURSITIS

A. L. NIELSON, M.D.

HARLAN, IOWA

Retrocalcaneal bursitis was first described by Albert,¹ in 1893, under the term achillodynia. He reported a number of typical cases, but did not determine the pathology of the condition. Rössler,² in 1895, by operation and dissection, found the true cause of the disease to be an inflammation of the bursa lying between the insertion of the Achilles tendon and the tuberosity of the os calcis.

This bursa is subject to the usual affections of bursae in general. Of special infections, tuberculosis occurs, and when it does occur, it extends to the bone quite readily, owing to the thinness of the bursal wall in its anterior and upper aspects. Gonorrheal infection attacks this bursa, as do rheumatic infections. In chronic infections of the bursa, there is a thickening of the bursal endothelial lining. There may be cartilaginous hypertrophy and periostitis, with formation of exostoses. Effusion is rare. Direct infection by puncture wounds may occur.

The causation of disease of this bursa may be classified as: (1) functional, (2) traumatic and (3) bacterial. Overuse of the foot, too much walking, the trauma incident to pressure of shoes, usually too short shoes, are etiologic factors in most cases. Bacterial infection is chiefly metastatic, the disease being, on this account, very often bilateral.

Pain is localized at the junction of the Achilles tendon and the os calcis. This pain is only on motion; rest relieves, and there is more comfort with the foot everted and the leg rotated outward. There may be tenderness over the bursa, and often there is an appreciable swelling or a doughy mass on each side of the Achilles tendon. I wish particularly to emphasize a diagnostic point which is also valuable as a therapeutic

measure. This was suggested by J. B. Murphy.³ The pain in disease of this bursa is due to the pinching of the inflamed and enlarged bursa, between the Achilles tendon and the os calcis, on flexion of the ankle. This is logical; and is proved by the fact that removing this pressure on the bursa, by rest, resection of the bursa or by any other means will relieve the pain. Then, if in any suspected case removal of this pressure relieves the pain, we may conclude that retrocalcaneal bursitis is the condition with which we are dealing. This is accomplished by putting the patient on high heels, mechanically increasing the distance between the tendon, just above its insertion, and the os calcis, thus giving more room to the bursa and preventing the pinching of the bursa between tendon and bone, as occurs in ordinary flexion of the ankle. I have had a three-fourths inch rubber heel fitted on the ordinary low-heeled shoes, without removing any of the leather heel. Roentgen-ray findings are negative in the absence of exostoses.

Treatment of this condition, aside from the foregoing method, is surgical removal of the bursa. The presence of long continued inflammation, cartilaginous bodies, or exostoses require operation. Careful fitting of shoes is necessary to prevent pressure of the shoe on the heel over the bursa. Local treatment is of little value. Robert Jones⁴ reports results with actual cauterization of the bursa, by inserting a heated needle into the bursa. Various injections into the bursa have been tried.

REPORT OF CASE

History.—B. K., a boy, aged 11, examined Feb. 1, 1921, whose family history was negative and who had had measles, mumps, recurrent tonsillitis for five years, tonsillectomy one year before, and several attacks of bronchitis during the last four winters, began noticing pain, ten months before I saw him, in the left heel on walking. The pain gradually became more severe, until it almost prevented him from walking. It did not bother when the feet were at rest. Under a diagnosis of suspected tuberculosis of the os calcis, he was kept off his feet for about five months. On beginning to walk again the pain recurred. Two months before I saw him a similar pain began in the right heel.

Physical Examination.—The boy was fairly well nourished. The facies suggested adenoids. Roentgen-ray examination revealed apparently a cyst in the anterior part of the os calcis of the left foot. The heel and the right foot were negative. An irregular shadow just apart from the lower border of the os calcis helped to make the former diagnosis of probable tuberculosis. This shadow was the epiphysis of the os calcis, which appears about the age of 10 years and unites with the body of the bone at about 15.

Treatment and Course.—A three-fourths inch heel was added to the ordinary heel of the shoes. Immediately the patient was free from pain on walking and has continued so. He now goes to school, and is as active as the average boy of his age, with no trouble with the heel. There is still, four months after beginning the raised heels, slight tenderness on pressure over the left bursa, and when walking barefoot he notices pain in the left heel. The right heel gives no symptoms, even without the raised heel.

3. Murphy Clinics 4: 505 (June) 1915.

4. Jones, Robert: Diseases of the Bones and Joints.

Organization of Hospital Social Service.—It is desirable that the fundamental principles of function, policy, and organization of social service in hospitals and dispensaries should receive the official endorsement of national bodies concerned with these fields of service. Uniform, consistent, and unretarded development will thus be promoted, and hospitals entering into social service activities will find available guidance.—*Hospital Social Service* 3:7, 1921.

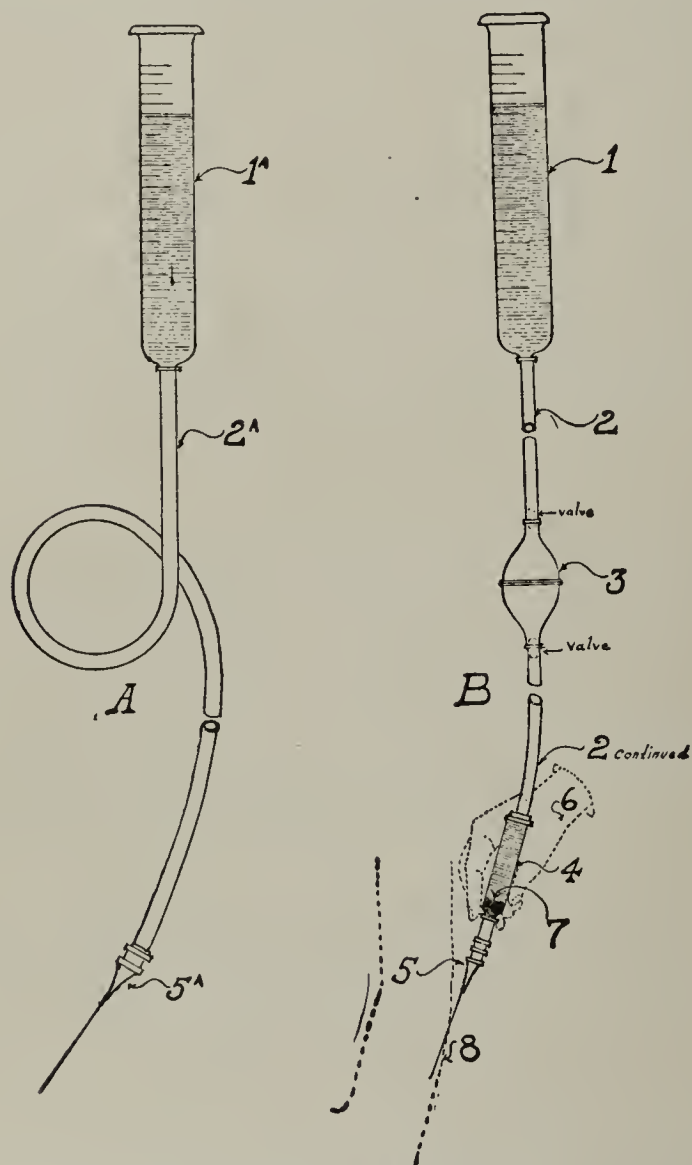
1. Albert, E.: Achillodynie, Wien. med. Presse 34: 41-43, 1893.
2. Rössler: Zur Kenntniss der Achillodynie, Deutsch. Ztschr. f. Chir. 52: 274-291, 1895.

Clinical Notes, Suggestions, and New Instruments

MODIFICATION OF GRAVITY METHOD OF ADMINISTERING ARSPHENAMIN

SPENCER G. GILL, A.B., M.D., NORFOLK, VA.

This method has been gradually evolved after experimentation with the gravity method of arspenamin administration. It has proved satisfactory in clinical administration of arspenamin where there are many cases to treat in a short length of time. In a series of 1,000 treatments by this method, we have had less trouble in entering small veins; the reactions have not been more severe than in other forms of administration, and the results of treatment have been as satisfactory. With this apparatus we inject safely from 100 to 120 c.c. of ars-



A, apparatus for administering arspenamin by present gravity method; B, modification.

phenamin solution, with an average length of time of two minutes. As there is considerable pressure, when the bulb of the apparatus is squeezed, it is necessary that all connections should be attached firmly.

The additions and improvements in mechanism over the gravity method are illustrated in the accompanying drawing, in which A represents the present gravity method of administering; 1A shows a graduated glass cylinder holding fluid to be administered; 2A shows ordinary rubber tubing through which the fluid flows to needle 5A. B represents the modification of the gravity method of administering; 1 shows a glass graduated cylinder, attached to which is a rubber tubing, five-eighths inch in diameter and 4 feet in length; at the end of the tubing is connected a rubber bulb, 3; in continuation and attached to the lower end of this bulb is about 18 inches of the same caliber of rubber tubing, 2 continued, to the end of which is attached the barrel of a Luer syringe or similar piece of glass, 4, that can be connected with a small Luer needle, 5, preferably a 19 gage, 1¼ inch size.

The bulb, 3, is constructed with valves as indicated, so that by gravity there will be a continuous flow of fluid; or when the bulb is compressed the fluid will be injected through the needle into the vein, 8; when the bulb is pressed on, the upper valve is pushed up and the lower valve driven down, allowing the fluid to escape, but no air to enter the bulb.

The glass, 4, attached directly to the needle, 5, serves also as a convenient handle, 6, for approaching the desired vein, 8; and when the vein is entered, the blood flowing into the glass barrel at 7 is assurance that the vein has been entered. The fluid will then run into the vein by gravity. By intermittently pressing on the bulb, 3, the fluid can be regulated, and 120 c.c. of solution can be given in from two to twelve minutes, as desired.

A small piece of cotton and strip of adhesive tape is put over the puncture at 8, after the administration, and a little of the solution is allowed to run through the needle, putting on the stopcock when the fluid in 4 is clear and the glass is filled with fluid. The needle is then free from blood and immediately put into the sterilizer, and another needle is attached to the glass barrel, ready for the following operation.

ADVANTAGES

1. The improvement of the attached valvular bulb's use in connection with the present gravity method, controlling and regulating the flow, permitting the administering of a large number of doses in a short time, necessary in public clinic service, and lessening the work in each individual case, without tire to the patient.

2. The improvement of the attached glass barrel, which gives the administering hand a steady hold on the needle, indicates the flow of fluid, and notifies the physician when the vein has been reached without spilling one drop of blood. This lessens the danger of moving or puncturing the vein during the operation, and makes it a clean, bloodless operation.

3. The improvement of using a small needle, in which there is no clotting of blood on account of the forced flow of fluid, which cleans the needle and leaves it ready for the sterilizer.

322 Dickson Building.

AMNIOTIC HERNIA CORRECTED BY OPERATION

JOHN FORMICHELLA, M.D., BRIDGEPORT, CONN.

I read with much interest Dr. Thorek's¹ report of a case of amniotic hernia. The illustration accompanying the report was surprisingly similar to a case I saw April 30, 1921. The mother, a primipara, aged 25, had been attended during labor, which was normal, by a midwife. I was called at 10 a. m., soon after the birth of a full-term, 9-pound, well developed and well nourished baby girl, presenting an amniotic hernia the size of a grapefruit, somewhat elongated. The hernia was protruding through an opening a little larger than a half-dollar, and was enveloped by the dilated sheath of the cord, which had been tied by the midwife at about 2 inches from the beginning of the dilatation. The contents of the hernia, consisting of intestine, were plainly visible as through a glass.

I never before had occasion to see any similar case, but I expressed to the family the certainty of the death of the baby in a day or so unless they would take the risk of an immediate operation. The parents consenting, I took the baby to the Columbus Hospital.

The first step of the operation, before opening the sac, was to reduce the contents. The sac was then ligated near its base and resected. The patient, resenting the procedure, began to scream and strain herself so much that suddenly the ligature slipped off, allowing the intestine to come out again. Then the administration of ether became imperative. Even under general anesthesia the reposition was so difficult that two incisions, each 1 inch long, one above and one below the original opening, were required. The wound was then closed with five interrupted mattress sutures of plain catgut No. 2, about one-fourth inch from its margin, through all the layers, including the skin, followed by a continuous suture of the

1. Thorek, Max: Report of a Case of Amniotic Hernia, J. A. M. A. 76: 1748 (June 18) 1921.

skin alone with No. 1 plain catgut. The wound was covered with gauze, held by straps of adhesive plaster, and a gauze bandage was applied.

Soon after the operation, the cyanosis disappeared. In the afternoon, about 6 hours after the operation, I took the patient home, recommending the mother not to handle her unnecessarily. Everything went well. To change the dressing at the end of the first week, I took the patient to the hospital for fear that the wound might possibly open. I found that, although the dressing was wet with a green secretion, the sutures were holding firmly. Three days later I redressed the wound at home. By the first of June, the wound was completely healed, leaving a strong scar through which it was possible to notice, on palpation, two small diastases of the fascia. If, in the future, an incisional hernia should develop, it will be an easy matter to repair it. At present the patient is in the best of health.

654 Pembroke Street.

A CASE OF CONGENITAL ICHTHYOSIS

C. H. DEAN, M.D., AKRON, OHIO

March 20, 1921, an American woman gave birth to a girl after a normal labor. On delivery of the head, it was noted that the face was a dull, pasty white, and singularly devoid of human expression. The eyes were narrow slits, the nose flat and the ears scarcely discernible. On completion of delivery, transverse lines appeared on the chest as it expanded. Otherwise no abnormal color was noted. The child breathed quickly and well, and the face was soon the color of the body. Because of lack of assistance, I oiled the child, using olive oil. Nothing peculiar in the texture of the skin was noted.

When next seen, about nine hours later, the child presented a striking appearance. The whole body and face was a bright copper color. The skin was dry, and crackled like parchment or an onion skin. The face was expressionless, the eyes were deep slits and scarcely openable, the nose flat, the ears crumpled and very small, the nails poorly developed, and the toes and fingers poorly formed. There was a bulla on the side of each foot. The child was vigorous and had taken the breast.

That afternoon, Dr. R. S. Friedley saw the child with me, and we came to the conclusion that we were dealing with a case of congenital ichthyosis. During the next two days the child was seen by other physicians, but none had seen a similar case.

The child early became fretful and was finally given small amounts of paregoric, which afforded it some relief. The skin was kept well oiled. We used petrolatum, olive oil and cold cream, and finally settled on olive oil as the most useful. When sufficiently oiled, the child rested better. Quarts of oil were used. The child continued vigorous and took the breast well. The temperature ranged about 99 by rectum, and the bowel and bladder were emptied normally.

The maternal grandmother offered the information that two of her children (the child's mother and aunt) had presented the same appearance at birth and had done well. Both were examined and presented no skin abnormality. Both parents of the child gave a negative Wassermann reaction.

March 22, flakes began to be detached from the lower lip and groin. On the 23d, large flakes were detached. Complete casts were removed from the nose and ears, and these organs immediately expanded to normal size and contour. The flakes from the scalp were large and pierced by the hair. After desquamation, the nails and digits were found to be normal. On removal of the flakes, the skin was very delicate and appeared normal. In a few hours this normal appearing skin became dry and stiffened, and finally desquamated. It was as necessary to keep the skin oiled as before the first desquamation, for only so could the child be kept comfortable. This process continued repeatedly, but each desquamation was less till May 22, when last seen, the skin seemed normal, was not oiled, and there was no visible desquamation. Since then the family has disappeared.

We have been able to find nothing more enlightening than the descriptions of congenital ichthyosis, except that Knowles

says under that head: "In other instances the infant is born with a collodion-like membrane covering the skin, but this coating peels off in sheets, and after a short period of desquamation the skin assumes a normal aspect. The latter, although resembling, is distinct from ichthyosis."

What is the condition?

522 Wooster Avenue.

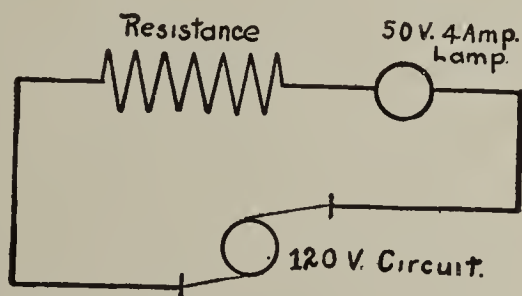
[COMMENT.—This case is one in which Bowen has suggested there is a persistence of the epitrichial layer, which is usually cast off by the seventh month. References to cases of the sort will be found in Pusey, Edition 3, page 899.—Ed.]

A SIMPLE AND EFFICIENT LIGHT SOURCE FOR THE ELECTROCARDIOGRAPH

PRO. V PREWITT, M.D., NEW YORK

Assistant Professor of Physiology, University and Bellevue Hospital Medical College

Some objections to the use of the carbon arc as a light source in the electrocardiograph are: (a) light and dark streaks in the tracings due to inconstancy of illumination; (b) interruption, frequently, of the process of taking an electrocardiogram to replace an exhausted carbon; (c) frequent cleaning and difficult alinement of the elements of the optical train, necessarily interposed between such a light source and the galvanometer; (d) frequent delays involved by replacing fuses in the lighting circuit on account of failure of the magnets in the lamp to prevent contact of the carbons, and (e) space occupied, unnecessarily, by the optical train and arc lamp.



Arrangement of resistance and lamp in the lighting circuit.

The 14 volt, monoplane filament lamp usually supplied with the American made electrocardiograph is unsatisfactory because of its insufficient luminosity.

We have found that the 50 volt, 4 ampere, Type T M 200, monoplane filament, hard glass lamp gives results equal to the best of those obtained from the arc lamp to the exclusion of the disadvantages associated with such a light source. This lamp is designed for use in the usual type of miniature socket supplied with the American made electrocardiograph. The photic efficiency of the lamp may be increased as much as 60 per cent. by placing a small convex mirror immediately behind the bulb.

The average life of this lamp is about 100 burning hours on a 50 volt circuit. Since the functional duration is decreased by operation on a circuit of only slightly higher voltage, it should be operated in series with a resistance allowing a maximum of not over 50 volts. Such a voltage can be obtained by placing, in series, in a 120 volt direct or alternating current circuit, 155 feet of No. 16 gage or 121 feet of No. 17 gage Advance resistance wire, according to the accompanying diagram.¹

1. It was at the suggestion of Messrs. Summers and Otteson of the Industrial Lighting Department of the Edison Lamp Works, Harrison, N. J., that we investigated the adaptability of this lamp. The lamps are made by the Edison Company and distributed by the Pathoscope Company.

State Health Administration.—The state should perform those necessary functions of health administration which, if omitted or left to the numerous counties of the state to assume, would require in the place of a single state agency many county agencies with much overlapping and extravagance and nothing like the efficiency that would be had through one well organized state agency.—W. S. Rankin, *Tr. Assn. Life Ins. Presidents*, 1919.

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SATURDAY, AUGUST 6, 1921

THE REGULATION OF BLOOD SUGAR CONTENT

The mechanisms whereby the physiologic constants of the body are maintained have provided investigators with perennial problems. The regulation of the content of blood sugar is frequently discussed. Since the classic studies of Claude Bernard, the rôle of the liver in the storage of sugar as glycogen has been universally accepted, and the textbooks have dismissed the description of this vital phenomenon with general statements of the formation of hepatic glycogen and its subsequent hydrolysis to glucose. The phenomenon is not a haphazard one. Careful physiologic regulation undoubtedly occurs. Hence one is impelled to inquire: What is the mechanism whereby the blood sugar concentration is normally adjusted so nicely that the content of glucose remains at from 0.07 to 0.11 per cent. in starvation as well as in full digestion?

In a recent series of papers, Langfeldt,¹ besides reviewing the earlier work on this subject, has added new observations of his own and formulated an attractive theory of blood sugar regulation. The blood sugar concentration obviously is a balance between glycogen formation, on the one hand, and glycogen hydrolysis, on the other. That the presence of pancreatic hormone is necessary for the synthesis of glycogen seems fairly well established by perfusion experiments of Langfeldt and others. The factor governing the hydrolysis of glycogen, on the other hand, appears to be the reaction of the blood, for the activity of the liver diastase seems to vary with or depend on the hydrogen ion concentration. It has long been known that, in general, autolysis is favored by an acid reaction; but Langfeldt has demonstrated the varying activity of the various possible salt combinations of the liver diastase at varying hydrogen ion concentrations. The optimal activity of the diastase sodium chlorid complex, which is the most probable enzyme-salt combination in the body, is at p_H 6.8, so that the usually higher hydrogen ion concentration of the blood acts as a check on the process of glycogenolysis in the liver. The author has thus formu-

lated his theory: Under the influence of the pancreatic hormone, fragments of the protein and carbohydrate of the digested food are synthesized to glycogen in the liver. This carbohydrate may subsequently be hydrolyzed by the liver diastase to sugar, which is poured into the blood and is metabolized to yield energy, resynthesized to glycogen in muscle and other cells, or is returned to the liver, where it is again built up into hepatic glycogen. In starvation the glycogen supply is maintained by the glucose derived from amino-acids, and by glycerol from the fats of the tissue of the starving animal.

With increase in the hydrogen ion concentration of the liver cells one would expect increased glycogenolytic activity, as when acid is injected into the organism or the liver autolyzes in the absence of oxygen. Epinephrin forms a diastase complex very active at the hydrogen ion concentration of the blood, which may account for the hyperglycemia following administration of this substance. On the other hand, if the glycogen formation fails through lack of the pancreatic hormone, we should observe an increased blood sugar, which is the case in pancreatic diabetes. From a reconsideration of older data supplemented by some new observations it appears, then, that glycogen formation and glycogenolysis, the two forces that have long been known to be concerned in the maintenance of constant blood sugar concentration, are continually in operation, and that the hydrogen ion concentration of the blood and the pancreatic hormone have important rôles as regulators in this mechanism.

THE RELATIONSHIP BETWEEN TRAUMA AND MALIGNANT DISEASE FROM AN INDUSTRIAL STANDPOINT

The continued growth of industrial insurance, workmen's compensation and similar medicosocial laws gives increasing importance to the question whether malignant growth is ever the result of a single trauma. Hence the judicious review of the subject by Ophüls¹ is most timely. That long continued irritation leads to the development of cancer is universally accepted. In some instances this fact has a distinct importance in industrial medicine, as, for example, in dye-workers' cancer of the bladder² and paraffin-workers' cancer of the skin. The possible responsibility of a single trauma leading to malignancy is less generally accepted, and by some authors is practically denied. Such absolute negation is, however, undoubtedly unsafe in the present state of our knowledge concerning cancer. We generally recognize that any change that is associated with tissue proliferation may terminate in the development of true tumor. Other things being equal, this transformation

1. Langfeldt, E.: Blood Sugar Regulation and the Origin of the Hyperglycemias, I, Glycogen Formation and Glycogenolysis, *J. Biol. Chem.* **46**: 381 (April) 1921; II, Conditions of Action of Liver Diastases, *ibid.*, p. 391; III, Theory, *ibid.*, p. 403.

1. Ophüls, William: Relationship Between Trauma and Malignant Disease from an Industrial Standpoint, *California State J. Med.* **19**: 54 (Feb.) 1921.

2. Dye Workers' Cancer, an Important Industrial Disease, editorial, *J. A. M. A.* **75**: 321 (July 31) 1920. Hamilton, Alice: *J. Indust. Hyg.* **3**: 16, 1921.

occurs the more readily, the more actively the tissues are proliferating and the longer the tissue proliferation has continued. It is also evident that this transformation is fortunately a rare occurrence, for pathologic tissue proliferations due to one cause or another are exceedingly common. There is hardly any human being, or any living organism, for that matter, exempt from them; but tumors we encounter only occasionally. The existence of intermediate stages, in which even the most expert with all modern technical means at his disposal cannot decide whether they should be classified as tumors or whether they still belong to the other pathologic conditions mentioned, seems to indicate that, after all, the same process continues only in a vastly exaggerated form in a more or less predisposed individual.

From these theoretical conditions it will be evident that trauma can contribute to the development of tumors so far as it causes tissue proliferation; and, since any break in continuity, such as is likely to occur as a result of the trauma, is sure to be followed by regenerative and often by inflammatory proliferative processes, the possibility certainly exists that these may go on to the development of true tumors.

At one time an uncritical acceptance of patients' statements concerning the relation of some previous injury to their existing tumor led to the prevalence of the view that single trauma often led to tumor formation. Thus, Samuel Gross in 1897 attributed half of his cases of sarcoma of the long bones to traumatism, and many other surgeons accepted a traumatic origin for a large proportion of cases of sarcoma, and for some of the carcinomas, especially those of the breast.

As a result of the more careful analysis of cases, the percentage figures of tumors really ascribable to injury has been decreasing greatly. In his handbook on accident medicine, Kaufmann states that there seems to be a reasonable connection between trauma and benign tumors in 2 per cent., between trauma and carcinoma also in about 2 per cent., and between trauma and sarcoma in 5 per cent. of the cases; and Loewenstein informs us that the statistics of the Prussian army and navy from 1899 to 1907 reveal a proportion of one case of post-traumatic malignancy in 15,000 accidents. Our general conclusion, then, would be that a single trauma not followed by complications is a rare cause of tumor, and each individual case must be subjected to a careful analysis before arriving at any conclusion.

As proper criteria for establishing the relation of a single trauma to a subsequent tumor, Ophüls lays down these rules: 1. The occurrence of the trauma must be proved. 2. The trauma must have been severe enough to appear effective. 3. The growth must develop at a place likely to have been injured by the trauma. 4. It must be reasonably certain that the traumatized part was normal before the accident. 5. The time elapsing between the trauma and the appear-

ance of the tumor must agree with our scientific experience in the rapidity of the development of the particular kind of tumor under consideration. The time must not be too short, not less than several weeks, nor too long. The outside limit is usually given at about two years, but a reasonable connection may be assumed even in cases in which the interval is much longer, if there are symptoms that bridge the intervening period. Applying these criteria, Ophüls recognizes that fibromas occasionally result from trauma, and that numerous fairly well authenticated cases of enchondroma have been reported; these possibly result from stimulation of an already existing abnormal mass of cartilage, but even such an occurrence would seem to entitle the patient to compensation.

Among all sarcomas, those of bones are most frequently referred to trauma and, theoretically, the interrelation seems quite plausible, because any injury to bone, and particularly a fracture, is followed by the most remarkably vigorous production of new tissue. In fact, the callus production is often so exuberant that it is difficult to decide, even microscopically, whether one is dealing with normal regenerative processes or tumor. While Kaufmann estimates that 12 per cent. of bone sarcomas are of traumatic origin, Ophüls believes that this figure is still too high; but even the most skeptical observer must acknowledge that there are a certain number of reports of such cases which are thoroughly convincing. As to carcinoma following a single trauma, there seem to be few if any that have been satisfactorily proved, although there is no *a priori* reason why in certain cases the reparative stimulus following a single injury of epithelium may not pass into malignancy. The round cell tumors of the testicle, which some authors call carcinoma, seem to be the only malignant growth of organs which is definitely produced by single traumatism, and Ophüls believes that such cases are frequent. Ewing³ calls attention to the fact that trauma is an effective method of producing artificial parthenogenesis, which may account for the relative frequency of post-traumatic tumors in the testicle and in misplaced and undeveloped organs. There is also good evidence that at least some gliomas have resulted from cranial trauma. Therefore, as Ophüls says, it would appear that in estimating the probability of a connection between trauma and the development of a true tumor, the collective experience that has so far been obtained in the particular type of tumor concerned should also be carefully taken into account.

Ewing, who takes a liberal attitude toward the problem, says that it is necessary to distinguish also between complete and partial liability. When a healthy adult receives a blow on the head, remains unconscious for days, never recovers full mentality, shortly develops signs of brain tumor, and dies in a few months of

3. Ewing: Textbook of Pathology, Philadelphia, W. B. Saunders Company, 1919, p. 110.

gliosarcoma of suitable size and location, the liability is generally accepted as complete. When a patient with symptoms of abdominal disease receives a blow in the epigastrium and rapidly succumbs to carcinoma of an abdominal organ, it is reasonable to assume that the trauma hastened the progress of an existing tumor. As Segond states, trauma reveals, aggravates or serves as a pretext for the origin of tumors; so that in each case very careful consideration of all circumstances is required to establish the relation of the injury.

MODE OF ACTION OF SOME COMMON LAXATIVES

Without doubt the common laxatives are the most widely used drugs in the entire pharmacopeia of the modern physician; hence the conclusion is irresistible that he should be adequately informed regarding their precise mode of action. If an added reason were necessary it could readily be found in the all but universal use of laxative drugs by the laity. Sometimes they are purchased by the public with a distinct appreciation of their purpose; not infrequently potent laxatives represent an essential ingredient of proprietary and "patent" medicines that are secret as to composition and misrepresented with respect to their pharmacology. Probably physicians would be more discriminating, or at least more rational in the prescription of the various laxative preparations, if information regarding the pharmacodynamics of the subject were more widely disseminated among the members of the profession.

Calomel is a popular representative of the group of nonsaline laxatives. It has currently been represented to act by promoting intestinal secretion and retarding absorption, so that an accumulation of the abundant fluid and a consequent evacuation of semisolid contents ensues.¹ A recent investigation of the pharmacologic action of calomel, aided in particular by roentgen-ray observations of the progress of the alimentary reactions, has not substantiated the view just cited. Working in the pharmacologic institute of the University at Utrecht, van der Willigen² has concluded that absorption in the gastro-intestinal canal is not interfered with in the presence of calomel. The drug functions by promoting more vigorous movements of the small and large intestines whereby the contents are propelled so rapidly toward the rectum that absorption and the production of formed stools cannot take place. The fundamental feature in the action of calomel, therefore, is its influence on alimentary peristalsis.

The widely used phenolphthalein, the laxative action of which was an accidental discovery of pharmacology, is another drug which promotes peristalsis so that fluid contents are driven into the proximal colon more rapidly than under normal circumstances. Van der Willi-

gen³ has recently demonstrated that the drug does not retard absorption, nor does it produce secretion in undue quantities, as is currently taught. In connection with this laxative also, then, our present day assumptions must be revised.

How sulphur acts to promote purgation has been considerably debated. One investigator, for example, has believed that it gives rise to sulphurous acid which acts as an irritant in the bowel.⁴ In contrast with this is the finding of hydrogen sulphid in the lower small intestine and upper large bowel after ingestion of sulphur.⁵ The most recent investigator, van der Willigen,⁶ has adopted the hypothesis of the function of the hydrogen sulphid as the potent factor. He thus pictures its action: Ordinarily, the chyme which discharges from the small intestine into the colon is soon concentrated there by the rapid absorption of water; but when hydrogen sulphid is formed in considerable abundance from ingested sulphur it provokes a more rapid passage of the semifluid contents beyond the colon, so that the usual concentration cannot take place. A corresponding change in the feces is observed along with the more rapid evacuation.

THE RÔLE OF OXYGEN AND HEAT PRODUCTION IN THE FUNCTION OF MUSCLES

When a muscle contracts, energy is liberated in several forms. The measurable manifestations include a change in electrical potential, mechanical work, and the production of heat. Furthermore, carbohydrates disappear and carbon dioxide is given off. Only a few years ago it was customary to compare the working muscle to a heat engine in which the potential chemical energy of supplied fuel is first converted into heat by combustion, that is, oxidation, a portion of the liberated heat energy thereupon being utilized to perform mechanical work, as in the device of human construction.

Of late, many evidences have been adduced to show that muscular contraction cannot be the direct outcome of the oxidation of some combustible chemical muscle component. The difference of temperature required to satisfy the laws of thermodynamics applied to heat engines is not conceivable in the case of muscle. It appears more likely that the contractile tissues function in some different way as chemical or chemodynamic engines. A. V. Hill of the University of Cambridge, England, has devised recording apparatus sufficiently sensitive to indicate temperature changes of less than 0.000001 degree Centigrade. With such delicate instruments he has been able to follow the time relations of heat production in isolated muscles readily during exceedingly brief intervals. It appears from his

1. Meyer, H. H., and Gottlieb, R.: *Experimentelle Pharmakologie*, Ed. 4, Vienna, 1920.

2. Van der Willigen, A. M. M.: *Die Abführwirkung des Kalomels*, Arch. f. d. ges. Physiol. **186**: 185, 1921.

3. Van der Willigen, A. M. M.: *Die Abführwirkung des Phenolphthaleins*, Arch. f. d. ges. Physiol. **186**: 193, 1921.

4. Frankl, T.: *Ueber die Darmwirkung des Schwefels*, Arch. f. exper. Path. u. Pharmacol. **65**: 303, 1911.

5. Taegen, H.: *Ueber die Abführwirkung des Schwefels*, Arch. f. exper. Path. u. Pharmacol. **69**: 263, 1912.

6. Van der Willigen, A. M. M.: *Die Abführwirkung des Schwefels*, Arch. f. d. ges. Physiol. **186**: 173, 1921.

researches with Hartree¹ that heat production in muscular contraction can be resolved into a series of phases. There is an initial rapid production followed by a diminishing rate; then there is a relatively large evolution of heat, occurring rather suddenly during the later stages of relaxation; and a large, but slow, production of heat occurring in the presence of oxygen for some minutes after the contraction is over.

These investigations, along with earlier studies of Weiszäcker,² have further demonstrated the important fact that both the time relations and the magnitude of the heat production in the early stages of excitation of a muscle are unaffected by oxygen. Obviously, there must be some sort of chemical reaction going on; but the initial chemical breakdown may be regarded as entirely nonoxidative in character. From this standpoint, the rôle of oxygen in muscular contraction is put in a new light. The mechanical response of the muscle to stimulation and its maintenance in the contractile state is not the result of combustion in the working tissue. Oxidation comes into play in the recovery from activity. If one conceives some product like lactic acid to arise in the initial stage from chemical breakdown, the oxidative recovery may consist in the combustion of the cleavage product. According to Hill's researches, the slow oxidative recovery, as well as the rapid initial contractile changes, is associated with the production of heat: hence, further, the importance of oxygen in the avoidance of fatigue from accumulation of unoxidized wastes of the contractile acts. These facts give some idea of the part played by oxygen in the function of our muscles. They do not answer the more fundamental question: How is the contraction produced?

Current Comment

REPRIEVE FOR MISSOURI IN MEDICAL LICENSURE

Reference has previously been made³ to an amendment to the Missouri medical practice law voted by the legislature of that state last April. The amendment substituted for the word "reputable" in its reference to medical colleges in the law the words "legally chartered," the effect being to lower seriously the educational standards of the state. The word "reputable" gave the licensing board authority to establish reasonable standards of preliminary and professional education and to refuse to admit to its examinations graduates of medical schools which did not meet these requirements. The words "legally chartered," on the other hand, meant nothing, since all medical schools, and even the worst diploma mills, have been found to be "legally chartered." Through this change in the wording of the law, graduates of low grade medi-

cal schools throughout the country would be eligible to licenses in Missouri, although at present they are refused admission by from forty-two to forty-four states. In spite of vigorous opposition by the medical profession, the leading university medical schools and many intelligent laymen of the state, the governor signed the measure. Immediately a canvass of the state was begun by those opposing the bill, and more than 76,000 signatures were obtained to a petition asking that the measure be submitted to a referendum vote of the people of Missouri at the next general election. Owing to the short time permitted for the canvass, automobiles were freely used and the petition was delivered to the state capital by an aeroplane. The attorney general of the state has since announced that all legal requirements have been met, and the referendum is thus assured. Thus Missouri has been granted a reprieve from the disgrace of lowered standards of medical education and licensure, at least until November, 1922, when the people of the state will make the final decision.

A LAYMAN'S DEFENSE OF ANIMAL EXPERIMENTATION

The July issue of the *Woman's Home Companion* contains an important article, entitled "The Truth about Vivisection." The author, Mr. Ernest Harold Baynes, is well known throughout the United States as an animal lover. Of him Roosevelt said, "He has the highest reputation in all forms of work for the care of animals." There is little wonder, consequently, that when, horrified by the statements of wanton, even demoniac, cruelty in laboratories, which he had read in antivivisection literature, Mr. Baynes determined to learn whether these statements were true, and if true, to work vigorously for immediate abolition of the evil. He soon discovered that the literature was characterized by misstatements of fact, by perversions of truth, and by suppressions which were equivalent to falsehoods. His inquiry quickly led him to perceive that the two central propositions on which the antivivisectionists base their propaganda are that animals are ruthlessly tortured to gratify the curiosity of the heartless experimenters, and that the results are of no benefit whatever. The first of these claims he investigated by visiting, unheralded, a number of active laboratories and watching the experimental procedures. He found, not "brutality and heartlessness," but kindness and consideration. He was interested to observe posted in the laboratories certain rules regarding the care of animals. These rules, we may remark, were formulated more than a decade ago by the Bureau for the Protection of Medical Research of the American Medical Association, and have been formally adopted and are being enforced in every medical school and medical research institute in the country. The claim that the experimental method in medicine has been useless Mr. Baynes learned was overwhelmingly disproved by unimpeachable evidence. In presenting the case to his readers he cites the results of diphtheria antitoxin, of asepsis in relation to surgery and puerperal fever, of antityphoid vaccination, and of the human experiments which disclosed the mode

1. Hill, A. V., and Hartree, W.: The Four Phases of Heat-Production of Muscle, *J. Physiol.* **54**: 84 (Aug.) 1920.

2. Weiszäcker, V.: *J. Physiol.* **48**: 396, 1914.

3. Unfortunate Missouri, Current Comment, *J. A. M. A.* **76**: 1251 (April 30) 1921.

of transmission of yellow fever. This story of his own personal experience Mr. Baynes tells with the utmost candor and directness. No more effective attack on the methods and assertions of the antivivisectionists has ever appeared in a popular journal. The article has attracted much favorable comment from the daily press in all sections. It has stirred the antivivisection societies to frantic retaliation. A circular letter from one of them mentions the "evident commercialism" (whatever that may mean) of the article, and urges readers to protest against such misuse of a "home" magazine. A circular letter from another society urges subscribers to cancel their subscriptions. For spreading broadcast this instructive examination of the misleading statements and claims of the antivivisectionists and of the procedures and achievements of experimental research in medicine, the gratitude of the entire medical profession and of well-informed citizens everywhere is due to Mr. Baynes and to the editor of the *Woman's Home Companion*. They have done a highly valuable service by instructing the public in a matter of fundamental significance for public welfare. As they together declare, the *Companion* would not have published the article if it were not "of the utmost importance to the human race, and to animals as well, that medicine and surgery be allowed to advance, unhampered by ignorance, prejudice and sentimentality."

THE AMERICAN CHEMICAL INDUSTRY

Before the war, American physicians were besieged with a host of coal-tar synthetics for which claims of therapeutic value were made. Most of these had their genesis in Germany. In the refinement of coal-tar, it seemed as if practically all by-products which could not be employed as explosives or dyes per se were being offered as drugs and were being marketed with extensive solicitation and advertising. Since the war, only a few of these drugs on which letters patent have been granted and which were exploited formerly by German manufacturers have been found to possess sufficient commercial possibilities to warrant their manufacture in this country.¹ However, many valuable *nonpatented* drugs were woefully scarce during 1916-1918 because of the inadequacy of American chemical manufacture. As has been pointed out previously, and recently reemphasized in Congress by Representative C. R. Layton,² during the war such common substances as acetphenetidin, antipyrin, resorcinol and phenolphthalein sold at fabulously high prices, while in some instances actual suffering resulted from the scarcity of arsphenamin and certain local anesthetics. America was brought to realize its neglect in not manufacturing the dye products and the interdependent synthetic drug products. American chemists, however, soon established a dye industry which at the same time alleviated

the synthetic drug stringency. Our active participation in the war, necessitating the manufacture of high explosives, served as an added stimulus so that today there exists a substantial American chemical industry. The supply of useful drugs is ample, while prices are lower, and in cases of certain patented preparations on which German concerns formerly had a monopoly, are below prewar levels. All this has been accomplished in the absence of serious foreign competition. Now with the gradual recovery of Europe, the American industry is threatened. This country should provide for the manufacture of worth-while remedies of this type. As brought out by Congressman Layton, the medicinal compounds represent only part of the products of synthetic chemistry. The intermediate products as well as the dyes are indispensable substances preliminary to the manufacture of all of the medicinal synthetics. The country cannot be independent in its supplies of medicaments of this type unless it is also independent in the other coal-tar products.

IS BROMIN A TISSUE COMPONENT?

The demonstration of the normal occurrence of iodine in the thyroid gland, a contribution which science owes to the biochemist Baumann, who announced his discovery in 1895, soon awakened suspicions that other equally unexpected elements may be present with comparable frequency in the organism. There is no doubt that various elements do occur as chance constituents of living tissues. They presumably represent fortuitous deposits which have found their way into the body through some exceptional circumstance. Thus, copper and other heavy metals are sometimes found in demonstrable quantities in the liver, where they find a temporary lodgment. In some of the invertebrates the blood pigment regularly contains copper in place of iron, which is found in hemoglobin. The widespread distribution of manganese has often been a subject for comment. Chemists have also argued that minute quantities of arsenic are a characteristic component of the organs of the higher animals. The difficulties attached to any final conclusion regarding the problems here raised are largely those due to the selection of suitable highly accurate and delicate methods of analysis. Many of the elements referred to are so omnipresent that they form a contamination of chemical reagents as well as of bodily fluids and tissues. Bromine also has been proposed as a normal constituent of animal tissues. In the case of this element, so closely resembling the other halogens chlorine and iodine in its chemical behavior, the difficulties of decisive demonstration have been peculiarly great. It is worthy of note, however, that Damiens¹ now believes he has indisputably established the occurrence of bromine as a regular tissue constituent in a variety of animal species including man. It does not seem to be localized in special structures as iodine is; in fact, it is reported missing in the thyroids. The quantities reported average considerably less than a milligram per hundred grams of fresh tissue, that is, less

1. Leech, P. N.; Rabak, William, and Clark, A. H.: American-Made Synthetic Drugs, II, J. A. M. A. **73**: 754 (Sept. 6) 1919. Leech, P. N.: Chicago Chem. Bull., January, 1918, p. 230.

2. Speech of Hon. Caleb R. Layton of Delaware in the House of Representatives. Congressional Record, July 9, 1921. The Tariff on Dyestuffs, and Drug Prices, editorial, J. A. M. A. **67**: 880 (Sept. 16) 1916.

1. Damiens, M. A.: Sur le brome existant normalement dans les tissus animaux, Bull. Soc. chim. biol. **3**: 95 (April) 1921.

than one part per hundred thousand. This is an almost infinitesimal quantity; but these are days in which large results are sometimes associated with small factors. Meanwhile we await corroboratory information.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Physician Convicted.—Dr. Elias P. Case, Oakland, is reported as having been found guilty on a charge of obtaining money by false pretenses, by pretending to perform an operation.

Physician Guilty of Prescribing Narcotics.—It is reported that, early in May, Dr. Jacob L. Arbogast, Sacramento, was convicted on a charge of prescribing narcotics in violation of the state poison act.

Chiropractor Sentenced.—A news item from a Los Angeles paper states that "Dr." Sue Amack, woman chiropractor, convicted in May of treating the sick without a state license, is spending three months in the county jail.

Chinese Herb Specialist Fined.—Poo On, Chinese herbalist of Modesto, who recently completed a term of three months in the county jail and paid a fine of \$500, for practicing medicine without a license, is reported as having again been convicted on a similar charge.

Fined for Issuing Liquor Prescriptions.—It is reported that Dr. Rex V. Graves and a Dr. C. E. Cowles, Fullerton, were recently found guilty of illegally issuing liquor prescriptions. Each was fined \$300 and given a jail sentence of ninety days, the jail sentence being suspended.

Personal.—According to a statement of the county health officer, Dr. Margaret E. Farr forfeited her position in the Los Angeles County Health Office because of her loss of citizenship when she was recently married in New Mexico to Dr. James Hatuji Hara, a Japanese physician of Moneta.

Traveling Clinic for California Indians.—An elaborately equipped medical and dental clinic mounted on a motor truck has been sent to visit the remote California Indian tribes. The chief of each tribe will be asked to arrange for the treatment of all people who need medical aid and dental work. The clinic, which has been provided by the Indian Board of Cooperation and the United States Department of the Interior, will carry with it a physician and a dentist, and the California state departments have provided two nurses.

Hospital News.—According to an official announcement the new \$600,000 hospital for tuberculous veterans of the World War will be ready for occupancy in August. The new sanatorium will have a capacity for 310 patients.—The Roosevelt Hospital in Berkeley has passed into the control and possession of the Masonic Hospital Association and the name has been changed to King Solomon Hospital. The association has acquired additional land and plans to construct a new fireproof modern hospital unit which will greatly increase the capacity of the present hospital. Negotiations are under way for a hospital in San Francisco, and ultimately there will be a chain of hospitals throughout the state.—Excavation work has been started for the new county hospital to be erected by the county of San Mateo. It is expected that the hospital will be completed and ready for occupancy within one year.

CONNECTICUT

Hospital News.—The new hospital of New Haven, which is now being renovated and thoroughly modernized, will accommodate more than forty additional patients, when completed. Through the cooperation of the Yale University School of Medicine, a new laboratory for medical research is planned, and the hospital is also developing final plans for a four-story private ward, which will accommodate fifty-two patients and be thoroughly modern in every way.

Hartley Foundation.—Public health, mental hygiene and probation work, not only in Connecticut but also in other states, are the purposes announced by the Hartley Foundation, which was recently granted a special charter by the Connecticut legislature. The foundation held its first meeting, July 19, at Norfolk, and the founder, Mrs. Helen Hartley Jenkins, New York, was chosen president, and her attorney, Robbins B. Stoeckel, Norfolk, secretary-treasurer. Dr. Samuel A. Brown, dean of Bellevue Hospital Medical College, was made a member of the executive committee. The foundation was established in memory of Mrs. Jenkins' father, the late Marcellus Hartley, former head of the Remington Arms Union Metallic Cartridge Company, and the funds made available by Mrs. Jenkins are said to total several millions. The public health department of the corporation will put its facilities at the disposal of the state or any subdivision of it in case of epidemics or other emergencies. It will carry on mental hygiene work in connection with prisons, reformatories and other institutions.

GEORGIA

Cancer Quack Convicted.—Arthur Grenoble, according to reports, was convicted recently in Atlanta for practicing medicine without a license, fined \$500 and sentenced to serve twelve months on the chain gang and three months in the county jail. According to the report, Grenoble was tried on indictments returned in July based on complaints made by F. B. Freeman that Grenoble had been treating his wife for cancer. Grenoble declared the remedy used was of his own invention; that many people applied to him after doctors had given them up; and that in many instances he had effected partial cures. He claimed he had studied medicine in Worcester, Mass., and in France and that he was licensed to practice in Cuba but admitted he had no license in Georgia.

ILLINOIS

Personal.—Dr. Cecil R. Driskell, Raymond, was burned about the face and arms when a can of ether, which he was opening, exploded.

Clinic for Physicians.—The members of the DeWitt County Medical Association will be the guests, August 11, of the Peoria County Medical Society at the sanatorium of Dr. George Michell, near Peoria. Dr. Gaston LeBat, member of the staff of the University of Paris, will be the guest of honor.

INDIANA

Medical Meeting.—The physicians of the tenth district held a meeting recently, at the home of George Ade, the author. Drs. Peter S. Clark and Dean Lewis, Chicago, and John A. MacDonald, Indianapolis, were the speakers.

Sanatorium for the Insane.—The present Park Hospital, Wabash, which has been used in the capacity of a city institution for many years, will be converted into a private sanatorium to be used exclusively for the treatment of insane patients. Dr. Gilbert M. LaSalle will be in charge. The sanatorium will be open in the fall.

KENTUCKY

Itinerant Doctors Fined.—In the conduct of a campaign to prevent the practice of medicine in the state by traveling physicians, it is reported that the state board of health recently secured the conviction of Dr. Simon N. Jacobstein, a traveling optometrist, and of Dr. Roy Newell, a chiropodist, on the charge of practicing in counties in which they had not been licensed. Each man was fined \$50.

MARYLAND

Hospital Positions Given Hopkins Graduates.—Seventy-four members of this year's graduating class of the Johns Hopkins Medical School, in which are included eleven women, have been appointed to hospital positions. Of these, twenty-nine, including three women, were given positions at the Johns Hopkins Hospital, while forty-five others received appointments at other institutions throughout the country.

Preventive Measures Against Plague.—A report which has recently been submitted to the U. S. Public Health Service, after an investigation by Captain E. F. Allen, incorporates protective measures against bubonic plague outbreak in Baltimore. Recommendations are made with regard to changes in the harbor regulations and suggestions for the

rat-proofing of wharves and docks to protect the city against rats getting ashore from vessels coming from ports where the plague is endemic.

Personal.—Dr. André Gratia, a graduate of the University of Brussels, Belgium, with Mr. J. B. Devin, an architect of Brussels, and Mr. A. Goosens-Bara, of the Brussels Board of Public Hospitals, are in Baltimore inspecting the buildings at the Johns Hopkins Hospital. The results of the inspection and those made of medical institutions in other American cities will be incorporated in the Hospital of St. Pierre, a teaching hospital to be connected with the Medical School of the University of Brussels, which will be erected at a cost of about \$5,000,000.

Joint County Medical Meeting.—The medical societies of Allegheny and Garrett counties held a recent meeting in Grantsville. Dr. William S. Gardner, Johns Hopkins Hospital, discussed the subject of gynecology, Dr. Albert Keidel, also of Johns Hopkins, the treatment and prevention of syphilis, and Dr. John J. Donovan, Baltimore, discussed leading questions of the day, including the Sheppard-Towner bill, his views on the measure being unanimously endorsed by the association, which passed a resolution protesting against the passage of the bill.

New Ruling for Fees at the Johns Hopkins Hospital.—The Board of Trustees of the Johns Hopkins Hospital has issued a dictum fixing the maximum fee for an operation in the hospital at \$1,000 and the maximum charge for attending a patient in the hospital at \$35 a week. It applies only to the part-time professors and their assistants in the medical school, and those physicians and surgeons of the Johns Hopkins staff who practice at the hospital. The full-time professors and members of their staffs are not affected, because all fees received by them go into the William H. Welch fund and are distributed to the various full-time departments.

MINNESOTA

School for Tuberculous Children.—Schoolchildren in Minneapolis who are tuberculous will receive medical treatment and their education at the same time, as the result of the establishment of Lymanhurst Hospital School. According to a statement of the city health commissioner, this is the first school to be provided for educating tuberculous children barred from the public schools by state laws.

MISSOURI

Petition Against Medicinal Beer.—A petition asking that the manufacture and sale of beer for medicinal purposes be prohibited has been signed by 100 Missouri physicians and forwarded by the Missouri Anti-Saloon League to Washington for presentation to the federal prohibition director.

Medical School to Be Enlarged.—St. Louis University is erecting a new building, 50 by 200 feet, three stories high, as an extension to the medical school. Accommodations will be afforded for the library, reading room, administration offices and the laboratories for physiology, pharmacology and histology. In addition to this the old building is being remodeled so as to give more adequate accommodations to other departments.

MONTANA

Appointment of Health Officers.—The board of county commissioners has announced the appointment of Dr. George A. Fusom, Kalispell, as full-time health officer for the year, beginning August 16, and also the renewal of the contract with the city and government providing for the continuance of the board of health for another year.

NEW YORK

Poliomyelitis Increases.—According to a special bulletin issued by the state department of health, July 28, the number of cases of poliomyelitis reported to the department during the first twenty-seven days of July was twenty-five, a greater number than has been reported during any July since the epidemic of 1916, and an increase over the number of cases previously reported during the year. While the department does not view present conditions with alarm, it has sent a letter to health officers requesting them to be on the lookout for suspicious cases and offering the services of consulting diagnosticians in doubtful cases.

Personal.—Dr. Frederick W. McSorley, formerly supervisor of tuberculosis hospitals, clinics and dispensaries in

the New York State Department of Health, has been appointed director of the division of tuberculosis to succeed Dr. Malcolm Lent, resigned.—Dr. McSorley's successor as supervisor of tuberculosis hospitals is Dr. Lyman Thayer of the Albany Hospital Tuberculosis Sanatorium.—Dr. Elsie Blanchard, formerly supervisor of child welfare centers in the division of child hygiene, New York State Department of Health, has been appointed acting director of that division.—Dr. Charles C. G. McGaffin, recently of Kings Park State Hospital, Long Island, has been appointed assistant superintendent at the New York City Children's Hospital and School, Randalls Island, New York City.

New York City

Deaths From Narcotics in New York City.—A report from the Chief Medical Examiner of the City of New York, for the years 1918-1921, shows that during this period there have been in this city 164 deaths due to narcotic drugs. Of this number sixty-five occurred in 1918, fifty-six in 1919, and forty-three in 1920. Morphin was responsible for the largest number of these deaths, 107 being attributable to that drug.

Business Men Raise Fund for Downtown Hospital.—About 200 of the business leaders of New York have formed a committee known as the Downtown Hospital Association to raise a fund of \$1,000,000 to build the second unit of Broad Street Hospital. The new addition which is now practically completed will nearly double the present 100-bed capacity of the hospital and give greater assurance of being adequate to meet the needs of lower Manhattan's population of 1,500,000 commuters.

Post-Graduate Hospital Has War Memorial.—A huge bronze war memorial has been set up in the Post-Graduate Hospital in memory of the medical officers, nurses and enlisted men who formed a unit from that hospital and served in the American Expeditionary Forces, France, which functioned under the unit name of Base Hospital No. 8, A. E. F., Savenay, Loire, France. Five members of the unit lost their lives in the service, and a gold star has been placed opposite the name of each of these.

Personal.—Dr. William C. Billings of the United States Public Health Service has assumed his duties as medical head of Ellis Island and director of inspection of immigrants for this port. He succeeds Dr. John W. Kerr, who has been transferred to the Surgeon General's Office.—Dr. Rosalie Slaughter Morton sailed for Europe on the *Mongolia* on July 29.—Dr. Fenton B. Turck and family sailed by the Mediterranean route on July 26 to spend two months in France and England.—Dr. Edmund L. Gros, head of the American Hospital in Neuilly, has arrived in this country.—Dr. David E. Hoag sailed for France, July 21.

Amendment to Sanitary Code Aids Enforcement of Narcotic Drug Regulations.—Amendments to the sanitary code affecting the handling of cocaine and opium were adopted by the New York City Health Department, July 26. Under the new provisions of the sanitary code violations are classed as misdemeanors and the power carried under the old state law, recently repealed, is restored to the police. The resolutions adopted by the board of health state that the unauthorized possession, sale, distribution, prescribing, administering or dispensing of either opium or cocaine is dangerous to the public health and a menace to the public welfare. Hashish also comes under the ban. Within the twenty-four hours following the adoption of these resolutions, the police department made fifty-one arrests.

OHIO

Auto Clinic for Suburban Towns.—During August and September, practical advice and instruction on the care of babies will be given mothers in ten towns and villages near Cleveland by the Babies' Dispensary and Hospital. An automobile truck completely fitted out as a baby clinic, in charge of trained nurses and physicians, will tour the country, and the service will be free.

PENNSYLVANIA

New Hospital for Steel Company.—A new and thoroughly equipped industrial hospital was opened, August 1, by the Cambria Steel Company at Johnstown. The old institution will be used as a receiving station. Equipment of the new building includes a roentgen-ray room and a room with rehabilitation equipment, installed on the recommendation of the chief of the medical department, Dr. John B. Lowman.

A nurses' home with accommodation for twenty-three nurses is also to be provided.

Philadelphia

Personal.—Dr. Francois L. Hughes has been appointed as supervising medical inspector in the bureau of health. He had been filling the place provisionally.—Dr. Percy E. Luecke of the Philadelphia General Hospital was the sole eligible for assistant resident physician of the Bureau of Hospitals.—Dr. George E. de Schweinitz, ophthalmologist, and Dr. John G. Clark, surgeon, will leave for Peking, China, August 18, to attend the installation of the new director of the Union Medical College, founded by the Rockefeller Foundation.

Pennsylvania Hospital to Be Rebuilt.—The Pennsylvania Hospital at Eighth and Spruce streets, the oldest and one of the largest in Philadelphia, is to be rebuilt in part. The new buildings in contemplation are a nurses' home, an outpatient building, a private patient building, a service building, and additions to the heating plant, laundry and laboratory. Collaborating with Daniel D. Test, superintendent of the institution and nationally known hospital authority, in the drafting of plans for the greater hospital is Dr. Sigismund S. Goldwater, noted sanitarian and former New York health commissioner. The cost of the project has not yet been estimated, but it will provide for most modern facilities and equipment, it is stated.

WASHINGTON

Graduate Medical Lectures.—Under the auspices of the University Extension Services, cooperating with the Washington State Medical Association and the Kings County Medical Society, there was held at Seattle, July 18-23, the fifth annual course of graduate medical lectures. The principal lecturers were Dr. Charles Franklin Hoover, Western Reserve University, director of medicine in the Lakeside Hospital, Cleveland; Dr. Carl A. Hamann, dean of applied anatomy and clinical surgery, Western Reserve University, Cleveland, and Dr. Harris Peyton Mosher, assistant professor of laryngology, and instructor in anatomy at Harvard Medical School, laryngologist of the Massachusetts General Hospital, and president of the American Laryngological Association.

GENERAL

American Association of Obstetricians, Gynecologists and Abdominal Surgeons.—The thirty-fourth annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held at the Hotel Statler, St. Louis, September 20-22, under the presidency of Dr. Henry Schwarz, St. Louis.

Tuberculosis Sanatorium.—The U. S. Public Health Service has published plans and specifications for a model sanatorium for tuberculous patients, especially ex-service men. These plans will be used in future service hospital construction. Provision is made for occupational therapy and for vocational training for selected patients.

American Chemical Society.—The fall meeting of the American Chemical Society will be held in New York, September 6 to 10. This will probably be the largest meeting of the American Chemical Society that has ever been held; the society will have as guests at this time about 300 or 400 British and Canadian members of the Society of Chemical Industry who will have held their annual meeting in Canada. A further reason for this being a large and successful meeting is the opening of the National Exposition of Chemical Industries, September 12, immediately after the close of the chemists' conclave.

Hospitalization Committee Makes Announcement.—Dr. W. C. White of Pittsburgh, chairman of the Hospitalization Committee of the Treasury Department, announced before a Senate committee this week that an additional expenditure of \$16,400,000 would be needed to construct and improve the government hospitals to assure proper treatment of war veterans. This sum, Dr. White testifies, was in addition to the appropriation already made by Congress amounting to \$18,600,000. He also stated that the report submitted to the President last spring by the special Dawes Commission was in reality a draft drawn by him and the other consultants of the Treasury Board on Hospitalization.

Conference of the Pharmacopeial Committee of Revision.—More than forty members were present at the conference held on the roof garden of the Bellevue-Stratford Hotel,

Philadelphia, July 1-2. It resulted in an advancement of the work of revision to a point far in advance of that which has been attained by any previous committee during its first year of work. Announcement was made of the authorization for translation into the Chinese language of the U. S. Pharmacopeia IX text, and also that research work on pharmacopeial problems by individual workers, on special request, may be released for publication. A committee was appointed to arrange for a conference on international standards.

Sanitary Work for National Parks.—Since great numbers of tourists now travel through the national parks in automobiles and camp out, the sanitary problem has greatly increased. At the request of the National Park Service, the U. S. Public Health Service has, since May 15, been sending engineers into Yellowstone, Mount Rainier, Yosemite and Grand Canyon Parks, for examination and protection of water supplies, disposal of garbage and sewage, inspection of milk and food and the way they are handled, and to provide for camp policing and sanitation. Malaria carrying mosquitos have been found in Yosemite Park, and special efforts will be made to eradicate them and keep them out of the other parks.

Personal.—At the meeting of the Medico-Chirurgical Society of Edinburgh, held July 6, Dr. Robert Tait MacKenzie, professor of physical education in the University of Pennsylvania, discussed the system of physical training carried out in the University of Pennsylvania, and in other American colleges and universities.—Dr. Bernard L. Wyatt, recently returned from four years' service in France, as associate director of the Commission for the Prevention of Tuberculosis, International Health Board, Rockefeller Foundation, has resigned from its medical staff to become director of health service with the Laurentide Company, Ltd., at Grand Mère, Quebec. The Laurentide Company plans to organize a modern health and welfare service for the employees of its paper mills and logging centers.

Prohibition Commissioner to Issue Beer Regulations.—Prohibition commissioner Blair has announced that he will make public within the near future the rules and regulations under which physicians will be permitted to issue permits and prescriptions for the use of beer for medicinal purposes. These regulations have been ready for his signature for some time, but have been held up pending the early passage of the Willis-Campbell anti-beer bill now in the Senate. Delay in the passage of the measure and recently a postponement in the legislation led the commissioner to the opinion that the prohibition bureau had already postponed too long putting into effect the terms of the law as it now stands on the statute books. Senator Moses of New Hampshire after this announcement was made introduced a resolution in the Senate requiring the Internal Revenue Commissioner to submit these regulations to the Senate so that they could be used in the Senate debate. The resolution did not meet with immediate approval.

Chaulmoogra Tree to Be Grown in This Country.—Prof. J. F. Rock, former president of the University of Hawaii and now an agent for the Department of Agriculture, has just returned from an extensive trip through the jungles of Siam, Burma and Assam where he has been studying the problem of foreign seed and plant introduction into the United States. After his arrival he announced that the introduction into this country of the chaulmoogra tree was assured and that a permanent supply of the oil for the treatment of leprosy is certain. He also brought back with him several specimens of the "taraktogenos" plant, the seeds of which have been sent to the various experimental stations of the Department of Florida, Maryland and California for germination. Within eight years enough fruit will be borne from these trees to initiate a domestic source of supply of chaulmoogra oil. Professor Rock declared on his return that the natives of the parts of Asia which he visited had been using the curative properties of the taraktogenos trees for centuries.

Agreement Reached on Sweet Bill.—An agreement has been reached in conference between the Senate and the House on the Sweet Bill establishing a Veterans' Bureau to administer to the needs of ex-service men. The measure has passed both houses of Congress. Instead of placing the Veterans' Bureau in the Department of Treasury it has been made an independent governmental agent under the direction of the President. According to the agreement between the conferees, the burden of proof, in all cases where mental and

tuberculosis patients are claimants, shall for two years be on the government. The amendment passed in the Senate for the abolition of the Federal Board of Vocational Education was rescinded and the board will continue in operation confining its work to promoting cooperation between the states and the federal government in vocational education. Another agreement provided that construction of hospitals for the Veterans' Bureau will be under the jurisdiction of the Treasury Department. The Senate amendment under which blind soldiers would be allowed \$50 per month for attendance, instead of \$20, was stricken out. The bill has been passed by both houses of Congress as a conference report and now goes to the President for signature. Its final enactment into a law means the end of Bureau of War Risk Insurance and all activities on the part of the U. S. Public Health Service in the assignment or disposition of disabled war veterans.

Congresswoman Denounces Sheppard-Towner Bill.—Characterizing the Sheppard-Towner Bill as "class legislation of sex," and denouncing it as possessing "paternalistic possibilities of incalculable danger," Miss Alice Robertson of Oklahoma, the only woman member of Congress, appeals to American women in an open letter, to use their influence to defeat the bill:

"To the American woman voter, as an individual:

"On July 22, by a vote of sixty-three to seven—twenty-six Senators absent—the United States Senate passed the bill variously known as the "baby," the "maternity" or the "Sheppard-Towner" bill. This bill is now pending consideration in the House. Its supporters assert that it has the undivided support of the women voters of America.

"I was one of those millions of conservative, home-loving women, who never asked to vote, who dreaded new and heavy responsibilities, but God in infinite wisdom placed upon us the burden of the suffrage. It matters not now whether we sought this duty or not, we cannot evade it, and from cowardice or indolence, we must not now fail our country.

CLAIMS BILL PATERNALISTIC

"It is your bounden duty, your inalienable right as an individual to know the real meaning of this bill. Send a postcard to your Senator or member of Congress or to me asking for a copy, and when you receive the bill, examine it carefully, see if it does not carry with it a power, small in its beginning and seemingly innocuous, but with paternalistic possibilities of incalculable danger. Ask other women about it, ask your husbands, your legal friends, and when you have made up your mind, tell us, your representatives in Washington.

"Remember, the political women who are supporting this bill, wishing the first test of their power in legislation to be a master stroke, have used the most touching and irresistible appeal that could be placed before a body of American men. Mothers of America, is this an insidious attempt to secure most dangerous class legislation—the class legislation of sex?

"I oppose this bill, basing my action upon the belief that my sister women have not been fairly dealt with, that even to the great hearted, sympathetic president, it has been claimed that the mothers want it and ask for it, when the vast majority know nothing of it.

"I have personally given more time, study and thought to this bill than to any other legislation now pending; that has been my duty as the only woman who would have a right to lift her voice either for or against, as a national law-maker desiring to be prepared when this fateful issue comes, to speak for the women in humble homes whose toil is glorified by love of husband and babies.

"If in your judgment this legislation is unnecessary for the reason that the family, the community, the municipality and the State, understanding local conditions, can care for their own without national mandate or espionage, say so."

LATIN AMERICA

Merida Branch of Mexican Medical Association.—A branch of the Mexican Medical Association was organized at Merida, June 27, 1921. The secretary of the local society is Dr. Narciso Souza.

Personal.—Drs. C. E. Paz Soldán and G. Fernández Dávila, prominent Peruvian physicians, have returned to their country from a trip to Europe. On their way they stopped at Havana.—Friends of Dr. Martín Alvizu of Carora, one of the prominent physicians of the western part of Venezuela, organized a committee to celebrate, July 19, 1921, the twenty-fifth anniversary of his graduation.

Medical Society of Bahia.—At its last meeting the Medical Society of Bahia, Brazil, elected the following officers: honorary president, Dr. A. Pacifico Pereira; president, Dr. L. Pinto de Carvalho; vice president, Dr. C. O. Ferreira de Moura; secretary general, Dr. E. Diniz Gonçalves; first secretary, Dr. A. Froesda Fonseca; second secretary, Dr. E. Vidal da Cunha; and treasurer, Dr. J. de Aguiar Costa Pinto.

Centennial of Argentine Medical Statesman.—June 25 was the centennial of the birthday of Dr. Guillermo Rawson of Buenos Aires, eminent as a hygienist, physician and states-

man, and a series of memorial meetings were held at the Academia de Medicina and elsewhere, with addresses by delegates from the University, from the government of Chile, the Argentine Antituberculosis League, women's clubs and from the school and hospital named in his honor. The Buenos Aires daily, *La Prensa*, also organized a public meeting to pay tribute to the memory of Professor Rawson.

Graduate Course in Argentina.—Courses in anesthesia as adapted for general practice, courses in children's diseases, in embryology, in women's diseases, and in chemical analysis in its application to the clinic were held at Buenos Aires in July, with leading specialists in charge. A similar set of courses is to be organized for next January. Attendance at each course is restricted to ten physicians, and a certificate of attendance is given. Each course consists of from six to ten eminently practical lectures and demonstrations, at the rate of 10 pesos per lecture, paid when registering. These courses are proving extremely popular among physicians from all over Argentina.

Personal.—Dr. M. Cantillo, professor of pathology at the University of Bogotá, Colombia, has been given a long leave of absence to recover his health. Dr. A. Garcés is serving during his absence.—The University of Rio de Janeiro has conferred honorary degrees on Dr. G. Aráoz Alfaro of Buenos Aires and Dr. A. Ricaldoni of Montevideo.—Dr. William Sharpe of the Polyclinic Medical School of New York has been in Rio de Janeiro, giving two lantern talks on the indications for and the technic of surgery of nerves. He is intending to visit Argentina and Chile.—The thirty years of service of Dr. Franco da Rocha at the Hospicio de Juquery and his long term as professor of psychiatry at S. Paulo, Brazil, were celebrated by his assistants and others recently.—A gold medal was recently presented to Dr. Rayneri of Havana on the occasion of his fiftieth professional anniversary.

FOREIGN

International Conference on Sexual Reform on Scientific Basis.—One day of the conference, which is to be held at Berlin in September, is to be devoted to discussion of the internal secretions from the standpoint of sex. The Institut für Sexualwissenschaft has organized the conference. The discussion on the endocrine system is to be opened by Biedl of Prague, Lipschütz of Dorpat, and Weil of Berlin.

International Medical-Anthropologic Social Academy.—This institution has been founded at Naples by the professors connected with the University Institute of Criminal Anthropology. Prof. A. Zuccarelli is the president, and Profs. G. Corrado and E. Ardizzone, vice presidents. A journal is to be issued, entitled *L'Anomalo*, for propaganda purposes, and public conferences are to be held for the education and warning of the public.

Token of the Gratitude of France.—The *Presse Médicale* for July 13 gives the latest list of physicians presented with the Médaille de la Reconnaissance Française. They are all Belgian, Danish or Roumanian except Dr. Richard Haven who was medical emigration officer at Genoa until 1915 when he tendered his services to France and served at Etaples, Neuilly and in French military hospitals until 1918. Also Dr. Juan Henrique, of Cuba who served as physician to the French embassy at Santiago and the consulate at Valparaíso and examined all the French there summoned to the colors.

British Medical Association.—The annual meeting of the association was held, July 15-23, under the presidency of Prof. David Drummond, at Newcastle-on-Tyne. On the occasion of the president's address, July 19, the gold medal of the association was presented to Sir Dawson Williams, editor of the *British Medical Journal* since 1898, in recognition of his services to the association and the medical profession.—The consent for universal postmortem examinations was strongly advocated by the president of the association. Inquiries at London hospitals showed that postmortems were held in about 70 per cent. of the cases which terminated fatally there. But in every case it was necessary to obtain the consent of the next of kin of the deceased.

Legislation Against Birth Control in France.—A law went into effect in France, July 31, 1921, penalizing attempts to induce abortion and attempts at propaganda for birth control. A Paris journal, *Le Parlementaire*, published Oct. 9, 1920, a first-page article protesting violently against this law, declaring that a woman's internal organs belong to her alone as much as her hair and her hands, and that until society is ready to care for the mother and the child and

insure their support, it has no right to forbid birth control. The article was not signed, but the authorities brought suit against the editor and general manager of the journal and they were condemned. The *Gazette des Hôpitaux* gives the details of the suit and the outcome, but does not mention the penalty enforced. The law provides for imprisonment for from six months to three years.

Tribute to Professor Fredericq.—Prof. Léon Fredericq retires this year from the chair of physiology at the University of Liège, and his pupils and other friends have prepared a souvenir volume with contributions from scientists of many lands to be presented to him, and a tablet with his portrait in bas relief is to be unveiled at the Psychology Institute. The ceremony will take place in November, 1921. All subscribing 30 francs (Belgian) will receive a bronze replica of the tablet. A large committee is in charge, including Nolf, Béco, and others, with Dr. P. Lelava, 8 rue du Batty, Cointe, Liège, as treasurer. Professor Fredericq is a member of numerous scientific societies in Belgium and elsewhere. His scientific research has aided materially in the progress of biologic sciences in the last fifty years, and the list of his publications is a very long one. He will be 70 on August 24.

Efforts of the Germans to Establish a Council on Pharmacy and Chemistry.—THE JOURNAL mentioned Dec. 25, 1920, that the organized internists of Germany had resumed their efforts to gather and disseminate information in respect to pharmaceuticals, similar to the work of our Council on Pharmacy and Chemistry. As mentioned then, they have made several attempts in this line, but none were carried far. The present attempt is now said to be halting on account of lack of funds. The urgent appeal to the authorities and the profession has resulted in the collection of only 29,477 marks. The German weeklies say that this is entirely inadequate for investigating the proprietaries as intended, but it will pay the expenses of an information bureau. This is now organized and will be continued as long as the funds hold out. If the profession finds useful the opportunity thus afforded for obtaining information in regard to proprietaries, the medical organizations may guarantee regular contributions to maintain this bureau.

The Medical Congresses of the Northland.—Helsingfors was the scene in June of a number of Scandinavian medical congresses. Among them was the Tenth Northland Congress on Internal Medicine with Prof. R. Sievers in the chair. Treatment of visceral syphilis and of neurosyphilis was the main topic for discussion. Some of the speakers advocated small doses of mercury and potassium iodid, not aiming to destroy the virus but to realize a catalytic action. The discussion on diabetes was mainly from the standpoint of roentgen differential diagnosis of constitutional disease. The next congress is to be held at Christiania with Prof. P. F. Holst as president. The main subject appointed for discussion is the diagnosis and treatment of disturbances traceable to the thyroid. The Second Conference of Tuberculosis Specialists appointed a committee to decide on a graphic method of recording stethoscope findings, Bang, Sømme and others extolling the advantages of their individual methods. Bang's method is in general use in Denmark. The *Ugeskrift for Læger* gives a brief account of these meetings.

Deaths in Other Countries

Dr. Domingos de Góes e Vasconcellos, professor of surgery at the University of Rio de Janeiro.—Dr. F. Vermehren, a leading clinician of Copenhagen.—Dr. J. Egydio de Carvalho, of S. Paulo, Brazil, secretary of the medical school and chief of the gynecologic service at the Santa Casa Hospital.—Dr. E. F. Pla, director of the preparatory school at Havana.—Dr. T. H. MacGillavry, formerly professor of physiology and histology at the University of Leyden, aged 85.—Dr. V. Lang, professor emeritus of the University of Vienna, recently president of the Academy of Sciences.—Dr. W. Schüle, a Berlin obstetrician, aged 73.—Dr. R. Mignot, at Paris, and Dr. Roume, assassinated on an express train on his way to Bordeaux.

CORRECTION

Basal Metabolism.—In the article by Dr. H. S. Plummer, THE JOURNAL, July 23, page 244, in the second and third paragraphs of the first column, the word "grams" has been substituted for "grains" in the phrases, "150 gr. desiccated thyroid," "20 gr." and "250 gr. desiccated thyroid has not caused any reaction."

Federalization of Medical Regiment.—In THE JOURNAL, July 23, page 293, it was stated that the One Hundred and Second Medical Regiment was the first to be organized and federalized. We are informed by Lieut.-Col. E. E. Persons that the One Hundred and Twelfth Medical Regiment, which is a part of the Ohio National Guard, was organized and extended federal recognition, May 17, 1921, or two months prior to the recognition of the One Hundred and Second Regiment in New York.

Government Services

Conference of Health Officers on Pellagra

As a result of reports made public by the U. S. Public Health Service of the spread of pellagra in the South, President Harding has instructed Surgeon-General Hugh S. Cumming to call a conference of the thirteen state health officers. The meeting will be held in Washington on August 4. The states to be represented are Texas, Louisiana, Oklahoma, Arkansas, Tennessee, Mississippi, Georgia, Alabama, Kentucky, Florida, North and South Carolina and Virginia. Quite a controversy has arisen as a result of the reports issued by the U. S. Public Health Service concerning the existence of a famine among the tenant farmers. Southern senators and congressmen have vigorously denied these serious conditions and claim that the number of cases of pellagra is no larger than usual. They also repudiate the stories that there is not plenty of food for the small cotton farmers. Representative Byrnes of South Carolina introduced a resolution in the House of Representatives requesting that the President submit to Congress all information and data available on the subject. President Harding replied to this resolution by making public a letter he had written to Representative Byrnes in which he stated that authentic reports had come from southern states regarding pellagra and that the government was taking action as a precautionary measure to prevent the spread of the disease.

Retirement of Colonel Crosby

Col. William D. Crosby, M. C., U. S. Army, has been placed on the retired list of the Army. He has been stationed at Jefferson Barracks, Mo. He is a native of Massachusetts, but was appointed to the Medical Corps of the Army in December, 1883, from New York. He has held the rank of colonel since December, 1912.

Interns in Army Hospitals

Announcement was made at the Surgeon-General's Office of the Army that because of the lack of appropriations made by Congress all interns taken in and now on duty at Army hospitals could not be guaranteed commissions in the Medical Corps. Reduction in the size of the Army by Congress has resulted in a surplus of 121 medical officers and no new officers will be commissioned until this number is reduced by absorption and by death and by retirement. The twenty interns now studying in the Army hospitals throughout the country have been notified that the present situation makes it impossible to reward them with a commission at the end of their year's course. Surgeon-General Ireland, however, declared that the Medical Department would continue to accept students as interns up to the limit allowed by the law with the understanding that they have no prospects of a commission on graduation.

Graduation of Medical Officers

The first class of U. S. Army student officers—numbering sixty-three, and of all ranks from second lieutenant to colonel—that have received instruction in field service activities at the Medical Department Field Service School, Carlisle, Pa., were graduated, July 19. Brig.-Gen. Walter D. McCaw, Medical Department, U. S. Army, delivered an address, and Col. Percy N. Ashburn, commandant of the school, presented the diplomas. Another class of students entered the school, July 24.

Foreign Letters

PARIS

(From Our Regular Correspondent)

July 8, 1921.

American Nurses' Memorial Home

A very impressive Franco-American ceremony took place recently on the Bagatelle estate at Talence, near Bordeaux, in honor of the dedication of the Memorial Home of the Florence Nightingale school, which is an annex to the Protestant Sanatorium of Bordeaux. This sanatorium was founded in 1863 to furnish medical attention to the sick foreign officers and sailors stationed in the port of Bordeaux. The origin of the Memorial Home dates back to the time of the war, when approximately 20,000 American nurses came over to take care of the wounded. Of this number, 294 died, martyrs of their devotion, and are buried on the European continent. The committee of the American Nurses' Association decided, after the armistice, to erect a memorial in their honor, and to obtain the necessary funds they asked each nurse to contribute one dollar. A total of 800,000 francs was collected. The memorial took the form of a home for nurses to be erected in France. A site in Bordeaux was chosen by the committee for its erection. It was decided to make the Memorial Home an annex to the Florence Nightingale Training School for Nurses of Bordeaux. Admiral Magruder, naval attaché at the American embassy in Paris, presided at the dedication ceremonies. He thanked in warm terms the Protestant Sanatorium, which for more than half a century has taken care of American sailors in Bordeaux and also treated them during the war. The American torpedo boat *Child 241*, under the command of Admiral Niblack, had been stationed in the port of Bordeaux in honor of this ceremony, in which seven of his officers and fifty of his sailors took part. Major Wadsworth was the representative of the American army. Among other American notables present I may mention: Colonel Olds, American Red Cross commissioner for Europe; Dr. Emerson, chief surgeon of the American Red Cross; medical delegates of the Rockefeller Foundation; the American consul in Bordeaux, and among American nurses: Miss Gardner, head of the visiting nurses of Providence; Mrs. Mary Breckenridge, Miss Evelyn T. Walker and Miss du Sautoy, directors of child welfare and of the American committee of visiting nurses for the devastated regions of France. The corner stone of the Memorial Home was laid by Miss Hay, formerly superintendent of the Illinois Training School for Nurses, and, at the present time, head nurse of the American Red Cross in Europe. The *Concours médical* contained a long editorial on the dedication of the Memorial Home, in which it stated that it was pleased to devote space to this subject not only because of a desire to give this recognition of all the good that the Americans have done and are still doing in France, but also because the foundation of the Memorial Home in honor of American nurses who died at the post of duty serves as an example and a lesson for us physicians, since we are still casting about for a plan to honor in a worthy manner our own dead.

Regulation Concerning the Delivery of Milk in Paris

As I have mentioned in previous letters, France has much to learn from the United States in matters of hygiene. We are somewhat behind in this matter, we must admit, and this is mainly due to our tendency to individualism. No sooner is a new hygienic measure proposed, than protests begin to arise declaring that the measure will work a hardship on certain interests. Further proof of this fact was in evidence when the question of regulations governing the

delivery of milk in Paris came up. It very often happens that milk destined for Paris consumption is delivered in a watered or impure condition. One common cause for complaint that frequently gives rise to court proceedings and attracts particular attention is the delivery of milk in open cans at the doors of milk shops. Between 4 and 5 o'clock in the morning, after the arrival of milk trains, the milk trucks deliver the retailer's supplies at his door, in one or in several cans of 10, 20, 30 or 50 liters, whatever he may have ordered. If the order calls for 20 liters or a multiple of twenty, the cans are delivered full and are closed. When the order calls for another amount, the quantity exceeding 20 liters or its multiple is delivered in a partly filled, open can. Under such conditions what guarantee has the public that some one may not take a certain amount of milk from the partly filled can and try to conceal his theft by adding a like amount of water, taken from whatever source is convenient? The dangers of such a system are obvious. Hygienists, and those concerned about the public health and especially young children, feel that they have cause to be solicitous. However, when Monsieur Joseph Denais, a member of the city council, requested the prefect of police to issue an order that no delivery of milk be made to retailers without being put in cans sealed by the producers, the prefect of police told him that, as desirable as such a measure seemed to him, it would be difficult to enforce, because it was the regular practice of the wholesalers to deliver milk in 20 liter cans only. Fortunately, Denais was not to be discomfited by this argument, and figuring that it is the privilege and duty of public authorities to intervene in such grave matters, he induced the municipal council to pass a resolution requesting the government to pass a law forbidding, three months from the date of its enactment, that any quantity of milk whatsoever shall be brought into Paris and delivered to wholesalers or retailers except as it shall be in closed and sealed containers.

Cardiac Organotherapy

In one of my previous letters to THE JOURNAL I mentioned an interesting communication by Dr. Martinet concerning cardiac organotherapy. Dr. Louis Rénon, professor in the medical department of the University of Paris, has also reported to the Academy of Medicine the excellent results he has secured with cardiac organotherapy, which he has been using for the last ten years. With a preparation consisting of powdered whole ox heart, Rénon states that he obtained noteworthy results (when its use was sufficiently prolonged) in chronic cardiac insufficiency with myocardiac degeneration, especially in left cardiac insufficiency accompanied by extrasystolic arrhythmia. It was administered in doses of from 0.5 to 1 gm. per day, which represents from 2 to 4 gm. of fresh myocardium. Some patients have been subjected to this medication for several years. Rénon uses it in conjunction with all other cardiac remedies such as digitalis, spartein, strophanthus, *Cecropia peltata*, ouabain, *Adonis vernalis*, hawthorn flowers, etc. Cardiac organotherapy is a type of supplementary medication, which combines with all other forms of medication and constitutes the basis of the treatment. The therapeutic effect manifests itself especially in diuresis, the abatement of dyspnea, the extrasystolic intervals and regularity of the pulse. If ingestion becomes impossible on account of being followed by vomiting and in case it is necessary to obtain quick action, Rénon resorts to injections of a lipoid-free extract of ox heart dissolved in physiologic sodium chlorid solution and heated to a temperature of 100 C. This partial extract given in the form of injections has not the same therapeutic value by weight as the powdered whole heart administered by ingestion; larger doses are therefore required. On the other hand, Dr. Fiessinger has used cardiac organotherapy in treating three patients but

without the slightest success. One patient was suffering from permanent slow pulse and the other two from insufficiency of the right cavities in connection with a mitral lesion.

Work of the Pasteur Institute During the War

Dr. A. Calmette, assistant director of the Pasteur Institute, has just published in the *Revue d'hygiène* an interesting article on the work of the institute during the war. The most important feature to be mentioned is the activity shown by the service of serotherapy. In July, 1914, the Pasteur Institute owned 273 horses. In time of peace about 80,000 vials of various serums were produced monthly, and the institute had in refrigerators a stock of 1,158 liters of diphtheria antitoxin and 1,434 liters of antitetanic serum. From the very first day after mobilization; that is, after most of the personnel had joined their respective regiments, demands for serums began to pour in, and especially for antitetanic serum, the production of which had to be stimulated, and at the same time, in order to meet the pressing needs of the French and allied armies, the preparation of antidysenteric, antimeningococcic, antipneumococcic, antistreptococcic, antiplague, antivenom and antigangrene serums was begun. A few other serums also became necessary for bacteriologic serodiagnosis (typhoid fever, paratyphoid A and B, cholera, Malta fever, etc.). As the supply of bottling machines was not equal to the demand, new ones had to be installed. For a period of several weeks, it became necessary to organize night shifts, and Sundays and rest days were eliminated for the time being. The number of horses increased up to 1,462. Thus, from August, 1914, to the end of 1918, 6,000,000 doses of serum were produced for France alone, 3,700,000 doses being delivered gratuitously to the army and to the public charities. This represented a value of approximately 10,000,000 francs that the Pasteur Institute contributed from its resources to the common fund for national defense. In addition to this, nearly a million doses were furnished to Italy, 10,000 to Serbia, 70,000 to Belgium, 40,000 to Roumania and 800,000 to the American army and the American Red Cross. At the time of the German offensive in March and April, 1918, the Pasteur Institute was able to furnish 20,000 vials of antitetanic serum per day. Some serums that were manufactured only in small quantities before the war became particularly useful in warding off epidemics among the allied troops on all fronts. Thus 390,000 vials of serum against cerebrospinal meningitis and 518,000 vials of serum against bacillary dysentery were furnished by the Pasteur Institute.

BELGIUM

(From Our Regular Correspondent)

Liège, July 7, 1921.

Supplemental Indemnity for Belgian War Wounded

On account of the present high cost of living in Belgium, and acting on a suggestion from the minister of national defense, the government has granted an additional indemnity or bonus to the war wounded. Heretofore 100 per cent. disability entitled a veteran to a pension of 3,600 francs. According to the new regulation, disabled men are granted increases to their pensions as follows: for from 60 to 65 per cent. disability, 15 per cent. increase; from 80 to 86 per cent. disability, 20 per cent.; from 90 to 95 per cent. disability, 25 per cent., and for 100 per cent. disability, a 30 per cent. increase.

Belgian Relief for Russian Refugees

At the request of Monsieur Depage, the Belgian relief committee for the civilian population of Russia has furnished the international committee of the Red Cross a list of the goods forwarded by the relief committee to Russian refugees in Constantinople and neighboring countries in November,

1920, and April, 1921. The first shipment (November, 1920) comprised drugs, vaccines, serums, ampules, surgical instruments and accessories, amounting in value to 177,977 francs. The second shipment was made up of clothing, dry goods, soap, sewing machines, bed linen, flannel goods, pencils, paper, pins, combs, barber's clippers, hammers, nails and kitchen utensils; also condensed milk, desiccated milk, meat extracts, egg powder, etc., amounting in value to 241,196 francs and sufficient to supply the needs of 2,000 men, 1,000 women and 400 children.

Increase of Pension for Tuberculous Soldiers

According to the pension laws, whatever may be the date of the final granting of their pension, soldiers suffering from tuberculosis of the lungs are entitled to demand an increase of pension if their condition becomes aggravated. The percentage of disability shall be determined according to the seriousness of the infection from which they are now suffering. Those concerned will be able to obtain an increase of pension corresponding to the difference between the percentage of disability then present and the percentage that served as a basis for the granting of the pension. This increase of pension will be granted for one year, subject to the same conditions that govern temporary pensions, and will consequently be renewable. In determining the percentage of disability, the medical examiner will base his decision on the lung lesions, the functioning of other organs and their influence on the applicant's earning capacity. Tuberculosis of slow evolution, with satisfactory general condition, indicates from 25 to 50 per cent. disability; pulmonary tuberculosis with marked stethoscopic manifestations affecting manifestly the general condition, 100 per cent. disability; advanced tuberculosis of the lungs and acute tuberculosis, 100 per cent., and sequels of cicatrized pulmonary tuberculosis, from 5 to 25 per cent.

Holland's National Health Insurance Bill

The importance that attaches to the general question of social insurance lends peculiar interest to the lively discussion taking place in Holland in connection with the proposed law pertaining to health insurance. The bill seems to be viewed with favor by the general public and also by the medical profession. If the bill becomes a law, it will guarantee medical care not only to the workingmen, who, according to the law of 1913, must be insured in the health insurance societies, but will include every one whose income does not exceed a certain limit. It also provides medical care for all members of the family of the insured. Health insurance funds shall never become dividend producing. Medical care will not be refused even though the insured is to blame for the sickness. The choice of the family physician will be permitted within certain limitations. Fees will be paid by the insured at regular intervals on a capitation basis. Free choice of specialists is allowed in the main, with payment for each service rendered. It is to be distinctly understood that any obligations binding physicians to a given health insurance society shall never be construed as constituting a dependent relationship whereby the principle of "free choice" shall be transformed into that of regularly "employed physician." But free choice of physician shall not be taken to mean that patients may change physicians every day. Aside from exceptional cases, patients shall not change physicians oftener than once or twice a year. To prevent abuses a certain control will also be exercised over the choice of specialists. The capitation fees and the maximal number of insured persons to each physician will be fixed by definite regulations. The income limit for health insurance; that is, the limit under which all must be insured, will doubtless be placed at 2,500 florins (\$766.25). The maximal number of insured persons to each physician will probably be 4,000 and

the fees will amount to 4 florins (\$1.23). This figure as fixed by the minister will constitute naturally only a minimum. The physicians' fees must be settled by mutual agreement between the administrators of the funds and the medical organizations, and it is likely that the rate will be higher in the large cities. The range of medical attention guaranteed by the proposed legislation is extensive. It includes, besides ordinary treatments and medical care: treatments by specialists (either office consultation or in the home); dental care; confinements (with midwife or, if need be, a physician), and hospital care (hospital, sanatorium, asylum). The best and most modern methods must be used in all cases (roentgen rays, laboratory examinations, isolation of those suffering from contagious disease, disinfection, proper mode of transportation of patients, etc.). Naturally the plan will entail a very heavy expense. The government will bear a portion of the expenses incurred by all the health insurance societies, irrespective as to whether self-created, established by physicians, communes, or otherwise, provided the conditions stipulated by the terms of the bill have been complied with. The state will allow 0.75 florin per person insured for administration expenses. It will pay a portion of the expenses incurred for hospital and special treatments, and it will give financial aid in the initial organization of societies. The government will also grant subsidies to certain authorized therapeutic establishments that will admit for treatment under certain conditions patients insured in an authorized health insurance society.

MEXICO CITY

(From Our Regular Correspondent)

July 24, 1921.

Plague Outbreak at Tampico

Plague has appeared at Tampico, the oil port. Since March 19, when the first case was recorded, to July 16, 164 cases of the disease have been reported with 108 deaths, i. e., a death rate of 65.85 per cent. The epidemic seems to be under control, since in the last three weeks there have been reported only three, nine and two cases, respectively, with no deaths. This outbreak is attributed to the fact that for one reason or another the deratization measures instituted last year, when plague prevailed at Vera Cruz and one case occurred at Tampico, were not applied with the necessary amplitude to control the disease. The personnel in charge has been much increased, a weekly total of rodents ten times as large as before has been caught, and antiplague vaccination, a measure on which our authorities place great dependence, has been enforced. In view of the tact and competence shown last year by Dr. Carl Michel of the U. S. Public Health Service in the antiplague campaign and as adviser *ad honorem* to the Mexican Public Health Department, the United States government was requested to send him again to cooperate in the antiplague campaign. This request was granted by the American government, and on this account we have had the pleasure of seeing again among us Dr. Michel, who is already at work in the invaded port.

Yellow Fever

As might be expected, when we keep in mind the cases of this disease reported in Mexico during the last two years and the first months of this year, as soon as warm weather began, new cases were reported; but the interesting feature has been that none of them were found in the towns where campaigns have been conducted against mosquitoes, all the cases occurring in the small towns where no such work had been carried out. For instance, in the oil camp called Alamo there were eight cases and eight more at Cosamloapam. Of the first, one was transferred to Tuxpam, and of

the others, three went to Vera Cruz, but in neither town have any yellow fever cases occurred. This fact has all the validity of an experiment according to Dr. Bert W. Caldwell, who thinks that, owing to the antilarval measures carried out and while the mosquito index is kept as low as at present, these places will be free from yellow fever. It may be added that as soon as these cases and the one at Alvarado were reported, the department of public health, with the valuable cooperation of the representatives of the International Health Board, extended the antimosquito campaign to the infected places.

Personal

Dr. T. C. Lyster, director of the International Commission against yellow fever, has returned to Los Angeles after spending a few days in Madrid.—Dr. E. I. Vaughn, a member of the same commission, who has been in Guatemala, arrived in this country to assist in the yellow fever campaign.—Dr. G. Mendizábal, president of the Mexican Medical Association, has returned to this country after a trip to the United States, where he visited Boston and other Eastern towns.—Drs. R. Silva and G. Díaz Lombardo, president of the Academy of Medicine, have been appointed members of the superior board of health.—Dr. F. Castillo Nájera has been appointed managing editor of the *Heraldo de México*, an important political journal.—Drs. J. T. Rojas, professor of the School of Medicine, and J. L. Torroella and Mr. D. T. Iglesias, a pupil of the medical school, have left for Spain to engage in graduate medical work; the last mentioned will complete his course in the Central University of Madrid.—Drs. R. Santa Marina and C. Guajardo have left for Brussels, where they will act as Mexican representatives in the Infant Welfare Congress.

BERLIN

(From Our Regular Correspondent)

July 4, 1921.

Blind Men as Factory Workers

Moving pictures have been presented of late that show, in a surprising manner, how extensively blind men can be utilized in large industrial plants. The most dangerous and complicated maneuvers about the machines are mastered with a skill and an adroitness that are astonishing. We have here an example of the not at all uncommon phenomenon that organic defects are compensated for, and even overcompensated, by the enhanced capacity of other organs. Professor Silex, the Berlin ophthalmologist, was the first to hit on the idea of putting to a practical test the afore-mentioned law of adaptation and compensation and to use blind men as factory workers in the industries. The Siemens-Schuckert Works in Siemensstadt, near Berlin, were among the first to enter into the plan. The unfortunate victims of the war (for they were, for the most part, the ones concerned), thrown out of their former sphere of activity as citizens, soon developed greater interest in machine work, which kept their minds and bodies constantly employed, than they had shown for the monotonous work of brush making or chair weaving in the reeducational institutions for the blind. Then again, it soon became evident that the lack of distraction (for surrounding distractions are always sure to affect considerably the rate of production of the seeing workman) was a factor favorable to the application of the blind. So, in the course of time, cases arose in which the earning power of the blind machine-worker was not only much greater than his former earnings by ordinary manual labor, but even exceeded the performances of his fellow workmen who were gifted with sight. The example set by the Siemens-Schuckert Works soon found emulators, and today blind men are employed in almost all the larger industrial plants of Germany, where they do the

most complicated kinds of machine work. It has been found feasible to use blind men in the manufacture of electrotechnical apparatus, the tobacco industries, ceramics, and candy and paper-box factories. The onlooker is for the moment astounded to see a man who is entirely bereft of sight operate a rapidly rotating circular saw, and with this dangerous machine manufacture an almost countless number of glass rods. Or, blind men may be seen operating drilling machines in connection with the manufacture of optical instruments, watches, machinery and various instruments; occasionally they are in charge of two machines, both in operation. It is an interesting fact that not only the blind men adapt themselves to the machines, but also the machines are fitted with safety appliances or accessory parts in order to make them more adaptable to the use of blind men. The supplying of accessory parts becomes particularly necessary when the workman has lost not only his sight but some other organ as well. For example, a blind man who has lost one arm becomes able to operate a thread-cutting machine by the substitution for the ordinary lever of a wheel that is operated by foot by means of a wire cable.

Induction of Temporary Infertility by Injection of Semen in the Blood Stream

In an article in the *Umschau*, R. Dittler discusses the question as to whether the union of the female ovum with the male germinal cell and the development of the impregnated ovum by the secretions of the tissue can be artificially influenced. There are two possible routes to be considered. The one has to deal with the glands of internal secretion and the possibility of changing their activity by bringing certain definite influences into play. The other method is concerned with the production of defense substances in the blood stream (as in other forms of protective vaccination), whereby an influence is exerted on the fecundation process. It is the latter method that Dittler discusses more particularly. He endeavored to render female rabbits unsusceptible to spermatozoa by the injection of living germinal cells. That the blood of animals that has been previously treated with a suspension of germinal cells exerts an injurious influence on spermatozoa of the same species, has been shown by Metschnikoff and Landsteiner, as well as by a number of other investigators. But in their experiments it remained an open question whether such a protective effect toward spermatozoa would become manifest in connection with the act of copulation.

By using not only the semen but also an extract from the whole testis, former investigators secured, as did Dittler, temporary sterility. However, because of the use of the extract, their experiments did not lead to sufficiently clear results. In his experiments, Dittler used rabbits of various kinds, but always couples that had produced young at least once, and of the females he chose those that had not only readily conceived but also carried their young to term. Pure seminal fluid served as the causative agent for the formation of the defense substances. The seminal fluid was secured by causing a female to be covered in which the first portion of the uterus had been ligated, after which copulation it was possible to draw up into a glass tube almost all of the seminal fluid that had entered. After dilution of the seminal fluid with a solution of salts resembling the secretions of the tissue, the mixture was injected into a vein of the ear. The injections were repeated at definite intervals, and after such preliminary treatment and the lapse of a certain time, the females were left with the males from which the seminal fluid for the injections had been secured. It was observed that, after copulation had taken place two or three times, which usually sufficed for impregnation, the females that had been treated generally refused the approach of the males.

The experiments showed that it is possible by means of injections of spermatozoa to render females temporarily infertile. However, the sterility lasted only four months at the most. Comparative experiments were performed with human spermatozoa. When these were injected into the blood stream of a rabbit it still remained fertile. The arrest of fertility is, therefore, not brought about by the injection of heterogenous semen but only by the treatment with homogenous seminal fluid. In this connection, the question arose whether through such treatment with injections of spermatozoa any disturbances in the periodic sexual processes within the ovary were produced. Therefore, Dittler observed rabbits that had been injected with homogenous seminal fluid. By the appearance of the surface of the ovaries exposed by opening the abdominal cavity, it can usually be established whether or not the ovaries are functioning normally. As the ovaries seemed, for the most part, to be unchanged, Dittler takes the view that by the injection of germinal cells temporary infertility may well be induced without any evidence of disturbance in the periodic activity of the ovaries.

History of Hygiene of the Eye

At a meeting of the Verein für Geschichte der Naturwissenschaften und Medizin, Geheimrat Julius Hirschberg of Berlin, the Nestor of German ophthalmologists, delivered a lecture on the history of the hygiene of the eye. That the value of the eye was appreciated even in gray antiquity, Hirschberg made evident by quoting well known Biblical sayings and also edicts contained in the oldest known code of laws, that of Hammurabi, king of Babylonia, which dates back to the year 2200 B. C. In the Hammurabi Codex we read: "If a physician operates on a fistula of the eye and the eye is preserved, there shall be paid unto him 10 shekels of silver. But if the eye is not preserved, both his hands shall be chopped off." However, scientific hygiene of the eye is only two centuries old. Hygiene of the eye was unknown to Greek physicians, for they were not acquainted with the optical structure of the eye nor with ground glasses. From Hippocrates' work on prevailing diseases we learn that marjoram and lentils are injurious to the eyes, a view that again appears in the twelfth century A. D. in a didactic poem at Salerno. Galenus recommended for weakness of vision a powder composed essentially of pumice stone, which was also said to have prophylactic value. Oribasius recommended for eye affections fennel water (*aqua foeniculi*), which is still known as a home-treatment remedy. For artists who painted miniatures on gems, whose work is still highly prized, a special eye ointment was prescribed. Magnifying glasses were not known at that time. The middle ages did not bring much that was new. Eating the eyes of birds of prey was recommended for the strengthening of vision. Convex lenses did not become known in Europe until the thirteenth century. But spectacles were recommended only as a last resort, in case ointments failed to bring the desired relief. The concave lenses for myopic persons were introduced much later than the convex lenses. Kepler was the first to recognize the dioptric structure of the eye, and it was he who set up the theory of spectacle lenses: "Vision is produced by the fact that a picture of the whole hemisphere of the world is thrown on the white wall of the concave retina." The first hygiene of the eye, established on a scientific basis, we owe to Hamberger, professor of mathematics in the University of Jena, who in 1696 wrote a description of the eye and declared that the cure of optical defects must be on an optical basis. He warns against a sedentary mode of living and against children reading too much. The discovery of the ophthalmoscope, the middle of last century, was most influential in bringing about further progress in the hygiene of the eye.

Marriages

ALFRED MORRELL BIDWELL, Captain, M. C., U. S. Army, Jersey City, N. J., to Miss Florence Hannah Lindquist of Minnesota, at Washington, D. C., July 22.

WILLIAM CONRAD G. HENSKE, St. Louis, to Miss Margaret Yates of Chippewa Falls, Wis., at Kansas City, Mo., June 15.

CHRISTIAN HENRY DEWEY, Captain, M. O. R. C., to Miss Edna Thompson, both of Des Moines, Iowa, recently.

JOHN A. LOGAN, Captain, M. C., U. S. Army, Pittsburgh, to Miss Ruth Bronson, at Chevy Chase, Md., August 3.

WALTER J. PENNELL, Washington, D. C., M. C., U. S. Navy, to Miss Mary E. Eliason, at Washington, July 6.

ANDREW J. PAULSON, Watertown, S. D., to Miss Mina Nelson of Devils Lake, N. D., in June.

ROLLA I. STEWART, Wendell, Minn., to Miss Clarice Adelia Stetton, Elbow Lake, Minn., in June.

JERRY M. JAMES, Hooversville, Pa., to Miss Margaret M. Veil of Scalp Level, Pa., July 13.

SAMUEL A. MYERS, Urbana, Ill., to Mrs. Myrtle Crays of Sidell, Ill., at Chicago, June 20.

CARL G. BRETHAUER, Boone, Iowa, to Miss Muriel Amish, at Des Moines, Iowa, April 14.

OKLA W. SICKS, French Lick, Ind., to Miss Norma Jane Sutton of Indianapolis, July 14.

JOHN RUSSELL, Des Moines, Iowa, to Miss Sadie Ann Caquelin of Omaha, May 12.

ANDREW S. MACDOUGALL, Lewistown, Mont., to Miss Muriel Grant, Anaconda, in June.

ANGELL SIGHART HOILAND to Miss Clara E. Overby, both of Argyle, Minn., in June.

GEORGE C. PASCHALL to Miss Bessie Lee Wilson, both of Franklin, Tenn., June 30.

WILLIAM B. WARTHEN to Miss Christine Gower, both of Clayton, N. C., June 29.

CHARLES STEINHAUSER to Miss Helen Rosenstein, both of New York City, July 17.

ANDREW J. MINAKER to Miss Gertrude Granfield, both of San Francisco, July 15.

CLAUDE B. SQUIRES, Charlotte, N. C., to Miss Maude Shute, Monroe, N. C., July 8.

HARRY KENNY, Watertown, S. D., to Miss Agnes Smith of Pierre, S. D., in June.

WILLIAM HUNTER BARR to Miss Estella Maust, both of Wells, Minn., in June.

HAROLD H. FESLER, St. Paul, to Miss Ruth Ruggles of Oak Park, Ill., recently.

LOUIS W. TOLES to Mrs. Maude M. Brown, both of Lansing, Mich., July 30.

JOHN GARFIELD FROST to Miss Mae LaNell, both of Chicago, June 29.

Deaths

George Knowles Swinburne ☉ New York City; College of Physicians and Surgeons (Columbia University), 1885; member of the American Association of Genito-Urinary Surgeons, the American Urological Society, and the New York Academy of Medicine; genito-urinary surgeon to St. Mark's Hospital and the Good Samaritan Dispensary; dropped dead while playing tennis, July 23, at Rye, N. Y., from heart disease, aged 63.

Reuben Saunders Toombs, Memphis, Tenn.; Washington University, Baltimore 1868; former president of the Mississippi State Medical Association; was one of the founders of the University of Tennessee; professor of materia medica, clinical medicine, and of medical ethics at the University of Tennessee, until 1918; Confederate veteran; died, July 15, in a private sanatorium at Lexington, Ky., aged 77.

Louis Favrot Reynaud, New Orleans; New Orleans School of Medicine, 1866; Confederate veteran; formerly physician to the Institute for the Blind, Baton Rouge, La., instructor in physical diagnosis at Tulane University, New Orleans,

1891-1894; emeritus professor of materia medica, therapeutics, and clinical medicine, Tulane University, 1894-1905; died, July 16, aged 79.

Herbert Lee Gray, New York City; Johns Hopkins University, Baltimore, 1906; genito-urinary surgeon to the New York Hospital Dispensary and chief of the genito-urinary clinic of Demilt Dispensary; member of the American Urological Society, and member of the Medical Society of the State of New York; died suddenly, July 23, from heart disease, aged 39.

Edwin R. Smiley, Philadelphia; Philadelphia College of Pharmacy, 1872; Jefferson Medical College, 1881; coroner of Camden County, 1890-1893; deputy coroner of Philadelphia County, 1906-1909; was treasurer of the Philadelphia Retail Druggist Association; died, July 19, from a complication of diseases.

Robert Bancker Talbot, New York City; College of Physicians and Surgeons (Columbia University), New York City, 1877; member of the New York Obstetrical Society; associate surgeon at the Women's Hospital, New York; died, July 16, from pneumonia, at Raquette Lake, N. Y., aged 69.

John P. Shelby, Yuma, Ariz.; Jenner Medical College, Chicago, 1904; member of the Arizona State Medical Association; while suffering from a nervous breakdown, committed suicide, July 24, at Venice, Calif., by severing his jugular vein with a scalpel, aged 63.

Frank Hamilton Todd, Cleveland; Western Reserve University, Cleveland, 1876; postgraduate work, College of Physicians, New York; specialized in children's diseases; assistant surgeon, marine hospital service, Fairport, Ohio, 1888-1892; died, July 16, aged 72.

Charles H. McCarthy, Lowell, Mich.; University of Michigan, Ann Arbor, 1921; was one of three graduates picked from American universities for the staff of the Mayo Hospital, Rochester; took overdose of a poisonous drug in a Chicago hotel, July 21, aged 26.

George Brinton Thomas, Bismark, Ill.; Bennett Medical College, Chicago, 1914; served overseas in the M. C., U. S. Army, during the World War; was killed when his automobile was struck by a train at a road crossing, near Bismark, Ill., July 8, aged 42.

Albert H. Lamphear, Independence, Mo.; Medical Department of the City of New York, 1859; served as regimental surgeon, One Hundred and Sixth Illinois Volunteers, in the Civil War; died in June, at Marion Stations, Mo., aged 92.

Logan Lindsay Banner, Castlewood, Va.; College of Physicians and Surgeons, Baltimore, 1884; served as member of the United States Board of Medical Examiners for Pensions, 1897-1905; died, June 29, from general paresis, aged 63.

Edwin Lorendus Bebee, Buffalo; College of Physicians and Surgeons (Columbia University), New York, 1900; surgeon in U. S. Army, 1904 until close of World War; chief city surgeon, Buffalo; died, July 15, aged 51.

Lindsey L. Whitesides ☉ Franklin, Ind.; University of Louisville (Ky.), 1883; Spanish War veteran; member state board of health; died, July 17, at the Methodist Hospital, Indianapolis, from pneumonia, aged 61.

Paul A. Ramsel, Shiner, Texas; University of Louisville (Ky.), 1894; was found dead with a bullet wound in his heart and a rifle at his side in a vacant lot near the Ramsel Sanitarium, July 9, aged 46.

Lamartine Orlando Hicks ☉ Jackson, Ala.; University of Alabama, Tuscaloosa, 1871; local surgeon of the Southern Railroad at Jackson; died in July, at the Mobile Infirmary, Ala., aged 72.

Andrew C. Jackson, Tulsa, Okla.; Meharry Medical College, Nashville, Tenn., 1904; was shot while running from his burning home, during the race riots in Tulsa, May 31, aged 42.

Mary Anne McCay ☉ Northumberland, Pa.; Womans' Medical College of Pennsylvania, Philadelphia, 1887; died, July 26, at Sunbury, Pa., from chronic interstitial nephritis, aged 63.

Frederick W. Lake, Omaha; University of Pennsylvania, Philadelphia, 1901; member of the Nebraska State Medical Association; served in the World War; died, July 10, aged 46.

Orville C. Omohundro, Nashville, Tenn.; University of Nashville, 1872; Confederate veteran; died, July 15, from heart disease, at his country home near Mt. Juliet, aged 76.

Martin Grace Meehan, Chicago; Rush Medical College, Chicago, 1885; member of the Illinois State Medical Society; died, July 24, from cancer of the gallbladder, aged 70.

☉ Indicates "Fellow" of the American Medical Association.

Isaac M. Cornell, Wappingers Falls, N. Y.; University of the City of New York, 1877; member of the Medical Society of the State of New York; died, July 16, aged 70.

Jefferson Davis Fenton, Portland, Ore.; University of Oregon, Portland, 1889; disappeared on March 13, body was recovered from Wilamette River, July 7, aged 58.

Henry Herman ⊕ New York; Bellevue Hospital Medical College, New York, 1883; died, July 12, at his summer home at Long Branch, N. J., from heart disease, aged 60.

Clara H. Rogers Rutter, Lawrence, Mass.; Boston University (Homeopathic), Boston, 1879; practicing physician for nearly half a century; died, July 15, aged 67.

Julius Haas, Altenheim, Calif.; University of Vienna, Austria, 1861; died at the Altenheim Institution, of which he was house physician, May 31, aged 85.

Elias Galley Brown, Allaben, N. Y.; College of Physicians and Surgeons, New York, 1895; died, June 28, in New York City, from cancer of the stomach, aged 50.

David W. Crosthwaite, Altoona, Pa.; University of Pennsylvania, Philadelphia, 1881; practicing physician for nearly half a century; died, July 18, aged 65.

Maurice Dorewitz ⊕ Buffalo; University of Illinois, Chicago, 1919; died, July 9, from pneumococcic meningitis, at the Buffalo General Hospital, aged 26.

Paul Armstrong, Muncie, Ind.; Barnes Medical College, St. Louis, 1904; served in the M. C., U. S. Army, during the World War; died, July 18, aged 44.

Samuel C. Sims, Memphis, Tenn.; Vanderbilt University, Nashville, 1893; died, July 14, from serious complications, following a long illness, aged 59.

Jesse L. Hill, Lowell, Ind.; Rush Medical College, Chicago, 1875; died in July, when a rib punctured a lung, caused by a fall from a ladder, aged 77.

Edmund Hopkins Barber, Chautauqua, N. Y.; New York Homeopathic Medical College, New York City, 1877; died suddenly, July 6, aged 76.

George H. Astler ⊕ Elmwood Place, Ohio; Cincinnati College of Medicine and Surgery, 1890; died, July 6, from heart disease, aged 54.

William H. Ross, Grand Rapids, Mich.; American Eclectic Medical College, Cincinnati, 1888; died, July 14, from heart disease, aged 76.

James W. McCracken, Sulphur Springs, Ark.; University of Michigan, Ann Arbor, 1866; Civil War veteran; died in April, aged 84.

Henry L. Pace, Exeter, Calif.; Missouri Medical College, 1890; died in Chicago, May 23, from acute myocarditis, aged 68.

Samuel B. Gordon, Salinas, Calif.; University of the City of New York, 1889; died recently, from uremic poisoning, aged 53.

Albert Herman Blocklinger ⊕ Dubuque, Iowa; State University of Iowa, 1894; died, July 20, in a local hospital, aged 53.

Arthur Jukes Johnson, Toronto, Canada; University of Toronto, 1870; M. R. C. S. (Eng.), 1871; died, June 9, aged 72.

Frederick Graves, Hinkley, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1881; died in Tennessee, July 19.

William H. Wood, Smithfield, Ohio; Medical College of Ohio, Cincinnati, 1883; died, July 2, at his daughter's home, aged 73.

Harrison Fitzpatrick, Goodlettsville, Tenn.; University of Nashville, 1871; died, May 23, from Bright's disease, aged 76.

Nathaniel N. Hurst, Chicago; Jefferson Medical College, Philadelphia, 1873; died, July 25, from heart disease, aged 75.

Clement North Guy, Greene, N. Y.; Hahnemann Medical College and Hospital of Chicago, 1883; died, June 21, aged 81.

J. R. Dickey, Columbus, Ga.; Atlanta Eclectic Medical College; died at Bremen, Ga., from nephritis, aged 36.

Oscar Eason ⊕ Goldsboro, N. C.; University of North Carolina, Chapel Hill, 1910; died, June 29, aged 37.

Henry Newton Burr, Williamson, N. Y. (license, New York State Society, 1863); died, June 12, aged 83.

William B. Ely, Ainsworth, Neb.; University of Michigan, Ann Arbor, 1878; died, June 23, aged 79.

Silas Addison Austin, Los Angeles; Rush Medical College, Chicago, 1877; died, June 17, aged 78.

The Propaganda for Reform

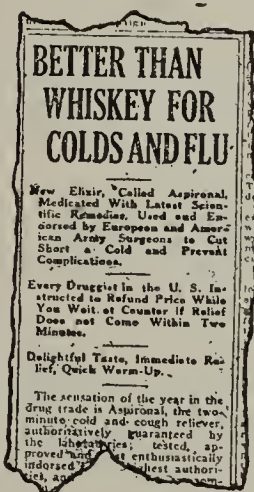
IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Hoffman's Celebrated Mixture.—A quantity of "Dr. Hoffman's Celebrated Mixture" shipped by Solomons Co., Savannah, Ga., in February, 1919, was declared misbranded. The federal chemists reported that the article consisted essentially of an alcoholic solution of copaiba and opium. It was falsely and fraudulently sold under the claim that it was an effective remedy for gonorrhea and gleet. In June, 1921, a decree was entered by the court ordering the destruction of the product.—[Notice of Judgment No. 8870; issued May 18, 1921.]

Aspironal.—In March, 1919, the Aspironal Laboratories, Atlanta, Ga., were alleged to have shipped a quantity of "Aspironal" which was misbranded. The Bureau of Chemistry reported that analysis showed the stuff to consist essentially of a solution containing sodium salicylate, cascara, a small amount of mydriatic alkaloids (probably from belladonna), and a trace of menthol. The government charged that the article was misbranded, in that the statements appearing in and on the labels, bottle, circulars, etc., regarding the alleged curative and therapeutic effects of the product, were false and fraudulent, and these statements were made by the Aspironal Laboratories knowingly and in wanton and reckless disregard of their truth or falsity, and with intent to deceive the purchaser thereof. The stuff was further misbranded in that the packages failed to give a true and correct statement of the quantity and proportion of alcohol it contained. In June, 1920, a jury returned a verdict declaring the goods misbranded as alleged. Judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9020; issued May 25, 1921.]



Lozon Pills.—A quantity of these pills were alleged to have been consigned by the Lafayette Co., Berlin, N. H., between June, 1919, and June, 1920. The federal chemists reported that analysis showed the pills to consist essentially of iron (ferrous) carbonate, nux vomica, damiana, arsenic and a laxative plant drug. The trade package bore such claims as:

"Restores Vitality to weak men, whether lost by . . . excesses of any kind . . . will tone up weak men . . . gives youthful ardor . . ."

"No cure no pay . . . give new life . . . recommended for young . . . middle age and old men."

These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8922, issued May 23, 1921.]

La Nobleza and Sin Igual.—In July, 1920, Juan Gandara, Albuquerque, New Mexico, shipped a quantity of "La Nobleza" and "Sin Igual" which was misbranded. The federal chemists reported that analysis showed La Nobleza to be, essentially, a solution containing plant extractives, including saponin (sarsaparilla), a plant laxative, sugar, alcohol, water and traces of alkaloids. The bottle label of La Nobleza represented that preparation to be an effective treatment, remedy

and cure for scrofula, cancer, leprosy, syphilis, tuberculosis; and all impurities of the blood. These claims were, of course, declared false and fraudulent.

The federal chemists reported also that Sin Igual was found to consist of a watery solution containing gum (probably from althaea), a plant laxative, licorice, and faint traces of alkaloids. Sin Igual was represented as an effective treatment, remedy and cure for gravel, suffocation of the chest, retention of urine, stone in the bladder, yellow fever, jaundice and diseases of the kidney, liver, bladder, chest and womb. These claims were declared false and fraudulent.

When this case came on for trial before a court and jury it was brought out that eight days before the shipment of these two consignments on which the prosecution was based, Juan Gandara had been convicted in the United States District Court for a similar violation of the federal Food and Drugs Act. When the present case came to trial, the jury returned a verdict of guilty, and the court sentenced Juan Gandara to serve one year in jail, and to pay the cost of the proceedings.—*Notice of Judgment No. 9008; issued May 25, 1921.*

Silverstone's Internal Remedy.—H. Planten & Son, Brooklyn, N. Y., are alleged to have shipped in July, 1919, a quantity of this product which was declared misbranded. The Bureau of Chemistry reported that analysis showed the article to consist of capsules containing essentially resins and volatile oils, including copaiba and cubebs. The article was labeled in part:

"Dr. Silverstone's Internal Remedy (Klotz R 999 Capsule Form)
Prepared for The Pioneer Drug Co., . . . Seattle, Wash.,
36 capsules in box . . ."

"For the relief of Gonorrhea, Gleet, Stricture and all unnatural discharges in Male and Female Does not produce nausea as do most internal remedies of this nature, used in connection with our injection will cure the most obstinate cases."

These claims were declared false and fraudulent and in January, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—*[Notice of Judgment No. 8902; issued May 23, 1921.]*

Yellow Pine Compound.—In April, 1919, David F. H. McDowell, trading as the Yellow Pine Extract Co., Pittsburgh, Pa., was alleged to have shipped a quantity of Yellow Pine Compound which was misbranded. The Bureau of Chemistry reported that analysis showed the article to consist of turpentine mixed with magnesia (magnesium oxid) and a small amount of jalap. The product was falsely and fraudulently represented as an effective treatment, remedy and cure for rheumatism and sciatica, "when, in truth and in fact, it was not." In January, 1921, McDowell entered a plea of *nolo contendere* and was fined \$250.—*[Notice of Judgment No. 9039; issued May 25, 1921.]*

Thomas Emmenagogue Pills.—A quantity of this product alleged to have been shipped in January, 1920, by the Palestine Drug Co., St. Louis, Mo., was declared misbranded. The government chemists reported that analysis showed the pills to consist essentially of (iron ferrous) sulphate, aloes, and an unidentified alkaloid. The pills were labeled in part:

"Emmenagogue Pills recommended for Amenorrhea . . . and other Menstrual Troubles . . . beginning treatment . . . before the regular monthly period . . . continue . . . until relief is obtained."

These claims were declared false and fraudulent since the article did not contain an ingredient or combination of ingredients capable of producing such effects. In January, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—*[Notice of Judgment No. 9025; issued May 25, 1921.]*

Nyal's Prescription "23" and Nyal Prescription "23" Pills.—The Nyal Co., Detroit, Mich., are alleged to have shipped in October, 1918, a quantity of these two preparations which were misbranded. "Nyal's Prescription '23'" when analyzed by the Bureau of Chemistry was found to be a liquid consisting essentially of zinc sulphate, boric acid, Golden Seal, glycerin and water. "Nyal Prescription '23' Pills" were found by the same chemists to consist essentially of iron (ferrous)

sulphate, copaiba balsam, oleoresin of cubebs and alkaloidal material. These two preparations were falsely and fraudulently recommended for gonorrhea and gleet. In October, 1920, the court declared the products misbranded and directed that they be destroyed.—*[Notice of Judgment No. 8995; issued May 24, 1921.]*

Correspondence

INFORMATION ON EFFECTS OF WAR GASES

To the Editor:—I enclose copies of a letter and questionnaire pertaining to the subject of the after-effects of warfare gas on the human being. These have been sent to the secretaries of the various county medical societies throughout the United States in an endeavor to obtain through them information relative to this most important matter. In carrying out this work, over 2,500 letters have been mailed, and of this number a large percentage have already been answered, showing conclusively that medical men throughout the United States are greatly interested in the subject. It is realized that many medical men who have had extensive experience in this work and whose views on the subject should be obtained cannot be reached through this source, and, in order to reach them the thought has arisen as to the possibility of utilizing the columns of THE JOURNAL for this purpose.

In connection with this subject it might be of interest to know that at present over 200,000 ex-service men are applicants for pension, attributing gas as a source of their disability. It might also be of interest to know that of 1,200 applicants for pension for lung troubles alone, examined in the Bureau of War Risk Insurance, over 30 per cent. claim warfare gas responsible for their disability. These cases were not selected, but taken at random.

In view of the fact that gas has been decided on as one of the weapons for future wars, the necessity for knowing the after-effects resulting from this method of warfare is extremely important. Although much research work has been done in the laboratories throughout this country and Europe, relative to this matter, the results are not satisfactory, and it is believed that the only means of obtaining reliable information is that which can be obtained from medical men of the world who have had actual experience with these cases.

Readers having any definite information on the subject may fill out the questionnaire and mail to the Chief of Medical Section, Chemical Warfare Service, Washington, D. C.

H. L. GILCHRIST, M.D., Washington, D. C.

Lieutenant Colonel, Medical Corps; Chief, Medical Section, Chemical Warfare Service.

The letter and form of questionnaire follow:

The late war with the Central Powers introduced several new and important weapons, such as the submarine, air bomb, tank, flame thrower and war gas. All of these were important agents in the production of new types of traumatism, especially gas, which, viewed from the standpoint of the medical man, was the most important, and directly responsible for thousands of casualties occurring in our forces operating in France.

Owing to the fact that gas was a wholly new and unknown factor, affecting principally the respiratory system, it has been difficult to determine the amount of damage done not only to the system, but also to other internal organs of the body. For this reason gas is now, and will unquestionably for years to come, be blamed for many ailments for which it is in no way responsible. Unfortunately, medical literature, both domestic and foreign, relative to the after-effects of gas on the internal organs of the body, is rather negative.

Prior to the discharge of many gassed soldiers undergoing treatment in the hospitals of this country, the reports in the Surgeon General's Office showed that a large number of them complained of tachycardia, pain in the chest, dyspnea, sweating and asthma. Insufficient changes in the respiratory tract were found to account for these symptoms complex, and it was the opinion of many of the medical officers who treated these cases that the symptoms were the expression of a neurosis introduced on the suggestion of gassing. It was also the opinion of these medical men that the neurosis was a defensory reaction on the part of

the individual, as the so-called shell shock cases were in a large measure a defense action on the part of soldiers who had been subjected to high explosion missiles on the field of battle.

At Fort Grant in 1919, a board of medical officers of the army examined over 2,000 men who were gassed, and after careful individual and group examinations, reported the following definite conclusions:

- (a) That gas victims, irrespective of the type of the gas and severity of attack sustained, showed no marked predisposition toward pulmonary tuberculosis or toward the re-activation of a healed or quiescent lesion.
- (b) That gas victims presented little evidence of material destruction of lung tissue.

Notwithstanding the report of this board and the opinions of others who have given the subject much study and who concurred in the findings of the Fort Grant board, former service men are breaking down at an alarming rate from tuberculosis and lung troubles, and a large percentage of them attribute their conditions to the remote effects of war gases.

There is no doubt that many ex-soldiers are suffering from the ill effects of warfare gases; but, on the other hand, a large number are not, and in justice to them and to the government, it is of the greatest importance to know the exact after-effects of this new war weapon.

It is believed that the only logical means of obtaining this information is from medical men who have encountered cases of this character, and it is felt that the best way of reaching them is through the different medical societies. To that end I am addressing this communication to you, you being the secretary of the medical society in your district, and, if not asking too much, I wish you would refer this matter to the members of your society who have had experience with cases of this character. I am also inclosing a questionnaire to be used in connection with their reports.

It is intended to publish a complete summary on the results of this work, mentioning the names of the societies and individuals contributing; but, if for any reason, it is desired to withhold the names of contributors, the request will be so honored.

QUESTIONNAIRE PERTAINING TO THE AFTER-EFFECT OF WARFARE GASES
Place.....
Date.....

APPROXIMATE NUMBER OF GASED CASES SEEN AND EXAMINED.....

The replies to the following questions to be based on clinical observations made when treating persons who claimed to be suffering from conditions resulting from inhaling warfare gases. They do not include conditions resulting from mustard gas burns on the external body surface.

As a result of my experience in treating cases of persons claiming to be suffering from the after-effects of gas poisoning, I am of the opinion that warfare gases do or do not permanently affect:

	Yes	No
The brain and central nervous system.....		
The eyes		
The ears		
The larynx		
The vocal cords.....		
The larger bronchi.....		
The smaller bronchi.....		
The lung tissue.....		
The heart		
The blood vessels.....		
The composition of the blood.....		
The kidneys		
The organs of digestion.....		
Produce a bronchiectasis.....		
Produce emphysema		

That there is any relation between the after-effects of gassing and:

Tuberculosis	
Asthma	
Chronic bronchitis	
Nephritis	
Neurosis	
Psychoneurosis	
Effort syndrome	
Gastritis	

Report of necropsy findings, statement of conditions believed to be due to the after-effects of warfare gas.

"RELATION OF THE LIVER AND THE PANCREAS TO INFECTION OF THE GALLBLADDER"

To the Editor:—With regard to the conclusions from experiments by Mann, made by Dr. Judd in his recent paper on the above subject (*THE JOURNAL*, July 16, p. 197), certain suggestions seem obvious:

1. Since none of the intra-abdominal organs are rigid, the intra-abdominal pressure, whether normal or increased, must affect them all equally.

2. The highest pressure that could produce propulsion of the bile into the pancreatic duct would be the contractile

pressure of the gallbladder or the secretory pressure of the liver, whichever is greater, since the increased intra-abdominal pressure caused by contraction of the abdominal muscles and of the diaphragm during deep respiratory movements or struggling or retching would increase the absolute pressure in the pancreatic duct, common bile duct, gallbladder, and all other intra-abdominal organs to the same degree.

3. Therefore, the highest bile pressure which need be considered in its effect on the pancreas would be the difference between the pressure of bile in the common duct under the conditions of Dr. Mann's experiments and the intra-abdominal pressure taken simultaneously.

It would therefore be reasonable to conclude from these observations and from experiments in injecting bile into the pancreatic duct that the bile never under any condition produces damage to the pancreas because of the pressure under which it is placed.

R. L. REYNOLDS, M.D., Oak Park, Ill.

PATHOLOGY OF BOTULISM

To the Editor:—At various times during the last few years, in discussing the pathology of botulism, I have referred to the peculiar cellular thrombi which are found in the blood vessels of various parts of the body. These thrombi were first observed by Ophüls in the blood vessels of the brain of a human victim of botulinus intoxication, and were described in the *Archives of Internal Medicine* (14: 589 [Oct.] 1914).

In 1915 and 1918 I described a series of observations of experimental botulism in animals, and recorded several outbreaks of botulism in human beings. It was found that in the tissues of a large percentage of animals that survived the administration of toxin for more than twenty-four hours, and in those of six of seven human victims whom I had opportunity to examine postmortem, there were thrombi which were identical with those described by Ophüls. My conclusion was that cellular thrombi are characteristic of botulinus intoxication, and that their presence in the tissues is strong evidence that death has occurred from botulism.

My further observations have confirmed my belief that these cellular thrombi occur in the great majority of cases in which patients have died from botulism; but two specimens have recently been brought to my attention which prove that they cannot be considered pathognomonic of the intoxication.

The first specimen was obtained in England from Lieut.-Col. Duncan Graham at No. 4 Canadian General Hospital, and consisted of sections from the tissues of a sergeant who died of pneumonia after exposure to mustard gas. Many of the blood vessels of the lungs and peribronchial tissues contained thrombi which were studied with leukocytes and which were very similar to, if not identical with, those which are found in botulism.

The second specimen was obtained from Dr. William Ophüls at Stanford University Medical School and consisted of sections from the brain of a patient who had succumbed to a typical but prolonged attack of epidemic encephalitis. The predominating feature of the tissues was the very marked perivascular infiltration with round cells; but, in addition, a number of the blood vessels contained cellular thrombi which were practically identical with those observed in botulism.

The demonstration of these thrombi in the latter case is of particular interest, since epidemic encephalitis and botulism are conditions in which the differential diagnosis during life is sometimes very difficult. It was believed that the presence of perivascular infiltration, on the one hand, and

of cellular thrombi, on the other, afforded conclusive differentiation by histologic examination of the tissues after death, but it is now apparent that this is not reliable.

ERNEST C. DICKSON, M.D., San Francisco.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PROTECTION OF RED BLOOD CELLS AGAINST HEMOLYSIS

To the Editor:—Will you kindly send me a description of a method of preventing hemolysis in red blood cells. A method was described, but I have been unable to locate the reference.

S. T. R., M.D., Missouri.

ANSWER.—This subject was discussed by Carl L. A. Schmidt and G. F. Norman in the *Journal of Infectious Diseases* 27:40 (July) 1920, in an article entitled, "On the Protection Afforded to Red Cells Against Hemolysis by Eosin." They sought to find a correlation between the protection afforded to red cells by certain proteins against lysis by eosin and the nature of the amino-acids in the molecule, and their results indicate that the presence of tyrosin or tryptophan determines ability to protect. Experiments were carried out with eosin (Grübler's w. g.), and red blood cells were used to indicate toxic action; 0.5 c.c. of a 5 per cent. saline suspension of red cells (sheep or ox) was placed in each of a number of small test tubes, and to each, 1 c.c. of a 1:10,000 eosin in salt solution was added. The substances to be tested for protective action were likewise made up in salt solution in specified concentrations and the reaction adjusted to p_H 7.5-8.0. The tubes containing the suspension of red cells, eosin and substance to be tested for inhibitory action and also a number of control tubes were placed in the sunlight for thirty minutes, and after exposure immediately placed in the ice chest. The tubes were inspected at the end of three hours and again after eighteen hours to determine the amount of lysis. Only in those tubes which after three hours showed that some hemolysis had taken place was a slight increase noted after eighteen hours. A certain number of tubes similar to the foregoing were kept in the dark in order to rule out the possibility of any unlooked for factor being concerned in the reaction. Protein substances, other than egg-white and blood serum, namely, ovomucoid, casein, edestin, Witte's peptone and deuterio-albumose, inhibit the lytic action of eosin on red cells. Casein lacks glyocoll, gelatin contains about 16 per cent.; apparently the presence or absence of this amino-acid in the protein molecule is immaterial. The experiments with pure amino-acids show definite results. Of those tested, glyocoll, leucin, aspartic acid, alpha and beta alanin, glutamic acid, cystin, phenylalanin and taurin offer no protection, while tyrosin and tryptophan are very effective. Addition of dioxibenzoic and trioxybenzoic acid, resorcin, salicylic acid, pyrogallol or phenol to a mixture of red cells and eosin solution prevents hemolysis on exposure to light.

DIAGNOSIS OF WHOOPING COUGH

To the Editor:—In THE JOURNAL, June 11, p. 1720, appeared a review of an article by Meyer on the bacteriology of whooping cough (*Ugeskrift for Læger* 83: 523 [April 21] 1921). I have tried to secure a copy of this magazine in order to secure a full translation of it. If not too much trouble to you, may I ask whether there is contained in the original paper information regarding the technic employed by Meyer? If there is information regarding the technic, I would appreciate your sending to me a translation regarding the essential facts.

F. M. MEADER, M.D., Detroit.

ANSWER.—The technic is not described in the article referred to, but in a previous article in the *Ugeskrift for Læger* (78:1443, 1916), Meyer described the advantages of having the patient cough directly on a Petri dish containing the potato-blood-agar culture medium advocated by Bordet and Gengou. Using potato flour instead of potato extract makes the culture medium easier to prepare. Otherwise Bordet and Gengou's directions are scrupulously fol-

lowed. He does not quote their directions, but emphasizes that it is important to have a "good" sputum, that is, a tough, compact mass as free as possible from saliva and without admixture of vomit. The best results are obtained when the subject coughs directly on the culture medium spread in the Petri dish. The dish is held 10 cm. from the mouth; coughing is induced with a spoon if the subject does not cough spontaneously. He reports that this culture by droplet infection, as he calls it, has proved its usefulness in 1,665 specimens sent in to the serum institute for examination. The later the stage of the disease, the less frequent the positive findings. In the catarrhal stage, positive in 75 per cent.; in the first week of the paroxysmal cough, in 57; second week, in 61; third week, in 45; fourth week, 40.5, and fifth week and later, only in 9 per cent. These findings confirm the wisdom of requiring isolation for five weeks. With the culture obtained by coughing directly on the culture medium it thus proved possible to diagnose whooping cough in 75 per cent. of the cases during the catarrhal stage. The State Serum Institute sends on demand by mail the prepared culture medium in an aluminum Petri dish with a wrapper to return it in. He says that few specimens of blood have been sent in for examination, but that the deviation of complement may yield useful corroboratory evidence sometimes, although it is seldom positive before the third or fourth week. It is especially instructive when it is a question whether the cough that has been hanging on a long time is of pertussis origin or not. This serologic test may prove positive at the third week and even for months or years later. A thick emulsion with 2,000 million Bordet-Gengou bacilli gave a positive reaction in all but six to 112 cases, and in only one of 102 healthy controls, and this one woman had had pertussis as a child. The test is applied as for the Wassermann reaction. Not inactivated serum is better when the disease is in an early phase. Meyer's address is Statens Seruminstitut, Copenhagen, Denmark. The regular service for the diagnosis of whooping cough is called the Kighoste-diagnose station.

PERTHES' DISEASE OF HIP

To the Editor:—Can you tell me something about Perthes' disease of the hip?

S. L. WEISBROD, M.D., Milford, Mich.

ANSWER.—Perthes' disease of the hip is osteochondritis deformans juvenilis of the hip, also known as Legg's disease. The disease is characterized by atrophy and rarefaction of the head of the femur and, if weight bearing is continued, the head of the femur will be almost destroyed. The condition has often been diagnosed as tuberculosis of the hip. The cause is unknown. Infection, trauma and nutritional disturbances have been considered as etiologic factors. There may be pain radiating down the thigh, some limitation of motion, and atrophy of the hip and buttock. There is no fever. The first symptom is a slight limp. Unless treatment is instituted, shortening of the leg will occur. If weight bearing is prevented, no shortening occurs; the head of the bone hardens and undergoes repair. A plaster-of-Paris spica extending from the foot nearly to the axilla is considered excellent treatment. A high shoe on the sound leg and the use of crutches are of importance. The *Quarterly Cumulative Index* lists the following most recent articles on the subject:

- Francisco: Juvenile Deforming Osteochondritis, *J. Kansas M. Soc.* 20: 60 (March) 1920.
- Brandes: Further Observations on and the Results of Later Examinations in Cases of Osteochondritis Deformans Juvenilis Coxae, *Deutsch. Ztschr. f. Chir.* 155: 216, 1920.
- Sundt: Osteochondritis Deformans of Hip Joint in Young, *Zentralbl. f. Chir.* 47: 538 (May 29) 1920.
- Perthes: Osteochondritis Deformans of Hip Joint in Young, *Zentralbl. f. Chir.* 47: 542 (May 29) 1920.
- Waldenström: Osteochondritis Deformans of Hip Joint in Young, *Zentralbl. f. Chir.* 47: 539 (May 29) 1920.
- Frangenheim: Osteoarthritis Deformans Juvenile Coxae, Osteochondritis Deformans or coxa Plana? *Zentralbl. f. Chir.* 47: 946 (July 31) 1920.
- Kreuter: Osteochondritis Deformans Juvenile Coxae, *Zentralbl. f. Chir.* 47: 1162 (Sept. 18) 1920.
- Grob: Perthes' Disease, *Schweiz. med. Wchnschr.* 50: 493 (June 17) 1920.
- Francisco: Conclusions in Juvenile Deforming Osteochondritis (Perthes' Disease), *J. Missouri M. A.* 17: 366 (Sept.) 1920.
- Buckley: Case of Osteochondritis Deformans (Legg's Disease or Perthes' Disease), *Proc. Roy. Soc. Med. (Clin. Sect.)* 14: 49 (March) 1921.
- Levy: Etiology of Osteochondritis Deformans Coxae, *Zentralbl. f. Chir.* 47: 1338 (Oct. 30) 1920.
- Roderick: Legg's or Perthes' Disease, *Lancet* 1: 210 (Jan. 29) 1921.
- Phemister: Operation for Epiphysitis of Head of Femur (Perthes' Disease), *Arch. Surg.* 2: 221 (March) 1921.
- Fairbank: Pseudocoxalgia: Osteochondritis Deformans Juvenilis, *Lancet* 1: 20 (Jan. 1) 1921.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter P. Bowers, 144 State House, Boston.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan Concord.

Nevada May Examination

Dr. Simeon L. Lee, secretary, Nevada State Board of Medical Examiners, reports the written examination, held at Carson City, May 2-4, 1921. The examination covered 13 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 4 candidates examined, 3 passed and 1 failed. Three candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
St. Louis College of Physicians and Surgeons.....	(1892)	85.6	
Long Island College Hospital.....	(1896)	75.7	
Aichi Prefecture Special Medical School.....	(1908)*	81.1	
FAILED			
Chicago Hospital Medical College.....	(1919)	62.2	
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado.....	(1920)	Colorado	
Louisville Medical College.....	(1904)	Kentucky	
Western Pennsylvania Medical College.....	(1900)	Penna.	

* Graduation not verified.

Book Notices

THE CROONIAN LECTURES ON THE PSYCHOLOGY OF THE SPECIAL SENSES AND THEIR FUNCTIONAL DISORDERS DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS IN JUNE, 1920. By Arthur F. Hurst, M.A., M.D., F.R.C.P., Physician and Neurologist to Guy's Hospital. Cloth. Price, \$5. Pp. 123, with illustrations. London: Oxford University Press, 1920.

The investigation of a large number of war neuroses has given the author the opportunity to make observations which throw new light on the psychology of the special senses and the physiology of the reflexes associated with them. Hysteria, being the most common neurosis affecting the special senses, is selected for this particular study. Accepting the view of Babinski that the stigmas and temporary symptoms of hysteria, as taught by Charcot, are the result of suggestion on the part of the physician, the definition is given that "hysteria is a condition in which symptoms are present which have resulted from suggestion and are curable by psychotherapy"—apart from actual hysterical symptoms, there are no underlying physical or mental symptoms which precede and accompany them and persist after their disappearance, to which the term hysteria can be applied. All classes of hysterical anesthesia, including the classical form recognized in the past, the anesthesia which may follow a condition of stupor—the result of profound inattention during the stuporous period, as also the classes in which anesthesia is primarily organic in origin, due to injury or disease of the brain, spinal cord or peripheral nerves, or due to peripheral anemia—are all produced by heterosuggestion on the part of the physician, even in cases in which the anesthesia is in part a result of autosuggestion. Only in rare cases is autosuggestion alone responsible for the production of the anesthesia. The explanation of the process by which anesthesia develops when it has been suggested by heterosuggestion, autosuggestion or the two combined is that, in order to feel, one has to pay attention. Inattention will result in anesthesia. Feeling, seeing and hearing are active processes and require an effort of the will. "Anatomic basis for hysterical anesthesia must exist, which depends on the removal of the structural foundation of the psychologic process of attention." The structural basis of the psychologic act of attention consists in some change which leads to a diminution in the resistance offered at each synopsis of the sensory tract. This is in the nature of a throwing out of dendrites, or may depend on some bio-

chemical change in the material which occupies the space between the dendrite terminations of adjacent neurons. If this view is accepted, the occurrence of hysterical hyperesthesia can be easily explained. It can be extended to explain variations in sensibility to pain, hysterical deafness and hysterical blindness. The author's study of the superficial reflexes brings forth the conclusions that: cutaneous reflexes are easily affected by slight changes in temperature; fatigue leads to a diminution or loss of the reflex, if the stimulus is applied along the same line; a rapid disappearance of the reflex, when elicited often in the course of examination, is due to the fall of the temperature of the skin caused by exposure rather than to fatigue; absence of inequality of the superficial reflexes may occur in association with hysterical anesthesia, and in the absence of profound anesthesia, absence of the superficial reflexes cannot be regarded as a result of hysteria. The importance of emptying the bladder before concluding that the abdominal reflexes are abolished is pointed out. The numerous case histories quoted by the author give the technic of the therapeutic measures employed. The Croonian lectures of Dr. Hurst well deserve careful study.

ELEMENTS OF SURGICAL DIAGNOSIS. By Sir Alfred Pearce Gould, K.C.V.O., M.S., F.R.C.S., and Eric Pearce Gould, M.D. M.Ch., F.R.C.S. Fifth edition. Cloth. Price, \$4. Pp. 722, with 16 illustrations. New York: Paul B. Hoeber, 1920.

Crowded between two unimpressive red covers, one finds some 700 pages of material that cover the field of surgical diagnosis in a surprisingly complete way. A number of the chapters are worthy of critical analysis. The first sixteen are devoted to injuries of the various tissues and organs. Such a method of presentation may be a source of confusion to the student, since it tends to dissociate his ideas of regional conditions. There is no reason, for instance, why traumatic peritonitis should be described as a separate entity, distinct from other forms. The chapters devoted to injuries of the skull and spine are well written, and are as complete as can be, within the scope of the work. They are compact and systematically presented, two features that unfortunately do not always characterize these chapters. The remainder of the book is devoted to regional diagnosis, beginning with the lips and face and ending with the foot. The chapter on the neck is open to criticism because of the incompleteness of the material on the thyroid. The chapter devoted to the breast, however, is excellent. The authors are to be commended for their elaboration of the methods of breast palpation and examination—a phase of breast surgery too frequently neglected. The chapters on the abdomen are systematic, compact and replete with differential details so valuable to the student. There is in this connection a chapter on the chronic dyspepsias, considered from the surgical standpoint, that is well worth while.

AN INTRODUCTION TO CHEMICAL PHARMACOLOGY. Pharmacodynamics in Relation to Chemistry. By Hugh McGuigan, Ph.D., M.D., Professor of Pharmacology, University of Illinois, College of Medicine. Cloth. Price, \$4 net. Pp. 418. Philadelphia: P. Blakiston's Son & Co., 1921.

It is the author's belief that the period of the pure physiologic method in pharmacology "in which changes in blood pressure, respiration or heart rate have been recorded, for the present seems spent." He is convinced that chemistry offers the most hopeful method for the solution of many pharmacologic problems. The aim, therefore, in the compilation of this book has been to select for emphasis those chemical reactions which, in various branches, have an especial relation to pharmacology, presented, of course, from the point of view of the pharmacologist, rather than that of the chemist. Such an arrangement should be well received by the student who has just finished his chemistry course; much of the material will be in the nature of a review for him, while enhancing his interest in the avenues leading to clinical application of the "drugs." For instance, Chapter XIII is devoted to anilin and toluene derivatives. The chemistry of anilin is discussed tersely, followed by two pages of structural formulas showing the relations of various derivatives. A number of qualitative tests are given for the detection of anilin, followed by a short discussion of the chemistry and "pharmacology" of acetanilid, antipyrin, amidopyrin ("pyram-

idon"), saccharin, thymol iodid, phenolphthalein, and phenolsulphonaphthalein. Other subjects which form chapter heads include ketones, fats and fixed oils, volatile, ethereal or essential oils, glucosids, alkaloids, amines, proteins, colloids, reaction of living matter, salt action and toxicology. It is rather anomalous, however, to note that although the subject matter is treated from a chemical point of view, the old German proprietary names are retained instead of the new American scientific names; thus, the proprietary name "veronal" instead of the scientific, nonproprietary name "barbital," "novocain" instead of "procain," and "atophan" instead of "cinchophen." Although McGuigan's contribution cannot be considered a pharmacology in the sense that Sollmann's or Cushny's textbooks are so held, yet it should be a valuable adjunct in stimulating students to keener realization that, after all, living matter functions chemically; and rational therapeutics is simply a scientific endeavor somehow to place these reactions in their proper chemical environments—some of which we understand, more of which still require pioneer research.

LEHRBUCH DER NERVENKRANKHEITEN FÜR STUDIERENDE UND PRAKTISCHE AERZTE, IN 30 VORLESUNGEN. Von Robert Bing, Professor an der Universität Basel. Second edition. Paper. Price, 100 marks. Pp. 672, with 162 illustrations. Berlin: Urban & Schwarzenberg, 1921.

In this edition, Bing's interesting series of lectures dealing with the entire subject of clinical neurology has been brought up to date. Some of the lectures have been almost entirely rewritten; others have received considerable amplification. The first three chapters, devoted to diseases of the peripheral nerves, are exceptionally complete and eminently practical. While the author studiously avoids controversial points, he makes liberal use of his personal war experiences in the presentation of this part of his subject. Another chapter, excellently rewritten, is the one on arteriosclerosis of the nerve centers. The four lectures on syphilitic diseases of the central nervous system, while by no means complete, give the reader a fair idea of the entire field. Physicians will appreciate the discussion of the treatment of each disease following the clinical presentation, occasionally enriched by case citations. The work as a whole has been well done, and now ranks as a classic. Those of us who remember the difficulties attending the study of the old-time textbook which began with etiology and was followed by pathology, symptomatology, clinical descriptions, differential diagnosis, and finally treatment, will be pleased with a work written in an easy lecture style.

A TEXT-BOOK OF PATHOLOGY. By Alfred Stengel, M.D., Sc.D., Professor of Medicine, University of Pennsylvania, and Herbert Fox, M.D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania. Seventh edition. Cloth. Price, \$8.50 net. Pp. 1111, with 524 illustrations. Philadelphia: W. B. Saunders Company, 1921.

This is the seventh edition in twenty-one years, which shows that there has been a steady demand for a smaller reliable book on pathology. In the present edition are many illustrations that no longer seem worth while; e. g., the figures that are supposed to make clear the side chain theory and a number of other more or less familiar veterans that served their time. In all probability Plate 9, "acute aortitis," is mislabeled. Trinomial names are no longer in vogue in bacteriology. *Streptococcus intracellulosis meningitidis* certainly is an unexpected designation for the meningococcus. Botulism and meat poisoning are not defined clearly. Iso-agglutination and the Wassermann reaction do not seem to be mentioned. These are minor defects that do not detract seriously from the value of the book. Older sections need simplification and condensation.

THE DIAGNOSIS AND TREATMENT OF INTUSSUSCEPTION. By Charles P. B. Clubbe, L.R.C.P., M.R.C.S., Consulting Surgeon to the Royal Prince Alfred Hospital. Second edition. Cloth. Price, \$2.50. Pp. 91. New York: Oxford University Press, 1921.

This treatise—it is scarcely exhaustive enough to be called a monograph—is a practical and up-to-date exposition of the subject. Its common sense and insistence on important facts rather than unimportant details must appeal alike to the surgeon, pediatrician and general practitioner. The work is based on the treatment of 270 cases, and consequently has the added value of adequate experience.

Medicolegal

Injury from "Bon-Opto" Eyewash—Physician as Witness

(*Valmas Drug Co. v. Smoots (U. S.), 269 Fed. R. 356*)

The United States Circuit Court of Appeals, Sixth Circuit, affirms a judgment against the defendant drug company for injuries alleged to have been suffered by the plaintiff through the use of an eyewash, called "Bon-Opto," manufactured and put on the market by the defendant. The court says that the preparation was put up in 5-grain tablets. The tablets, according to the formula indorsed on the package, contained chloretone, zinc sulphate, sodium chlorid, boric acid, menthe poivrée, and camphre de menthe. The quantities were not given, but each tablet contained $2\frac{1}{125}$ grain of zinc sulphate, which was a trifle more than 3 per cent. of the contents of the tablet. The evidence on the plaintiff's part tended to show that she, being about 45 years old, on reading a newspaper advertisement "that you could throw away your glasses" if you used "Bon-Opto," bought a bottle at a retail drug store. She used eleven of the tablets on as many nights, bathing only the right eye, intending to treat the left one similarly if the right eye was benefited. Each use of a tablet caused smarting, which continued about ten or fifteen minutes and then passed off. After about a month she consulted a physician in general practice, who found an inflammation of the outer membrane of the eye, which was then so bad as to require bandaging to protect it from the light. The physician gave her a prescription which she had filled several times, causing some temporary, but not permanent, relief. Thereafter her eyes again troubled her, and her physician advised her to consult a specialist, which she did some months later, with the result that four ulcers were found on the right eye, which the specialist treated for two or three months.

The general medical practitioner was permitted to testify, against the defendant's objection, in answer to a hypothetical question, that on the assumptions contained therein it was his opinion that the condition of the plaintiff's eye, from which she suffered, including the ulcers thereon, was caused by the use of the zinc sulphate. Error was assigned on this ruling, as well as on the refusal to strike out the testimony of the witness generally as to the cause of the plaintiff's suffering and injury—all on the ground that the witness was not competent to testify as an expert. But the objection and the motion to strike were properly overruled. The witness obtained his medical education at two medical colleges; he had been a practicing physician for twenty-five years, and was then engaged in the general practice of medicine. While he had never given particular attention to diseases of the eye, he did undertake to treat such diseases until he concluded, through their failure to respond to his treatment, that they should be referred to a specialist. The facts that he was not an oculist, had never made a specialty of any particular branch of his profession, and had never used an eyewash containing zinc sulphate, did not, as matter of law, make him incompetent to testify as an expert. It is not to be presumed that reputable medical colleges fail to give suitable instruction in the fundamental principles of materia medica, toxicology and ophthalmology, or that one without either instruction or experience on these subjects would be permitted to engage in general practice in Michigan. The weight of his testimony was for the jury.

The jury was not bound to accept the testimony of the defendant's president that, before undertaking the manufacture of the tablets, he was told by several physicians and specialists that there was nothing about them that would injure any one's eyes, as relieving the defendant of negligence, in view of the evidence on the plaintiff's part as to the effect of zinc sulphate in the quantity used, and having in mind the newspaper advertisement testified to by the plaintiff, as well as the representations on the package that the remedy was not only "nonirritating and harmless," but that it was for use as "a home remedy"—implying that it was safe in all cases and without occasion to resort to physicians.

advice or prescription. The jury might well have concluded that, although it was customary to use as much or more zinc sulphate in an eyewash, it was negligent to offer it to the public, not only without caution, but with the sweeping (and, at least in one case, extravagant) claims said to have been made for it. In the court's opinion there was substantial proof of the defendant's negligence requiring the submission of the case to the jury.

Salpingitis a Disease Common to Both Sexes

(*National Life & Accident Ins. Co. v. Weaver (Texas)*, 226 S. W. R. 754)

The Court of Civil Appeals of Texas, in affirming a judgment in favor of the plaintiff, Mrs. Weaver, on a policy of accident insurance, says that the question was presented as to whether the disease salpingitis, with which the defendant claimed that the plaintiff was suffering, was one common to the two sexes, within the meaning of the policy, which insured her against bodily injury, or disease or illness common to both sexes. The court concludes that the question should be answered in the affirmative. There was expert testimony in the case that salpingitis is an inflamed condition of the parts affected. It may be an inflamed condition of the ovarian tubes, the fallopian tubes, or other parts of the body of a woman, and of such parts of a man's body subject to such condition possessed by him, as the eustachian tubes. The fact that a disease at times shows itself in an organ possessed by women and not by men does not make it a disease peculiar to women, for it could not be peculiar to women unless men were immune from its ravages. The court thinks the correct interpretation of the provision, which in effect exempted the defendant from liability for sickness caused by diseases not common to both sexes, covered only such sicknesses or diseases women have and from which men are immune.

A Good Indictment—Medical Law Not Discriminatory

(*Hicks v. State (Texas)*, 227 S. W. R. 302)

The Court of Criminal Appeals of Texas, in affirming a judgment of conviction of defendant Hicks, a chiropractor, of unlawfully engaging in the practice of medicine, holds the indictment sufficient, although the defendant contended that it was not because it did not, in addition to the allegation of failure to file the required certificate, state that he did not register his age, postoffice address, place of birth, or school of practice to which he professed to belong, with the district clerk of the county. The court says that one wishing to practice medicine in the state of Texas must file with his district clerk a certificate. In addition, he must also file a document stating his age, postoffice address, place of birth, and school of practice. The latter document he must sign and swear to himself. He may be prosecuted as an illegal practitioner of medicine for failure to file either instrument, according to the facts, but it would not be necessary on prosecution for failure to file only one of them for the indictment to allege the failure to file the other.

A second ground urged for quashing the indictment was that Article 5741 of the civil code of the state and Article 5742 thereof conflicted with each other, in that the former prescribed certain subjects on which every applicant for license to practice medicine must stand an examination, while the latter specifically provided that nothing in this law—referring to the medical examination—should discriminate against any school or system of medical practice. But the court is unable to find anything in either of those articles which conflicts with the other.

Moreover, the court is unable to find anything discriminatory in Article 5741. The court has no means of judicially knowing that the subjects named by the statutes on which examination must be had by one desirous of practicing medicine are those pertaining only to allopathic practice. Matters going to sustain such proposition would be matters of fact and not of law, and not facts of such a general knowledge as to enable this court to take judicial cognizance thereof.

The practice of medicine affects the lives and well-being of all our citizens, and in all its phases as a public business is well within the legitimate police powers of the state. It is

not to be supposed that the legislature would arbitrarily fix unreasonable limitations on so vital a matter as the general requirements for examination, applicable alike to all who desire to engage in the high calling of the practice of medicine. The court has no right to assume judicially as to the facts which were before the legislature when it passed the law in question, whether it was urged by allopaths, homeopaths, osteopaths, optometrists, chiropractors, chiropodists or ophthalmologists. The law as a law appears to be made equally for all who fairly come within its comprehension, and, as far as the court knows, prescribes no examination conforming to the technical requirements of any school or branch of medical practice, and is not violative of the tenets of the state constitution, which commands laws prescribing the qualifications of physicians, and forbids preference by law to any school of medicine.

Decision of Medical Examiners Not to Be Disturbed

(*State Board of Medical Examiners v. Boulls (Colo.)*, 195 Pac. R. 325)

The Supreme Court of Colorado says that this cause was before it to review a judgment entered on a writ of certiorari to the state board of medical examiners, which judgment, of the district court, reversed the action of the board in refusing to the defendant in error a license "to practice chiropractic." For the board it was urged that the trial court and this court were both without jurisdiction to consider the merits of the case; this for the reason that the only question to be determined on a writ of certiorari is whether the inferior tribunal or board has exceeded its jurisdiction or greatly abused the discretion allowed it. This contention is sustained by repeated rulings of this court. The statute under which the defendant in error applied for a license made the state board of medical examiners a tribunal to determine whether or not he came within the provisions of the law. The defendant in error was allowed a hearing on the matters involved, and the determination of the question presented to the board was within its jurisdiction. Its decision was, therefore, not to be disturbed on writ of certiorari. The judgment of the district court was accordingly reversed, and the cause remanded, with instructions for further proceedings in harmony with the views herein expressed.

Fantastic Beliefs and Testamentary Capacity

(*In re Olson's Estate (Minn.)*, 180 N. W. R. 1009)

The Supreme Court of Minnesota, in affirming a judgment upholding a will, holds that, so long as the understanding and reason are so far unclouded that a testator has sufficient intelligence to be able to transact ordinary business, a court is not bound to conclude that he did not have sufficient capacity to make a will because he was the victim of delusions. Fantastic beliefs are not so uncommon as to indicate a mind incapable of collecting and comprehending the facts a person should consider in making a will. The existence of a delusion with respect to a particular subject or subjects is not conclusive evidence of mental incapacity. The delusion may have no basis whatever, and no evidence may suffice to dispel it; but, if it did not influence the testator with respect to the terms of his will, its existence does not invalidate the will. This is the settled doctrine in England, and is the doctrine of practically all the American cases.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obst. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Delaware State Medical Society, Rehoboth, Aug. 16.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 27-29.
Minnesota State Medical Association, Duluth, Aug. 24-26.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

July, 1921, 2, No. 1

- *Induction, Complicated by Hemorrhage, of Labor. E. P. Davis, Philadelphia.—p. 1.
- *Chemical Studies in Normal and Abnormal Pregnancies. I. Significant Chemical Changes in Blood in Toxemia of Pregnancy. J. A. Killian and C. P. Sherwin, New York.—p. 6.
- *Blood Chemistry in Normal and Abnormal Pregnancy. W. E. Caldwell and W. G. Lyle, New York.—p. 17.
- Study of Ossification Centers of Wrist, Knee and Ankle at Birth, with Particular Reference to Physical Development and Maturity of New-Born. F. L. Adair and R. E. Scammon, Minneapolis.—p. 35.
- *Administration of Pituitary Extract at Beginning of Third Stage of Labor. G. H. Ryder, New York.—p. 61.
- Least Common Multiple in Obstetrics. H. M. Little, Montreal.—p. 67.
- *Experimental Studies Following Oophorectomy. H. Bailey, New York.—p. 77.

Hemorrhage in Induction of Labor.—Four cases are recorded by Davis. He suggests that the use of a new sterile rectal tube which does not pass beyond the lower uterine segment is safer than the use of bougies. It is not as prompt in its action, nor does it soften the cervix so thoroughly as the use of bougies. From his experience, Davis is not inclined to believe that the use of bougies does cause serious hemorrhage. On the whole, in his experience, this method has been the most uniformly successful of any employed for the induction of labor. It has produced the result of more closely resembling spontaneous parturition than any other.

Chemical Studies in Pregnancy.—Low values for nonprotein and urea nitrogen were found by Killian and Sherwin in normal pregnancy. The urea nitrogen constitutes about 44 per cent. of the nonprotein nitrogen. No variation is found in the uric acid, creatinin, chlorid or sugar concentration of the blood of normal pregnant women from that observed in nonpregnant women. A slight decrease in the carbon dioxid combining power of the blood plasma characterizes the last months of normal pregnancy. The chemical changes in the blood in the nephritic toxemias are typical of impairment of kidney function in general. There is an increase in nonprotein and urea nitrogen, and more than 50 per cent. of the nonprotein nitrogen is in the form of urea nitrogen. Some of the clinical symptoms, also point to a more or less severe nephritis. At most but a slight improvement follows the emptying of the uterus. Analogous chemical changes are found in the blood in pernicious vomiting, postpartum eclampsia, and exlampsia with gravid uterus. The nonprotein nitrogen is markedly increased, whereas the urea nitrogen is at the low normal limit or decreased, constituting 15 to 38 per cent. of the nonprotein nitrogen. A definite increase in uric acid is found, which is due to an impairment of renal function. In some cases the disturbance of the kidney function resulted in a retention of urea nitrogen in addition to the uric acid. In this type of toxemia the involvement of renal function results from the toxemia. A moderate or severe acidosis is observed in all cases. A prompt improvement, judged from a clinical standpoint and from the chemical composition of the blood in most instances follows the emptying of the uterus.

Blood Chemistry in Pregnancy.—In normal pregnancy, as compared with the nonpregnant state, Caldwell and Lyle found a low total of nonprotein nitrogen, low urea nitrogen and a very low ratio of urea nitrogen to the total nonprotein nitrogen. The excretory nitrogenous constituents in the maternal and the fetal circulations at the end of labor are practically identical. A definite retention of uric acid in the blood at the end of labor is found only in abnormal cases. The blood pictures in exlampsia and toxemia of pregnancy are interpreted most readily in terms of kidney insufficiency. The significance of a given blood picture can be defined only in the light of the clinical conditions at the exact time when the blood was taken. Marked kidney insufficiency, indicated by high retention of nitrogenous waste products, warrants a very grave prognosis. High creatinin retention seems to war-

rant a serious prognosis. When the nitrogenous constituents do not return to normal early in convalescence, a doubtful prognosis for subsequent pregnancies is justified. A rapid return of the blood picture to normal justifies a favorable prognosis for subsequent pregnancies.

Use of Pituitary Extract in Third Stage of Labor.—One c.c. of pituitary extract was administered by Ryder at the beginning of the third stage in 100 cases of labor and 100 other labors were observed in which pituitary extract was not given at the beginning of the third stage of labor. It would seem from the data given that this is a safe procedure. In none of the 100 cases was there any bad effect apparent. It tends to cause spontaneous expulsion of the placenta and to lessen the amount of blood lost. It makes guarding of the fundus during the third stage easier. Little stimulation of the fundus is necessary to keep it contracted. It does not do away with the necessity of watching or holding the fundus. It is not sufficient that the fundus remains well contracted. It must be kept from riding high, otherwise unobserved bleeding may occur into the membranes already partly expelled into the vagina. It is probably better not to wait twenty minutes as a routine before trying to express the placenta, as was done in this series. The attempt can often be made earlier with advantage, but should not be persisted in if expression is at all difficult. On the whole, the method is worthy of further study and consideration.

Experimental Studies Following Oophorectomy.—Metabolism studies after oophorectomy tend to show a reduction both of the oxygen consumed and the carbon dioxid eliminated. The greatest reduction occurs at a time some two or three months after the operation and when atrophic changes have probably occurred in the uterus. The experimental work, therefore, Bailey maintains, must be considered as inconclusive as regards the demonstration of a direct effect on the energy metabolism of the cell by an ovarian secretion. Experiments conducted with a view of ascertaining the condition of the ovary after hysterectomy show that in young animals the ovarian development goes on in a normal manner. Work with adult animals would indicate that following hysterectomy no ovarian change may be demonstrated until after a three or four month period. Clinical gynecology offers proof that the menopause ensues notwithstanding that the ovaries remain, if the uterus is entirely removed; and that saving a portion of the uterine mucous membrane so that menstruation may occur, prevents these symptoms. Transplantation of the ovary is of no value in relieving menopausal symptoms, unless the uterus or part of it remains.

Archives of Internal Medicine, Chicago

July 15, 1921, 28, No. 1

- *Renal Irritation in Man from High Protein Diet. T. L. Squier and L. H. Newburgh, Ann Arbor, Mich.—p. 1.
- *Effect of Cyanids and of Organic Oxidizing Agents on Liver Injury Caused by Chloroform. N. C. Davis, San Francisco.—p. 20.
- *Etiology of Outbreak of Infectious Diarrhea. H. Weiss, Boston.—p. 37.
- *Intravenous Use of Foreign Protein in Treatment of Chronic Cases of Arthritis. R. G. Snyder and M. A. Ramirez, New York.—p. 50.
- *Renal Glycosuria. P. L. Marsh, Ann Arbor, Mich.—p. 54.
- *Right Ventricle in Pulmonary Tuberculosis. E. P. Boas and H. Mann, New York.—p. 62.
- Frequent Causes and Treatment of Seasonal Hay-Fever. I. C. Walker, Boston.—p. 71.
- Some Urinary Changes in Normal Individuals on Pellagra Producing Experimental Diet. M. X. Sullivan, Spartanburg, S. C.—p. 119.

Renal Irritation from High Protein Diet.—Evidence is presented by Squier and Newburgh to show that high protein diet in man is a renal irritant. Forced high protein feeding in the presence of kidney damage resulted in the appearance of red blood corpuscles in the urine, and in the appearance of albuminuria or in an increase of a preexistent albuminuria. Forced high protein feeding invariably resulted in the appearance of red blood corpuscles in the urine of normal men. In some of the cases receiving high protein diet there was a definite increase in the edema and macular changes of the fundus following the meat. High protein diet over a short period had no effect on the blood pressure.

Effect of Cyanids on Chloroform Liver Injury.—These experiments reported by Davis offer no evidence that chloroform liver injury is a result of disturbance in tissue oxidations.

Outbreak of Infectious Diarrhea.—Of eight cases in which urine, feces and blood were examined by Weiss, seven yielded a gram-positive micrococcus from one or more sources, which were biologically identical in their reactions on fermentation mediums. The organisms were agglutinated by the serum of patients from which they were obtained, and also by the serum of other patients. Three strains that did not agglutinate when first isolated were subsequently agglutinated by rabbit serum produced with a heterologous strain. Rabbits are resistant to infection by this organism. Old and young rabbits were used, but the results were uniformly negative. *Macacus rhesus* monkeys were fed with mixed strains. One monkey died on the fourteenth day after a profuse diarrhea on the thirteenth day from which the organism was isolated. It was subsequently isolated at necropsy from the mesenteric lymph nodes and the spleen. A second monkey fed with cultures, filtered free from the broth in which they had been grown, developed a diarrhea on the fifth day and recovered. A third monkey was fed with mixed broth cultures by means of a stomach tube. He died on the eighth day. A pathologic condition was found at the juncture of the large and small intestine and the organism was found in the mesenteric lymph nodes and spleen. Two monkeys, one fed with the sterile filtrate from broth cultures and the other with cultures killed by heating at 60 C. for twenty minutes developed no symptoms and remained alive. One monkey actively immunized by a polyvalent vaccine made from these cultures was subsequently resistant to infection. One monkey that Weiss attempted to immunize passively by injection with specific rabbit serum died fifteen days after feeding, and the organism was isolated at necropsy from the spleen and mesenteric lymph nodes. The experiments indicate that the organism is pathogenic for *Macacus rhesus* monkeys, produces no exotoxin or endotoxin and can be used to produce active immunity against subsequent infection. The sum of evidence presented in this paper suggests the etiologic relationship of the organism described to infectious diarrhea in the outbreak studied.

Intravenous Use of Foreign Protein in Chronic Arthritis.—The majority of the patients in the series analyzed by Snyder and Ramirez have at one time or another during the past three years had both typhoid vaccine and secondary proteose administered intravenously. They have experienced less nausea, headache and weakness following the use of secondary proteose than after the injection of typhoid vaccine. Over a long series of injections they seem to lose less weight with the use of secondary proteose than with the typhoid vaccine. On the whole, the proteose appears to be less toxic, and it is of significance that patients who have been treated with typhoid and proteose strongly prefer the proteose for subsequent injections. In relieving the pain and in improving the motion in the joints, equally good results seemed to follow the use of proteose and typhoid vaccine. Cases of chronic arthritis which have not been relieved by the routine treatment consisting of sodium salicylate, acetylsalicylic acid, colchicin, cincophen, hot packs, baking or massage are, as a rule, materially benefited by the intravenous administration of small doses of foreign protein. The degree of benefit to be obtained varies with the individual case, and is nearly always greatest in the joints of the upper extremities.

Renal Glycosuria.—A case of renal glycosuria is described by March. During a period of four months the patient excreted an average of 60 gm. glucose daily with a variation of from 15 to 122 gm. The amount was not related to the carbohydrate intake. After the ingestion of 100 gm. glucose, the blood sugar rose from a fasting per cent. of 0.071 to 0.092 in thirty minutes; by the end of two hours it had fallen to 0.043 per cent., and after five hours it was found to be 0.068 per cent. Even with a blood sugar as low as 0.043 per cent., glucose was excreted at the rate of over 5 grams per hour. Diuresis by increased water ingestion caused no increase in the glycosuria, and no effect was seen from the administration of diuretin in large doses. No evidence of nephritis was found. The D:N ratio in the urine of starvation was about 10:1. She reacted to a laparotomy for acute intestinal obstruction in a perfectly normal manner.

Right Ventricle in Pulmonary Tuberculosis.—An electrocardiographic study made by Boas and Mann of ninety-seven patients with pulmonary tuberculosis revealed 29 per cent. with right ventricular predominance, 30 per cent. with left ventricular predominance, and 41 per cent. with no predominance of either chamber. Right ventricular predominance is not always associated with any particular type of tuberculosis. It is found more commonly in young than in old patients, and twice as frequently in men as in women. Left ventricular predominance is not always associated with any particular type of tuberculosis. It is found more commonly in older patients, and is twice as frequent in women as in men. Left ventricular predominance occurs more frequently with the increasing age of the patient. In contrast to the necropsy findings reported in the literature, right ventricular predominance is not found more frequently in association with fibroid phthisis, or with pleural adhesions, than with other types of pulmonary tuberculosis.

Boston Medical and Surgical Journal

July 14, 1921, 185, No. 2

- *Etiologic Factors in Traumatic Myositis Ossificans. C. F. Painter, Boston. Boston.—p. 45.
Complications Following Cholecystectomy. I. J. Walker, Boston.—p. 52.
*Case of Extensive Cavernous Angioma of Head, Face and Neck, with Attacks of Fever and Somnolence. G. Blumer, New Haven, Conn.—p. 58.
Paresis Treatment by Arsphenamin and Mercury. C. A. Bonner, Worcester, Mass.—p. 60.
Roentgen Ray in Diagnosis of Chronic Appendicitis and Chronic Cholecystitis. F. H. Lahey, Boston.—p. 61.
Neurotomy (Stoffel Operation) in Case of Spastic Paraplegia Following Spinal Fracture. R. N. Hatt, Boston.—p. 62.
Marked Sclerosis of Abdominal Aorta. C. R. Scott, New Haven, Conn.—p. 63.
Use of Sodium Bromid Solution in Pyelography, and Its Toxicity in Comparison with Other Mediums. E. L. Merrit, Fall River, Mass.—p. 65.

July 21, 1921, 185, No. 3

- Public Health Activities of William T. Sedgwick. E. R. Kelley, Boston.—p. 71.
Public Health Work of Professor Sedgwick. G. C. Whipple, Boston.—p. 74.
Professor William T. Sedgwick. A. L. Lowell, Cambridge.—p. 78.
Prolapse of Prostate Gland. G. M. Garland, Boston.—p. 78.
Questionnaire on Sacro-Iliac Joint Lesions. H. W. Marshall, Boston.—p. 79.
Report on Dermatology. Situation of Lupus Vulgaris. J. T. Bowen, Boston.—p. 88.

Traumatic Myositis Ossificans.—Painter says that there is some ground for feeling that in the isolated cases where single traumas seemingly act to incite an ossification in muscle, these may be individuals, who, having escaped the progressive form of the disease, still have just enough of a tendency toward that type of katabolic transformation to react to the stimulus of a violent trauma. That there is an intermediary class of persons who have never had the progressive type and who, through suffering, as all of us may, from traumas of equal severity to those causing a traumatic myositic development in many individuals, have also escaped from any of these lesions, but who, under slight, oft repeated traumas, have developed transformations in tendon sheaths and the fascial attachments of certain muscles, e. g., the tendo Achilles and the abductor longus, is again suggestive that in all three classes it may be a matter of a diathesis or dyscrasia, in varying degree, that underlies them all. In one, no trauma is required to set into operation the retrograde metamorphosis; in another, it needs to be slight but oft repeated, and in the third, the trauma must amount to violence. There may be no very sound logic to this view, but certainly the theories of periosteal transplantation or osteoplastic migration are not sufficient to explain all the cases. If this diathetic theory will not cover all, then there must be two classes, in one of which there is one etiology and another in the other. This does not seem reasonable when the objective evidences of the condition are all so closely allied.

Extensive Cavernous Angioma.—Blumer related the case of a man, aged 49, whose family and past history was uneventful. A nevus of the forehead, just external to the outer angle of the right eye, was noted at his birth. It had steadily increased in size. About the age of 30, three groups of symptoms had appeared, which are probably related to

one another. For the last fifteen to eighteen years, the patient has had attacks of headache. These occur once or twice a month, are very intense, bilateral, occipital in distribution, and unaccompanied by nausea. Going without food tends to bring them on. Food relieves him somewhat, but he has an intense occipital headache and feels slightly drowsy. He lies down and goes sound asleep, often to awake in a few hours feeling quite well. During the last five to eight years, the patient has had attacks of drowsiness not associated with headache. He has difficulty in concentrating his attention, is slightly garrulous, and at times feverish. He feels light headed and his gait becomes definitely unsteady. There is no true vertigo or tendency to fall in any particular direction. With these attacks there are no ocular or auditory manifestations. There may be slight prickling in both hands or wrists or a pain in the elbow. There is no speech disturbance, and memory is not affected. During the last few months, the patient's fellow workers have noted three sudden attacks of complete unconsciousness, coming on suddenly and lasting fifteen or twenty minutes. Physical examination shows on both sides of the neck anteriorly, more markedly on the right side, a deep cavernous plexus of veins which collapses easily. These vessels are about 12 or 14 mm. in diameter. In several of them, hard rounded bodies, nonsensitive and as much as 1 cm. in diameter, can be felt. On the right side, the angiomatic mass becomes very superficial in the region just behind the outer angle of the eye, where it forms a bluish mass which, in its distended condition is five to six centimeters in diameter. In the region of this mass, the superior orbital ridge is defective and the outer tables of the skull appear to be absent. The angiomatic process involves not only both sides of the neck and the right temporal region, but also the ocular conjunctiva on the right side, the cheeks, the hard and soft palate, the right half of the tongue and the pharyngeal walls as far down as can be seen. There is no bruit over the skull in the region of the mass. The general physical examination of the internal viscera is negative except for slight enlargement of the heart. The neurologic examination is almost negative. Lumbar puncture produced a clear fluid under increased pressure. There were fifteen cells to the cubic millimeter. The Pandy and Ross-Jones reactions were positive. The Wassermann and colloidal gold reactions were negative. A roentgenogram of the skull showed general thickening of the tables with the vascular depressions somewhat more marked than normal. The sella turcica was clearly defined. There was absence of the left frontal sinus. There was destruction of bone in the right supraorbital region. There were numerous circular areas of increased density in the zone occupied by the angioma. While not quite typical, the history of this case, Blumer says, recalls in many ways, recorded cases of so-called circoid aneurysms or angiomas of the pia. He concludes that this is an instance of the association of an external angioma of the cranium and face, with an independent internal angioma involving the pia mater.

Journal of Infectious Diseases, Chicago

August, 1921, 29, No. 2

- *Initial Exanthem of Smallpox. M. Tsurumi and S. Isono, Dairen, Manchuria.—p. 109.
- Bacillus Botulinus (Type A) Associated with Fatal Pasture Disease of Horses. R. Graham and H. R. Schwarze, Urbana, Ill.—p. 114.
- Purity of American Strains of Bacillus Botulinus. G. F. Reddish, New Haven, Conn.—p. 120.
- *Immunologic Study of Bacillus Influenzae. A. M. Chesney, St. Louis.—p. 132.
- Effects of Hemolytic Streptococci on Blood and Hemopoietic Organs of Rabbits. M. S. Tongs, Chicago.—p. 141.
- Reactions of Nasal Cavity and Postnasal Space to Chilling of Body Surface. II. Concurrent Study of Bacteriology of Nose and Throat. A. Goldman; S. Mudd and S. B. Grant, St. Louis and Boston.—p. 151.
- Antibodies for Sheep Blood and Complement of Aqueous Humor in Normal and Immunized Rabbits. R. Kodama, Chicago.—p. 160.
- Food Accessory Factors in Bacterial Growth. III. Growth of Pfeiffer's Bacillus (B. Influenzae). D. J. Davis, Chicago.—p. 171.
- Accessory Factors in Bacterial Growth. IV. "Satellite" or Symbiosis Phenomenon of Pfeiffer's Bacillus (B. Influenzae). D. J. Davis, Chicago.—p. 178.
- *Changes in Human Central Nervous System in Botulism. C. B. Semerak, Chicago.—p. 190.
- *Anaphylaxis Reaction with Purified Proteins from Milk. H. G. Wells, Chicago and T. B. Osborne, New Haven, Conn.—p. 200.

Initial Exanthem in Smallpox.—Prior to the peculiar eruption of smallpox is the so-called initial exanthem. This eruption bears a close resemblance to the eruptions of scarlet fever and measles, and is of significance in the diagnosis of smallpox, especially in cases of so-called variola sine exanthemate, when it may be the only symptom on which to base an intelligent diagnosis. Of 103 patients with smallpox treated at the Dairen Isolation Hospital, thirty-nine had an initial exanthem. Close observation seems to warrant the classification of the initial exanthem in smallpox into the hemorrhagic, the scarlet-fever-like, and the measles-like. The eruption appeared on the outer side of the upper arm in all the cases in this series. There is no direct relation between the initial exanthem and the pock marks. In the vaccinated the eruption is most marked about the place of vaccination. However, if ten years have elapsed since the last vaccination, no such tendency is apparent. An initial exanthem does not necessarily guarantee a light attack. This is true especially if the exanthem is hemorrhagic.

Immunologic Study of Influenza Bacillus.—Twelve strains of hemoglobinophilic bacilli obtained from eleven patients with influenza during the recurrent epidemic of 1920 have been studied immunologically by Chesney. Cross-agglutination tests and absorption experiments indicate that of the twelve strains four, or 33 per cent. were identical in their immunologic reactions. No evidence of relationship to strains obtained from another source was encountered. These results lend no support to the view that the influenza bacillus of Pfeiffer is the cause of epidemic influenza.

Changes in Central Nervous System in Botulism.—Semerak's report deals with the study of a brain-stem examined in serial sections from a case of botulism in a girl, 17 years old. The changes are confined to the vascular system. Thrombosis in arteries and veins is the initial change followed by ischemic necrosis and later by inflammation. The poison has no direct action on the nerve cells; the retrogressive changes are secondary and due to the disturbed blood supply. The ganglion cells of origin of the motor cranial nerves are always involved because their blood supply is derived from terminals of branches of the vertebral arteries which seem to be the seat of predilection of the thrombosis.

Anaphylaxis From Milk Proteins.—Cow's milk contains four chemically distinct proteins or protein fractions, namely, casein, lactalbumin, lactoglobulin and an alcohol-soluble protein. By means of the anaphylaxis test it can be shown that these four proteins are immunologically distinct. This fact furnishes another striking illustration of the dependence of immunologic specificity on chemical composition rather than biologic origin. Of these four proteins only one, the globulin, sensitizes to beef serum or causes reactions in animals sensitized to beef serum. This corresponds to the observation of Crowther and Raistrick that lactoglobulin and serum globulin are chemically indistinguishable. That some positive cross sensitizations may be occasionally obtained between cow's milk and beef serum is explained by the fact that the globulin constitutes a very small part of the milk proteins. Several other protein fractions obtained by Wells and Osborne in studying milk proteins were, according to anaphylaxis tests, not distinct from the four known proteins of milk. Their experience with milk proteins, as well as with proteins of other sources, has demonstrated that immunologic methods are a great aid and in many cases indispensable in preparing proteins in a state of purity, and may be used to furnish information concerning chemical relations of proteins from different sources.

Journal of Nervous and Mental Diseases, New York

May, 1921, 53, No. 5

- *Changes Produced in Nerve Cells of the Spinal Cord Following Exposure to Cold. C. DeFano, London.—p. 353.
- Blocking the Splanchnic Nerves. G. A. Preiss and Al. Ritter, Zurich.—p. 361.
- *Blood Analysis in Catatonic Dementia Praecox. S. Uyematsu, Hathorne, Mass., and T. Soda, Tokyo, Japan.—p. 367.

Effect of Cold on Spinal Nerve Cells.—DaFano claims that relatively protracted exposure of small animals to a moderate degree of cold is sufficient to cause peculiar changes in the

nerve cells of the dorsal horns, anterolateral and middle cell columns and the grey matter surrounding the central canal.

Blood in Dementia Praecox Catatonica.—There is a definite and absolute blood formula for the catatonic dementia praecox group. In 75 per cent. of the cases studied there was a decrease of uric acid. In 47 per cent. there was an increase in the amount of blood sugar. The average deviation of each constituent of the blood is higher than that of the normal, suggesting an unstable metabolic activity.

Medical Record, New York

July 16, 1921, 100, No. 3

- Surgery Among Uncivilized Races. J. R. Pennington, Chicago.—p. 89.
*Mediastinal Sarcoma: Report of Three Cases. R. Duncan, Los Angeles.—p. 96.
Chronic Nontuberculous Lung Disease. H. Greeley, Brooklyn.—p. 99.
Roentgenographic Technic with Bucky Diaphragm. W. H. Dieffenbach, A. J. B. Savage and L. Fox, New York.—p. 101.
Deleterious Effects of Bromid Treatment in Diseases of Nervous System. E. L. Hunt, New York.—p. 103.
Unusual Obstetric and Gynecologic Cases. L. F. Herz, New York.—p. 105.
*Unusual Case of Malignancy. E. M. Ellison, Washington, D. C.—p. 106.

July 23, 1921, 100, No. 4

- Encephalitis Completa. J. V. Haberman, New York.—p. 135.
Narcotic Situation. E. H. Williams, Los Angeles.—p. 140.
Health Problem. F. E. Jackson, Indianapolis.—p. 143.
Chlorosis a Toxemia Not a Primary Anemia. S. R. Salzman, Toledo.—p. 149.
Mountain Sickness. D. W. Montgomery, San Francisco.—p. 152.
New Pharyngeal Tube for Anesthesia in Oral and Head Surgery. R. C. Coburn, New York.—p. 155.
Suprapubic Cystotomy Ring. E. G. Ballenger and O. F. Elder, Atlanta, Ga.—p. 156.

Three Cases of Mediastinal Sarcoma.—Duncan reports three cases of mediastinal sarcoma treated with radium. Two cases of primary sarcoma of the mediastinum, in which involvement of the adjacent organs probably had not occurred, responded promptly to treatment and warrant a very favorable prognosis. The third case is an example of metastatic mediastinal involvement showing the palliative and probable curative effect of radium therapy in these cases. Duncan believes that there is reason to hope for a permanent improvement in some of these cases.

Unusual Case of Malignancy.—In 1898, Ellison's patient, then aged 38, discovered what her family physician called a wen, located between the nipple and the upper margin of the right breast, which he advised her to let alone and forget. This mass was and remained for a long while about the size of a hen's egg, was superficial and readily movable. It gave no subjective symptoms whatever until 1905, when it suddenly became somewhat larger and painful. A simple amputation of the right breast was performed. Fourteen years after this amputation, she noticed that her left breast had become rather hard and painful in and close about the nipple. Ellison's tentative diagnosis was acute mastitis, for which simple local treatment was prescribed. As the same signs and symptoms were present at the end of another week, a radical amputation of the left breast was performed. The microscopic diagnosis was: metastatic carcinoma in lymph glands, fat and muscle tissue. Four radium treatments were given in about eight weeks. In the meantime, the left chest and arm had gradually become quite hard, swollen and painful. It was readily observed that her condition was constantly growing worse and that the radium had signally failed to prevent recurrence or extension. The patient died in 1920.

New York State Journal of Medicine, New York

July, 1921, 21, No. 7

- Importance of History-Taking in Chronic Gastro-Intestinal Disease. W. Goldie, Toronto.—p. 239.
Interpretation of Gastro-Intestinal Signs and Symptoms. F. W. Rolph, Toronto.—p. 242.
Pneumoperitoneal Roentgen-Ray Diagnosis. A. Stein and W. H. Stewart, New York.—p. 245.
Urologic Diagnosis in Practice of General Surgeon. L. Buerger, New York.—p. 248.
*Deleterious Effects of Bromid Treatment in Diseases of Nervous System. E. L. Hunt, New York.—p. 255.
Corneal Lesions. A. J. Bedell, Albany.—p. 258.
*Intestinal Tuberculosis. L. Brown and H. L. Sampson, Saranac Lake.—p. 260.
Some Special Educational Needs for Children. S. Brown, New York.—p. 261.

- Spinal Puncture in Diagnosis and Treatment. W. E. Youland, New York.—p. 265.
Vitamins and Nutrition. M. J. Lewi and H. E. Dubin, New York.—p. 268.

Bad Effects of Bromid Treatment for Nervous Diseases.—Hunt points out that there are certain types of epilepsy in which the use of bromid aggravates both the irritability and restlessness preceding the seizure as well as the depression following. The toxic and exhaustion cases react unfavorably to the administration of bromid. Mental cases are susceptible to bromid intoxication. Patients suffering from arterial changes are peculiarly susceptible to bromid as they are all kindred drugs. Alcoholics are susceptible to bromid intoxication. Certain persons display an idiosyncrasy to bromid. In a few cases of chronic heart disease not only do small doses of bromid depress and enfeeble the heart action, but if long continued, give rise to the parietic symptoms so common in this condition. Therefore, bromids are very far from harmless. Their prolonged administration will give rise to both physical and mental symptoms, the latter a condition akin to paresis. They tend to aggravate the irritability and mental deterioration in long-standing cases of epilepsy. Toxic cases develop more rapidly on the administration of bromid. Bromid may mask the symptoms of mental disease just as thoroughly as does opium in surgical conditions.

Intestinal Tuberculosis.—In 1920, 19,612 persons died in New York State from tuberculosis; of these 7,235 died from pulmonary tuberculosis. The most frequent complication of pulmonary tuberculosis is intestinal tuberculosis. It is found in from 50 to 80 per cent. or more of all necropsies done on patients dead of pulmonary tuberculosis. Then 10,351 of the 17,235 patients had intestinal tuberculosis at death, of whom only 453, or 1 in 25 were diagnosed. Six per cent. of 89 consecutive cases at the Trudeau Sanatorium had definite or probable intestinal tuberculosis, but one-half of these were without intestinal symptoms. Tubercle bacilli in the stools are of little diagnostic aid, as they occur in 85 per cent. to 95 per cent. of all patients with tubercle bacilli in the sputum.

Ohio State Medical Journal, Columbus

July 1, 1921, 17, No. 7

- Surgical Neuralgia of Fifth Cranial Nerve. L. H. Landon, Pittsburgh.—p. 452.
Restoration of Obliterated Eye Socket. J. M. Wheeler, New York.—p. 456.
Importance of Goiter Being Recognized by General Public. W. Bartlett, St. Louis.—p. 461.
Treatment of Addiction Disease. F. Burns, Cincinnati.—p. 464.
Version. I. W. Potter, Buffalo.—p. 466.
Acute Methyl Alcohol Poisoning. R. Isaacs, Cincinnati.—p. 471.

Philippine Islands Medical Association Journal, Manila

March-April, 1921, 1, No. 2

- The Greater Association. H. W. Wade.—p. 46.
*Comparative Study of Several Contributing Factors to Postoperative Fistulas in Vesical Lithiasis. J. Eduque.—p. 48.
Differential Diagnosis of Dysenteries. F. G. Haughwout.—p. 53.
Cases of Nontraumatic Myelitis and Their Probable Etiology. C. B. Lara.—p. 58.
Preparation of Certain Drugs Used in Treatment of Leprosy. G. A. Perkins.—p. 62.
Right Diaphragmatic Hernia. R. Fernandez.—p. 67.

Postoperative Fistulas in Vesical Lithiasis.—As the main contributing factors to postoperative fistulas in cystolithotomy, Eduque mentions: (1) operation before the infection within the bladder cavity subsides; (2) intravesical drainage has been observed many times to be followed by leakage of long standing and infection at the prevesical space if postoperative care is not properly carried out; (3) continuous contact of the bladder wound with the urine that accumulates within the cavity; (4) insufficiency and irregularity of intravesical flushing after operation; (5) lack of regular change of the catheter per urethram; (6) in some cases, long standing postoperative blood clot may plug the vesical end of the urethral catheter and lead to obstruction of the bladder, thus mechanically bursting the stitches; (7) infection at the space of Retzius may go deeper, through the coats of the bladder, and lead to fistula; (8) hence the necessity of

the drain at the prevesical cavum; loose union between the abdominal wall and vesical wall might delay solid coaptation of the bladder wound, and fistula is likely to occur.

Philippine Journal of Science, Manila

February, 1921, 18, No. 2

Physical Properties of Philippine Concrete and Concrete Aggregates. A. E. W. King.—p. 105.

So. Carolina Medical Association Journal, Greenville

June, 1921, 17, No. 6

Diagnosis of Primary Anemias from Viewpoint of General Practitioner. E. W. Pressley, Greenville.—p. 135.
Nursing Spirit. F. Lander, Williamston.—p. 138.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

April-June, 1921, 18, Nos. 208-210

- Diagnosis and Treatment of Congenital Syphilis. C. F. Marshall.—p. 57.
- *Diurnal Somnolence and Nocturnal Wakefulness as Manifestations of Lethargic Encephalitis. H. M. Fletcher.—p. 69.
- *Fatal Case of Emaciation in Girl at About Period of Puberty. F. P. Weber.—p. 75.
- Treatment of Prolapse of Rectum in Infancy and Childhood by Injection of Alcohol. L. Findlay.—p. 83.
- *Case of Diphtheria of Penis, with Paralytic Sequel. G. Cochrane.—p. 86.
- Empyema of Maxillary Antrum in Infant. E. E. Hughes.—p. 89.

Diurnal Somnolence and Nocturnal Wakefulness in Lethargic Encephalitis.—The chief feature in the two cases cited by Fletcher was a remarkable degree of somnolence during the day associated with wakefulness during the night. Generally the sleepiness did not appear to be associated with any definite constitutional disturbance; in one case, however, the onset was associated with pains in the limbs and diplopia.

Fatal Case of Emaciation.—In Weber's case there was general visceroptosis with an atonic or hypotonic stomach, and probably a condition of achylia gastrica and so-called atrophy of the gastric glands after chronic gastritis. The stomach was distended. The patient had suffered from pain and discomfort on eating. Examination of the gastric contents after an Ewald's test breakfast showed absence of free hydrochloric acid, and the total acidity was only 12. In its motor efficiency the stomach was imperfect, some of the barium-meal being present in the stomach after five hours. The skiagram taken after twenty-four hours showed the stomach empty, but it likewise showed marked ptosis of the transverse colon and the whole of the colon full of the barium-meal. The patient was extremely thin—all skin and bones—as if almost all the subcutaneous fat had disappeared. The loss of fat differed from that seen in lipodystrophia progressiva, inasmuch as it affected the whole body and limbs. General emaciation became altogether extreme and was accompanied by increasing feebleness. The abdomen was rather "sunken." The long, thin, "bony" fingers were a feature of the case. The general development was somewhat infantile or retarded. The patient had never menstruated. There was no swelling to indicate the presence of mammary glands. There was no axillary or pubic hair. The skin was dry and rather sallow, but there was no anemia. In some parts—for instance, in the gluteal regions—the skin had a slightly senile appearance. The patient had a most extreme condition of "erythema ab igne" (reticulated erythema with pigmentation) of the front of the legs. The brachial systolic blood pressure was 100-116 mm. of mercury. There was no suspicion of inherited syphilis. She had always been a poor eater and had always been inclined to feel chilly, with a tendency to cold hands and feet. She took less and less food, and became still more emaciated. She complained of feeling sick if she ate much, and once at least she actually vomited. She died (apparently from exhaustion).

Case of Diphtheria of Penis.—In Cochrane's case, the penis seems primarily and alone to have been affected, and post-diphtheritic paralysis of a severe type developed, as though from an acute faucial attack. The source of infection could not be traced.

British Medical Journal, London

July 2, 1921, 2, No. 3157

- Principle of Repeated Medication for Curing Infections. R. Ross.—p. 1.
- Chronic Nasopharyngeal Infection, Chronic Toxemia and Distressed Heart in Children. C. P. Lapage.—p. 4.
- *Removal of Stones from Pelvic Portion of Ureter. W. H. Battle.—p. 6.
- *Results of Institutional Treatment in Surgical Tuberculosis. E. D. Telford.—p. 7.
- Sight Efficiency in General Population. J. Kirk.—p. 8.
- Case of Placenta Praevia Centralis, with Spontaneous Delivery of Child. A. C. Blair.—p. 10.
- Antitetanus Serum: Anaphylaxis. R. S. Woods.—p. 11.
- July 9, 1921, 2, No. 3158
- Colon and Colitis. Dawson.—p. 31.
- *Acute Infections of Endometrium. R. Hobbs.—p. 35.
- Intravenous Administration of Calcium Acetyl Salicylate. A. Campbell.—p. 37.
- Extraversion of Bladder. A. A. Lendon and H. S. Newland.—p. 38.
- Estimation of Physiologic Cost of Muscular Work. J. B. Orr and J. P. Kinloch.—p. 39.
- *Control of Hemorrhage by Intramuscular Injection of Calcium Chlorid. W. R. Grove and H. W. C. Vines.—p. 40.

Removal of Stones from Pelvic Portion of Ureter.—The method which Battle employed in three cases was this: An oblique incision was made from midway between the anterior superior spine and the umbilicus in the direction of the pubic spine. The sheath of the rectus was opened for the whole length of the incision, the muscle separated from its sheath, and strongly retracted inwards. The deep epigastric vessels were found and divided between ligatures. The posterior sheath and peritoneum were incised in the center of the upper part of the wound to an extent permitting an easy passage of the fingers of the left hand, which were carried to the place in the ureter where the stone had been shown to lie by the roentgen rays. Before the final stage of the operation the abdominal contents were protected and pushed out of the way with a strip of gauze. When the stone was located the forefinger of the other hand was worked extraperitoneally directly to the spot, separating the peritoneum to a sufficient extent down to and a little beyond the stone. An attempt may be made to bring the stone higher up in the ureter if this is thought desirable; it does not always succeed, but it can be lifted upward and forward with the ureter to a useful extent. In Battle's cases the lining of the ureter at the point of impaction was rough, and this appeared to be the reason why the stones could not be moved before the incision of release was made. As the stone was so definitely localized and the part of the ureter where the incision had to be made so clearly defined, it was possible to cut cleanly along the middle of the prominence felt, without varying from the straight line. In addition, the fixation of the stone by the fingers of the left hand made it easier to avoid any accompanying artery, and enabled the incision of the ureter to be made firmly and accurately.

Institutional Treatment in Surgical Tuberculosis.—The results of the conservative treatment of 159 children with tuberculous disease of the hip, spine, knee and foot are analyzed by Telford. Out of 100 children between the ages of 5 and 16 years, treated under good conditions for tuberculous disease of the spine and lower extremities, sixty-eight are cured and able to attend an ordinary school or follow a useful employment; ten received no permanent benefit, and twenty-two died from the disease or its sequels. The mortality is much less for disease of the hip; nine out of fifty-two. The knee shows only two out of thirty-one. Six cases of disease of the ankle and foot recovered completely. Of the thirty-five patients who died, no fewer than twenty-nine patients showed evidence of abscess formation on admission.

Acute Infections of Endometrium.—In acute septic conditions of the uterus, Hobbs is of opinion that careful treatment of the endometrium and draining the cavity of the uterus does not produce an extension of the existing inflammation but lessens it. The cavity of the uterus can be approached time after time until the temperature becomes normal, the uterus firm, and the discharge is got rid of. Inflammatory conditions in the adnexa of the uterus are not only no bar to but are an indication of the need of treatment of the endometrium, since by the fact that the physical signs subside much more rapidly

when the uterus is drained than if left alone. In a large number of cases the origin of the pain and discomfort lies not in the tubes but in the uterus, because it is inflamed and heavy. Unless these lesions outside the uterus are of the grossest kind no operation should be performed, at any rate until thorough methodical treatment of the endometrium has first been tried. Exacerbations of salpingitis have proved far less frequent since Hobbs followed this line of treatment.

Hemorrhage Controlled by Calcium Chlorid Injection.—One grain of calcium chlorid is dissolved in about 100 minims of water and injected deeply into the gluteal muscles; it must not be injected subcutaneously or sloughing of the skin will be caused. If a solution of the salt is made up to a concentration of 1 in 4 (2 drams in an ounce is a convenient quantity), 4 minims then contain 1 grain. This solution has been kept for weeks, and in this strength apparently remains sterile indefinitely. If the solution is not quite clear, it must be shaken before use. The 4 minims are diluted to 100 mm. with boiled water, and in some hundred or more injections nothing abnormal has developed at the site of injection. Generally the injection is painless, though a few patients have complained of pain and stiffness running down the limb. In the blood, the calcium value is found to rise slowly to a maximum in six hours, and then to remain practically constant for at least twenty-four hours. As a practical application of these results it has been found perfectly safe to give a second injection at the end of twenty-four hours, and, if necessary, a third, twenty-four hours later; this was actually done in a case of hematemesis. In anticipating hemorrhage at or after operation, an injection not more than two hours before, or even at the time of operation, would seem indicated.

Dublin Journal of Medical Science

July, 1921, 4, No. 17

Lichen Axillaris, Lichen Annularis; Etiology of Lichen. W. Beatty.—p. 289.

*Nature of Internal Secretion of Pancreas. W. M. Crofton.—p. 301.
Roentgen-Ray Treatment with Reference to Gynecologic Practice. E. J. Watson.—p. 309.

*Report of Rotunda Hospital. J. S. English and A. H. Davidson.—p. 317.

Nature of Pancreas Secretion.—Crofton endeavors to show that the internal secretion of the pancreas is not a "hormone" such as the secretins, thyroid substance, pituitary extract, and so on, but is an essential part of a compound ferment by means of which synthesis and hydrolysis, that is, anabolism and katabolism of different food material, is brought about.

Report of Rotunda Hospital.—In the extern maternity of the Rotunda Hospital there were attended during the year 1918-1919, 1,505 cases of labor with seven maternal deaths; two of these were due to pneumonia during the epidemic of influenza. In the intern maternity 2,036 cases were treated and 1,785 women delivered. Among these were five cases of accidental hemorrhage, all of the external type, and all recovered. Eleven cases of unavoidable hemorrhage included three deaths—two from septic infection and one a 7-para, twenty-five weeks pregnant, with severe toxemia. Twenty-one cases of contracted pelvis were treated; seventeen babies were born alive, and one mother died of influenzal pneumonia. Pubiotomy was performed eight times and delivery completed with forceps three times, and after version on account of prolapse of the cord once. Five women had the pubic bone divided from one week to two months before labor, and two of these delivered themselves spontaneously. One woman had pubiotomy done in 1912 and delivered herself spontaneously; another done in 1916 was delivered easily with forceps. Cesarean section was done nine times, six being for contracted pelvis, and one of these women had had the operation four times previously. Forceps were applied in eighty-eight cases, once to impacted breech and once to an after-coming head. Nine children were born dead. Forty-three children were delivered as breech presentations with five dead, one macerated. The morbidity for the year on the B. M. A. standard was 6.19; it was increased by the epidemics of influenza which occurred in November and February, but, on the whole, the hospital remained wonderfully free of the infection. Of the cases of genital origin, one received vaginal

douching only, twenty-six uterovaginal douching, fourteen applications to the peritoneum only. Vaccine was given in seventeen cases and hysterectomy done in three. Only three patients received more than two douches. In twelve cases streptococci were found and ten recovered; in three cases streptococci with coli were found and two recovered. Hysterectomy was done in three cases and one recovered. In this case when the uterus was removed it was found to contain a small placenta firmly inherent to the fundus and evidently due to a twin pregnancy which had died and been retained.

Lancet, London

July 9, 1921, 2, No. 5106

Etiology of Skin Diseases. A. Whitfield.—p. 61.

*Capillary Pressure and Circulation in Shock. L. Hill and J. McQueen.—p. 65.

*Diagnosis and Treatment of Diphtheria. F. H. Thomson.—p. 68.

Effects of Hot and Cold Applications to Surface of Body on Temperature of Muscles, Liver, Kidneys and Brain. J. J. R. Macleod and N. B. Taylor.—p. 70.

*Anomalous Response to Direct Faradic Stimulation of Nerve. J. S. B. Stopford.—p. 73.

Two Cases of Aplastic Anemia. E. C. P. Williams.—p. 74.

Capillary Pressure and Circulation in Shock.—Hill and McQueen state that the accurate measurement of capillary blood pressure throws light on stasis. Lost arterial blood pressures are dangerous because the capillary kinetic energy of blood flow is very small with normal arterial blood pressure. There is a very small margin of safety in the capillary area.

Diphtheria.—The main points in the treatment of acute diphtheria, Thomson says, apart from suitable nourishment, are adequate dosage of antitoxin and complete rest in the recumbent position. All other treatment falls into insignificance beside them, and any treatment which interferes with them is bad. There is evidence which goes to show that antitoxin neutralizes or partly neutralizes the toxin in circulation, and that larger doses may partly neutralize toxin loosely combined with the cells, but not that which has become fixed. The deductions appear to be that the earlier one can treat the disease the better, and that if one fails to get the patient early the dosage should be greater; this is in accord with clinical experience. The method of administering the antitoxin affects the dosage to some extent, but the main points affecting it are the severity of the attack and the stage of the disease. It is, however, very difficult to estimate the dosage in any given case, and the only safe method appears to be to err purposely on the ample side. It is wise in all severe cases to add, say, 4,000 units more to cover possible error. In Thomson's opinion, the intramuscular method is preferable and the injection is best made deeply into the vastus externus. If one has not erred in one's estimate of the severity of the attack, as indicated by a definite increase in symptoms in twelve hours after the injection, many cases will not require more antitoxin. In mild faucial cases, second doses will seldom be necessary. In moderate faucial cases some will require second doses of from 8,000 to 10,000 units. In severe faucial and laryngeal cases, second doses of from 12,000 to 16,000 units will be required in a goodly number. In many very severe faucial cases second doses, usually varying from 16,000 to 20,000 units, will be required, but occasionally it will be advisable to repeat the first-day dose in twenty-four hours or less if the faucial swelling and cellulitis have increased, and to give a second dose of 20,000 units should there be no improvement by that time. Cases suffering from laryngeal diphtheria with no faucial or nasal involvement seldom require more than 18,000 units. Nasal diphtheria with membrane but no faucial involvement, and conjunctival diphtheria with no faucial involvement, seldom require a second dose. A discharge from the nose, whether blood stained or not, in which is found the diphtheria bacillus but no membrane formation, seldom requires antitoxin treatment.

Anomalous Response to Direct Faradic Stimulation of Nerve.—The experience gained by Stopford from a study of two patients seems to suggest very strongly that the anomalous occurrence of a response in muscles on direct faradic stimulation of a nerve at operation may be explained by the regeneration of afferent fibrils down efferent pathways in the

distal segment of the nerve. If future observations prove this theory to be correct it must have an important influence on the procedure adopted by the surgeon at the second operation. Clearly, if this is the correct interpretation of the etiology of this curious phenomenon, the surgeon must not be misled and induced by its presence to leave the nerve alone and expect a functional recovery, but must resect the affected piece of nerve and perform an end-to-end suture.

National Medical Journal of China, Shanghai

March, 1921, 7, No. 1

- Famine Fever. W. W. Peter.—p. 5.
Explanation of Construction and Working of Delouser. J. H. Ingram.—p. 23.
Reduction of Fractures by Open Method. W. S. New.—p. 28.

Medical Journal of South Africa, Johannesburg

April, 1921, 16, No. 3

- Intestinal Radiography for Chronic Appendicitis. L. E. Ellis.—p. 163.
Clinical Side of Scurvy in Mine Native Laborer. S. Donaldson.—p. 169.

South African Medical Record, Cape Town

June 11, 1921, 19, No. 11

- Improved Apparatus for Administration of Warmed Ether Vapors. G. W. B. Daniell.—p. 207.

Archives Médicales Belges, Liège

April, 1921, 74, No. 4

- *Nystagmus and Equilibration. V. G. Brabant.—p. 257.
The Lipoids of the Leukocytes. E. Savini.—p. 325.

Nystagmus and Equilibration.—Brabant is chef du laboratoire de psychophysiologie of aeronautics in Belgium, and his experience and research have convinced him that the balancing sense is in the eyes rather than in the internal ear. The external muscles of the eyeballs—their variable state of contraction corresponding to the modes of the balancing of the eyeballs—seem to be, he says, the principal peripheral organs of equilibration. All the physiologic findings conform to this.

Bulletin de l'Académie de Médecine, Paris

June 14, 1921, 85, No. 24

- *Tuberculous Sputum. F. Bezançon and A. Biros.—p. 696.
*Heart Organotherapy. A. Martinet.—p. 701.
*Old Syphilitic Myocarditis. E. Lenoble.—p. 703.

Bacteriology of Tuberculous Sputum.—Bezançon and Biros take up the clump of fresh sputum on a wire and agitate it in four Petri dishes of physiologic saline in turn, to rinse it of saliva, etc., and then stain it as usual. In twenty-three of 120 examinations thus made the tubercle bacillus alone was found. In six other cases there was secondary infection; in one case the pneumococcus was found so numerous that this explained the symptoms as an interlobar pneumococcus pleuritis complicating the tuberculous process. These secondary infections explain many clinical pictures which we have been ascribing to exacerbations of the tuberculous processes. They explain the apparent anomaly of grave physical findings with only few tubercle bacilli in the sputum. The secondary infectious process may fan the tuberculosis process into a brief flame which subsides with the former.

Heart Organotherapy.—Reviewed in Paris Letter.

Old Syphilitic Myocarditis.—Lenoble applies the term *deshabitées* to the lesions he has in mind as the spirochetes have "moved out" and specific treatment is futile and may do harm. The onset of disturbances is abrupt and violent, and periods of improvement are brief. There may be a general weakness, which seems to be an essential characteristic of neglected syphilis. There is dyspnea on exertion, and sometimes intense cyanosis of face and extremities. The attacks recur frequently, and there may be precordial pains of the angina pectoris type. Death occurred suddenly in one of his nine cases of the kind.

June 21, 1921, 85, No. 25

- Cardiac Organotherapy. L. Rénon et al.—p. 707. See Paris Letter.
*Ulceration with Rectal Cancer. L. Rénon and P. Blamoutier.—p. 715.
*Traffic in Cocain. Courtois-Suffit and R. Giroux.—p. 720.

Perforation of Small Intestine in Course of Rectal Cancer.—In the case described by Rénon the man of 40 had been

having what seemed to be rebellious dysentery for nearly seven years, explained by the necropsy findings to have been due to a plastic linitis of the rectum terminating in an annular cancer. The latter might have been discovered at any time by sigmoidoscopy. Necropsy disclosed further secondary ulceration and perforation of the small intestine. The lesions resembled those in animals for which Morgan's bacillus is responsible.

Traffic in Cocain.—Courtois-Suffit and Giroux present data demonstrating the enormous spread of the traffic in cocain since the war, as the Germans are selling it in profusion for 600 francs per kilogram and it can be resold for 10,000 or 15,000 francs in France. The soldiers of the armies of occupation take advantage of this to trade in it, and the aeroplanes favor the smuggling of the drug into France. There were 151 arrests in France in 1920 of those trading in cocain, but the penalties were never more than three months' imprisonment and fines of from 100 to 1,000 francs. One of these cocain traders had a handsome establishment for dancing parties. When arrested he had 200 vials of cocain with the Merck label. Another had 14 kg. of the drug when arrested, and he claimed to have bought it from an American sergeant. In their investigation two years ago, they found Paris the main center for the trade, but now it seems to be scattered all through the provinces.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 10, 1921, 45, No. 20

- The Duodenal Tube in Diagnosis of Chronic Jaundice. F. Rathery and Cambessèdes.—p. 854.
*Blocked Aerophagia. F. Ramond, C. Jacquelin and Borrien.—p. 856.
*Inguinal Lymphogranulomatosis. P. Ravaut.—p. 865.
Exophthalmic Goiter with Thyroid Tumor and Metastases. L. Tixier and H. Duval.—p. 874.
Allyl-Theobromin in Therapeutics. Rémond and Colombies.—p. 876.
*Diagnosis of Spinal Cord Tumors, etc. D. E. Paulian.—p. 878.
*Asthma from Idiosyncrasy to Potatoes. Roch and P. Schiff.—p. 882.
Idiosyncrasy to Antipyrin. Roch and P. Gautier.—p. 886.
Idiosyncrasy to Linseed Meal. Roch and C. Saloz.—p. 888.
Pulmonary Tuberculosis Involving Esophagus. Lenoble et al.—p. 890.

Blocked Aerophagia.—Ramond and his co-workers apply this term to the condition when the swallowed air is unable to escape into the esophagus or bowel. They describe the puzzling symptoms therefrom, and the peculiar roentgen-ray findings. Treatment must aim to prevent ingestion of air and aid in its expulsion. The knee-chest position may help, and a short walk is advisable after eating, refraining from reclining or bending over which tends to obstruct the opening into the esophagus. A hot aromatic infusion after eating is always useful, and antispasmodics, if there is a tendency to spasm. In extreme cases the daily use of a stomach tube may be necessary. For this they prefer a tube like the Einhorn duodenal tube, only with stronger walls and made without any metal. If an abdominal bandage has to be worn, it should not push up the stomach, as this will block the aerophagia still more.

Subacute Inguinal Lymphogranulomatosis.—Ravaut has encountered fourteen cases of this kind in the last six months. Operative treatment has been the rule, to resect the mass of enlarged and suppurating glands, but in the last case he found an ameba in the pus. This suggested emetin in treatment, and under subcutaneous or intravenous injections of emetin the cure was soon complete. In four other cases, fistulas persisting for months healed under the emetin likewise. Physicians from the colonies who saw these patients commented on the resemblance between their lesions and those known in tropical regions as climatic buboes. Emetin should be given a trial in the latter. Ravaut has given emetin with good effect to date also in one case of glandular disease in the neck.

Compression of the Spinal Cord.—Paulian's experience has confirmed the diagnostic importance of the zone of hyposthesia just above the zone of anesthesia, with compression of the spinal cord from a tumor or other cause. The zone just above the anesthesia zone shows pronounced hyposthesia; above this is a zone of slight hyposthesia. The upper and lower limit of the zone of pronounced hyposthesia corresponds, he has found, to the upper and lower limit of the pressure. In several cases with this as the guide, he found

the lesion in question invariably in the anticipated segment of the spinal cord.

Asthma from Idiosyncrasy to Potato.—The woman of 56 has been subject to asthma all her life but only recently was it traced to its cause in an idiosyncrasy to potato. The anaphylactic asthma was accompanied by the hemoclastic shock, etc. Roch and Schiff are now studying the case to determine which element in the potato is responsible for the anaphylaxis, so that they can apply it to desensitize the patient.

Encéphale, Paris

May, 1921, 16, No. 5

Pathologic Anatomy of Pineal Gland. Laignel-Lavastine.—p. 225.
Progressive Vasotrophic Neurosis of Hands. A. Obregia and C. Urechia.—p. 240.
Acute Delirium in Course of Melancholia. H. Damaye.—p. 244.
*Schizophrenia. E. Minkowski.—p. 247. Cont'd.

Schizophrenia.—Minkowski discusses this subject in connection with the conception of mental disease in general, and particularly Bleuler's conception of it.

Lyon Médical, Lyons

June 10, 1921, 130, No. 11

Present Status of Bone Grafting. M. Durand.—p. 473.
Medical Impressions of Sweden. L. Duvernay.—p. 511.

June 25, 1921, 130, No. 12

*Suppuration in Both Suprarenals. E. Deglos.—p. 523.
The Pseudomembranes Found in the Gassed. R. Rendu and J. F. Martin.—p. 528.

Suppuration in Both Suprarenals.—Deglos' diagnosis was typhoid or paratyphoid as the woman of 28 had been having fever and malaise for two weeks with progressive prostration. Bacteriologic and other tests gave negative findings, but necropsy after the sudden death in the third week revealed cheesy foci in both suprarenals, one being transformed completely into a cold abscess. The case warns that this form of chronic suprarenal disease should be thought of in investigating cases of sudden death in persons complaining of extreme weakness, with low blood pressure. In this case the course had been too fulminating for pigmentation to have a chance to develop.

Nourrisson, Paris

July, 1921, 9, No. 4

*Pathogenesis of Athrepsia. A. B. Marfan.—p. 193.
*Stenosis of Pylorus in Infants. P. Rohmer.—p. 215.
*Scabies in Infants. H. Lemaire.—p. 223.
Rachitic Changes in Muscles. G. Banu.—p. 229.
*Infant Welfare Work. Dubost and François.—p. 239.

Denutrition in Young Infants.—Marfan has continued his research on athrepsia and hypothyrepsia. The grave forms are never observed, he says, in the breast fed, and he analyzes the differences between cow's milk and breast milk which are responsible for this different course of the nutritional disturbances. The chemical differences cannot explain the whole, nor the extra work required to digest cow's milk, but the lack of the specific enzymes found in breast milk amply suffices to explain the progressive athrepsia to which the bottle fed are liable. The enzymes and enzymoids of the infant organism are scanty and weak at first, but they are effectually reenforced by the ferments in breast milk, while the latter, in addition, is of extra easy digestion and assimilation. When the infant fails to receive the trophic ferments which Nature provides for it in breast milk, its development suffers, but the congenitally vigorous may produce enough ferments themselves to enable them to dispense with the maternal. If not, or if ferment production becomes arrested, hypothyrepsia and athrepsia may follow, and necropsy shows the reduction in bulk of the cytoplasm of the visceral and glandular cells that might be expected under such conditions. Congenital debility is identical with the condition of the bottle fed who have lost their enzyme producing power. The only difference is that this enzyme insufficiency is of intra-uterine instead of extra-uterine origin. Both require the ferments in breast milk. Athrepsia is therefore a deficiency disease, but not from deficiency of vitamins; there is nothing in athrepsia that resembles the symptoms of beriberi or orbutus. This theory is still conjectural; to demonstrate it

would require research on the activity of enzymes and enzymoids in the breast fed and bottle fed, discriminating further between the healthy and those with nutritional disturbances. The theory harmonizes with all the known facts, he says, and throws light on the physiology of infants, and is suggestive for medical practice. Marfan adds that Finkelstein's theory of intoxication from defectively digested cow's milk fits with the above theory, but Finkelstein ascribes the chief poisonous action to the sugar and salts in cow's milk, regarding the casein as the least harmful element, with the butter fat midway between them. Marfan adds, "The 'albumin milk' prepared to correspond with this assumption has not proved a success generally outside of Germany."

Stenosis of the Pylorus in Infants.—Rohmer describes three cases of stenosis with hypertrophy of the pylorus and extreme dilation of the stomach. In 265 cases on record, the dilation was marked in 10 per cent. Aerophagia is a contributing factor, and lavage of the stomach is of great benefit. The prognosis does not seem to be any graver with the dilation than without. In two of his three cases the motor function of the stomach seemed normal several months after the prolonged course of daily lavage of the fasting stomach. The third infant succumbed to an intercurrent infection at the age of 4 months.

Scabies in Infants.—In infants scabies assumes a pustular form, Lemaire remarks, and the differential diagnosis may be puzzling unless the soles are examined. The aspect of the sole of the infant will often clear up the diagnosis in dubious cases of itching dermatitis. He reports two cases which confirm that an infected scabies may prove fatal for a young infant. A transient bacteriemia entailed foci of infection in viscera, lungs and meninges. In one of the infants an accompanying eczema blanched out as a pulmonary focus became aggravated. The pulmonary focus and the general condition improved under baths, etc., which brought the eczema out again. He has on several occasions noted this coincidence, with the final recovery of the child.

Infant Welfare Work.—This communication describes the workings of the station at Mainville-Draveil which includes the placing of infants with women already nursing a child. This *centre d'élevage* is proving very successful in connection with the well baby clinic once a week and social service in the homes.

Paris Médical

June 11, 1921, 11, No. 24

Acute Toxemic Appendicitis Without Peritonitis. Descomps.—p. 469.
Influenza in Young Children in Manchuria. T. Suzuki.—p. 473.
Radium Treatment. M. d'Halluin.—p. 475.
Function After Chopart's Amputation. C. Roederer.—p. 478.

June 18, 1921, 11, No. 25

*Filtrable Neurotropic Viruses. P. Harvier.—p. 485.
*Radium Puncture of Uterine Cancers. A. Schwartz and Richard.—p. 493.
Mixed Tumor of Roof of Palate. Négrié.—p. 496.

Neurotropic Filtrable Viruses.—Harvier reviews the present status of our knowledge of the virus of rabies, of epidemic poliomyelitis, and of epidemic encephalitis. Each of these diseases can be transmitted by inoculation of nerve centers, and the two latter by inoculation with nasopharyngeal secretions from the sick and from carriers. Different animal species show a different susceptibility, and there is no crossed immunity to these three diseases. Epidemic encephalitis has given negative results to date in respect to vaccination and neutralization of the virus by serum.

Radium Puncture.—The radium emanation needles are plunged into the region of the uterine cancer, working through a laparotomy incision, to supplement the radium tube in the vagina. Two cases are described to show the advantages of this method. The cure has been complete for five months to date in one woman of 37. The other patient did not return to complete the course, and died not long after.

June 25, 1921, 11, No. 26

Recent Progress in Orthopedics. P. Mauclaire.—p. 501.
*Enteroptosis of Liver Origin. R. Glénard and Rouzaud.—p. 506.
Headache with Periodical Mania. G. Halberstadt.—p. 513.

Enteroptosis of Liver Origin.—Glénard and Rouzaud in reviewing the field of visceral ptosis say that there are few

pathologic conditions in which the treatment varies so widely from physician to physician as this. Their own study of 13 women and 11 men with enteroptosis showed that the metabolism was sluggish, the blood pressure low, the viscosity high, pointing to insufficiency of the liver functioning. This may be secondary to enteroptosis of mechanical origin, but in a certain proportion of cases the enteroptosis developed in consequence of primary disease of the liver. In his practice at Vichy Glénard found that 25 to 33 per cent. of all seeking relief there had pronounced sagging of the viscera, although this ptosis had seldom been recognized. The Vichy waters, restoring practically normal conditions in the liver, seemed to cure the tendency to ptosis at the same time. In 9 such cases the liver disease was of infectious origin (typhoid, malaria, etc.); in 19 of toxic; 28 traumatic, and in 12 of nervous origin, from grief, fright or overstrain. The resulting congestion of the liver impedes the portal circulation and tends to induce enteroptosis, both mechanically and by the results of its impaired functioning. Conditions may right themselves later by a process of compensation and by the return of the liver to normal.

To regard enteroptosis, he says, as belonging only to surgery, is to mistake a single accident, a complication, for the whole general condition. Of course constricting bands and cicatricial adhesion impeding bowel functioning require operative relief. But otherwise, the treatment of enteroptosis should be with an abdominal supporting girdle; laxatives, especially sodium sulphate, in small doses; a diet with meat predominating, and a course of alkaline mineral waters of the Vichy type. These medical measures are indispensable likewise after any operation for enteroptosis. He advises to give a preliminary course of the mineral waters before proceeding to operate; it will frequently render surgical intervention unnecessary.

Schweizerische medizinische Wochenschrift, Basel

June 9, 1921, 51, No. 23

- The Active Substances in Ergot. K. Spiro and A. Stoll.—p. 525.
- *Results of Meniscus Operations After Industrial Accidents. J. Dubs.—p. 529.
- Relations Between Exophthalmic Goiter and Tuberculosis. H. Steck.—p. 535.
- *Cholecystitis at Basel. A. Vischer.—p. 538. Conc'n.

Meniscus Operation After Industrial Accidents.—Dubs discusses the remote results and disability from the standpoint of accident insurance. His tables show that only 17.5 per cent. of the 40 insured workmen have regained full earning capacity since the operation on the ruptured meniscus, and 82.5 per cent. have received workmen's compensation for permanent disability. In Baud's similar series in men that were not insured against accident, 80 per cent. have regained full earning capacity, free from any subjective or objective disturbances. His tabulated data teach that the decision as to the outcome of a meniscus injury should never be made until a year at least after the operation. Conditions which seem irreparable at first may gradually right themselves.

Acute Cholecystitis.—Previous instalment mentioned on p. 410.

Policlinico, Rome

June 13, 1921, 28, No. 24

- *Serodiagnosis of Syphilis. S. de Villa and A. Ronchi.—p. 811.
- *Fulminating Urine Fever. E. Pirondini.—p. 816.

Serodiagnosis of Syphilis.—De Villa and Ronchi have been applying all the known means for diagnosis by deviation of complement or flocculation in the serum and spinal fluid of syphilis suspects, seeking to determine the element responsible for the specific reaction. In their over 600 tests they also applied various modifications of the usual technic with different chemicals. The findings are tabulated but they are not ready to draw deductions from them as yet, they say.

Fulminating Urine Fever.—Pirondini remarks that although the progress in technic has nearly banished fulminating intoxication from urine poisoning, yet it does still occur occasionally, fatal in a few hours. In a case in his own experience, after operative treatment of stenosis of the urethra, the urine escaped both by the perineal buttonhole incision and

the urethra. On the eighteenth day dilatation was begun with a metal dilator, and proceeded smoothly, the patient in good condition, the urine clear. In less than three hours rigors developed, with temperature up to 41.9 C. and the man died in coma nine hours after the first attempt at dilatation, six hours after the first chill. He queries whether an anaphylactic factor is involved, and compares this case with a similar experience in a man with cancer of the prostate. The chills and high fever followed an attempt to introduce the urethroscope which revealed metastatic stenosis. The alarming condition persisted for fifteen minutes and then gradually subsided. In a third case, reported by Ricci, the dilating procedure had proceeded regularly for several sittings, but two hours after the last one chills and high fever developed, with death in coma the twelfth hour. The danger seems to be from the penetration into the circulation of toxic substances during micturition after a dilating procedure which may have induced some erosion in the urethral mucosa. If the urine in the bladder can be diluted or disinfected, this danger is reduced, but this was supposed to be mechanically impossible in Pirondini's fatal case, and in the others had not been thought of.

June 20, 1921, 28, No. 25

- *Revaccination During Epidemic Smallpox. A. Ilvento.—p. 843.
- *Testicle Anomalies. A. Balduzzi.—p. 850.
- Paraffin Tumor in Scrotum. Santi Bivona.—p. 854.
- Inherited Morbid Taints. Monteleone.—p. 856.

Revaccination During Epidemic Smallpox.—Ilvento analyzes some recent epidemics of variola in Italy to show that the protection conferred by a positive vaccination is very slight for the first two weeks afterward, if it can be said to protect at all. The protection is more reliable by the end of the month, and it grows more potent as a few years pass, but individual conditions modify its duration.

Testicle Anomalies.—Balduzzi is inclined to regard retention of a testicle as a predisposing factor in hernia, an evidence of a general tendency to abnormal development. He describes some cases, and remarks that no instance of it was found among 1,000 soldiers while the anomaly was noted in 0.226 per cent. of 570 convicts.

Riforma Medica, Naples

June 11, 1921, 37, No. 24

- Loeb's Stain for Gonococci No Improvement. L. Vercellino.—p. 553.
- *Manifestations from Pilocarpin in Brain Lesions. C. Besta.—p. 553.
- *Sclerous Perinephritis. A. Cassuto.—p. 556.
- *Tuberculosis of the Myocardium. E. Benvenuti.—p. 558.
- Progress in Medical Education. A. Lustig.—p. 560.
- Infectious Erythema in Children. A. Muggia.—p. 562.

Action of Pilocarpin on Brain Lesions.—Besta had occasion to inject pilocarpin in 200 cases of wounds of the brain. He found that the drug induced characteristic symptoms according as the injury was in different areas and at different depths. He therefore calls attention to this harmless and simple means for revealing the existence of lesions in the brain, and localizing them, possibly in the absence of all other diagnostic findings. His research revealed a scope of influence from pilocarpin on the autonomic vegetative system beyond anything previously suspected. The findings confirm those obtained with ether in cases of cerebral injury; spasms and contracture occur, with exaggeration of the reflexes, when ether is given after a brain wound. The pilocarpin induced tremor of one arm, or jacksonian epilepsy, or lacrimation or salivation, exaggeration of reflexes or other manifestations, the type differing with the site of the lesion, as he explains in detail.

Hydronephrosis with Perinephritis.—Cassuto calls attention to the enormous sclero-adipose perinephritis in the man of 44 with calculi in the hydronephrotic kidney.

The Heart in the Tuberculous.—Benvenuti gives an illustrated description of a case of a large tubercle in the myocardium of the young man who had succumbed to the progress of the heart disease in the course of pulmonary tuberculosis.

Rivista Critica di Clinica Medica, Florence

May 15, 1921, 22, No. 14

- Splenomegalia with Polycythemia. M. Bufalini.—p. 157. Conc'n.

May 25, 1921, 22, No. 15

- *Transitional Forms of Hereditary Ataxia. G. Taddei.—p. 169.
Fractional Analysis of Stomach Content. D'Arbela.—p. 178.

Transitional Forms of Hereditary Ataxia.—In the case described by Taddei, the young man had unmistakable inherited syphilis and, in addition, presented all the symptoms characteristic of Friedreich's ataxia and some of the symptoms of Marie's hereditary cerebellar ataxia. The Friedreich and the Marie types must thus be regarded as different forms of the same disease, not as separate morbid entities.

June 5, 1921, 22, No. 16

- *Case of Quincke's Edema with Urticaria. C. Alessandri.—p. 181.
Conc'n No. 17, p. 193.

Quincke's Edema with Urticaria.—The father of the patient of 18 was a hard drinker, but the young man had always been supposedly healthy until in 1919 he was jailed for twelve days on account of rioting. Since then he has had recurring angio-neurotic edema with intense pruritus and urticaria, rebellious for months to all measures until 0.5 gm. of peptone was given by mouth half an hour before each of the three meals of the day. Under this antianaphylaxis, the morbid tendency gradually subsided to a complete cure, permanent during the four months to date.

Archivos Españoles de Pediatría, Madrid

April, 1921, 5, No. 4

- Schick Reaction in Diphtheria. Muñoyerro and Ramos Acosta.—p. 193.
*Tendon Transplantation for Radial Paralysis. Riosalido.—p. 210.

Tendon Transplantation for Radial Paralysis.—Riosalido's colored plates show the technic and perfect outcome of transplantation of the tendons of the flexor muscles to counteract radial paralysis. The transplanted muscles are flexors and they have to be trained to extension. The intelligence of his patient, a young man of 16, undoubtedly cooperated in the prompt success. The paralysis was the result of an osteomyelitic focus in the humerus, with fracture of the bone. The tendon operation was a modification of Jones' technic, severing the muscles through an incision on the palmar side. The proximal stumps were then brought out on the dorsal side through the soft parts, and were sutured to the extensors, to the thumb extensor separately, and to the bunched finger extensors.

Brazil-Medico, Rio de Janeiro

May 21, 1921, 35, No. 21

- *Treatment of Anaphylactic Phenomena. A. de Vasconcellos.—p. 259.
The Influence of the Sea on Health. J. Drummond.—p. 262.

Treatment of Anaphylaxis.—De Vasconcellos gives an able summary of the history of anaphylaxis, the anaphylactic shock and the attempts to utilize it in therapeutics and in functional tests. He cites Danysz' theory that the action is due to an influence on the nervous system, and relates that the latter's method of treating chronic intestinal disease, eczema, asthma, neurasthenia and insomnia by antigens derived from the patients' stools, is proving as effectual in his hands as in Danysz' own experience with cures in 80 per cent. In five cases of epilepsy, in private practice, and in a number of hospital cases—all adults—the seizures seem to be milder and the intervals longer. Chronic constipation is also favorably influenced. He gives these entero-antigens by the mouth or subcutaneously. The visible, palpable and proven benefit in his experience testifies, he reiterates, to the value of this form of therapeutic antianaphylaxis.

Revista Mexicana de Biología, City of Mexico

May, 1921, 1, No. 5

- Importance of Study of Biology. A. Aragón.—p. 203.
*Meat of Cattle with Malignant Edema. S. J. Bonansea.—p. 208.
The Interval Since Death as Estimated from the Blood Findings. F. Castillo Nájera.—p. 213.
Action of Lichens on Plant Hosts. Guillermo Gándara.—p. 215.

Meat of Cattle with Malignant Edema.—The cattle had been vaccinated against anthrax but this did not prevent malignant edema from decimating the herd. The meat from the sick cattle did not seem to induce any disturbances among those that ate it or handled it.

Semana Médica, Buenos Aires

May 19, 1921, 28, No. 20

- *Encysted Pelvic Abscess. G. Bosch Arana.—p. 569.
*The Pituitary and Gestation. Manuel Luis Pérez.—p. 580. Conc'n.

Rectal Access to Pelvic Abscess.—Bosch Arana refers to an encysted abscess in the pouch of Douglas, for which appendicitis is usually responsible. In two of his three cases of the kind, the symptoms had been mistaken for kidney colic or acute colitis. The clinical picture includes pain in the hypogastrium, pollakiuria, pains in the lumbar region and bowel, with frequent desire for defecation. His illustrations readily explain these symptoms and show how rectal evacuation is logical and simple. He uses for the purpose a twin drain tube. It is like two stout catheters soldered together, with openings in the curving tips which are introduced into the abscess cavity. One tube serves for injection of the disinfecting fluid; the other has three openings below for draining the rectum. The only incision is that through the rectal wall into the abscess, and this is laved by the fluid with which the abscess is rinsed out. The gases and feces pass out readily through the ample fenestrated tube while the abscess cavity can be flushed at will. By clamping the outflow tube, the rectum can be flushed likewise. The twin drain tubes are left in place otherwise unmolested for from five to seven days as required. The temperature drops, and without the dangers of a laparotomy or other intervention beyond the simple rectotomy, recovery is soon complete. The patient is kept from having bowel movements, as after an operation for piles, until the tubes are removed. Then a purge is given and the rectal incision heals spontaneously.

The Pituitary and Gestation.—Pérez summarizes what is known in regard to the physiology of the pituitary, and the effects of its removal in gravid and nongravid animals, describing his own research in this line with twenty-three dogs. These and other experiments have demonstrated, he thinks, that the pituitary hypertrophies during gestation, testifying to exaggerated functioning. The pituitary can be easily removed, but in gravid animals this is inevitably fatal in a few hours; of the nongravid male and female dogs, only 33 per cent. survived the hypophysectomy.

Siglo Médico, Madrid

May 21, 1921, 68, No. 3519

- Seashore Resorts in Psychoneuroses. E. Fernández Sanz.—p. 477.
*Roentgen-Ray Treatment of Metrorrhagia. J. and S. Ratera.—p. 479.
*Treatment of Scoliosis. J. Decref.—p. 480. Cont'd.
*Syphilis as a Factor in Epilepsy. C. A. Bambarén.—p. 485. Conc'n.
Tetanus Localized in the Members. E. Chauvin.—p. 487. Cont'n.

Roentgen Ray Treatment of Metrorrhagia.—The Rateras report here a case of recurring profuse hemorrhages from a small fibroma of the uterus in a woman of 45. She had lost 13 kg. in weight during the last two months. Under deep roentgen-ray treatment, with twelve fields, to a total of 300 X units in thirteen days, the hemorrhagic tendency subsided completely.

Scoliosis and Its Treatment.—In this instalment of Decref's study of habitual scoliosis he emphasizes the importance of being on the alert to detect scoliosis in its incipency and ward off further damage. He emphasizes the necessity for watching out for endocrine insufficiency and giving the proper organotherapy to restore the balance in the ductless gland system. The proportion of girls with scoliosis is much larger than of boys—the puberty process seems to be more complex in girls. But once installed, the scoliosis in boys is of a graver type, probably because boys and youths do harder physical work. The physician's main task is to watch out for and correct the tendency to scoliosis in its early stages. He warns that braces in this first stage do more harm than good.

Syphilis as Etiologic Factor in Epilepsy.—Bambarén draws the balance sheet of the conception of syphilis, inherited or acquired, as a factor in epilepsy, citing testimony for and against it, including a number of articles in THE JOURNAL, and Levy Bing's thirteen cases of essential syphilis with an unmistakable history of syphilis in all, and remarkable improvement under treatment for syphilis. He remarks in conclusion, "How difficult it is for new ideas to gain a foothold," as his comment on Strümpell's denial that inherited

syphilis has ever been conclusively demonstrated as a factor in essential epilepsy.

Archiv für Verdauungs-Krankheiten, Berlin

1921, 27, No. 6

*Multiform Syphilitic Gastric Ulcer. W. A. Brams.—p. 375.

*Duodenal Ulcer Under Age of Ten. J. Alsberg.—p. 396.

Gastro-Intestinal Disturbances in Malaria. E. Lyon.—p. 407.

Syphilitic Gastric Ulceration.—Brams has found only 7 cases on record in which the necropsy findings confirmed the clinical history, but in 30 other cases the course afforded presumptive evidence of the syphilitic nature of the disturbances. Pain in the epigastrium seems the most frequent and essential symptom; the pains were of different types. They did not spread as a rule, but in a case personally observed, the pains spread upward toward the left in front. Connection with the meals was usually evident, irrespective of the quality of the food. The intermittent or constant pains were relieved in the early stages by heat, alkalies, etc., and by vomiting; the pain stopped when the stomach was emptied, even in advanced cases. Hematemesis occurred in 13 cases. Vomiting was profuse, coming on from one and a half to three hours after the meal. *Sarcina* and Boas-Oppler bacilli were never found, and lactic acid only in 3 of the total 37 cases. In 14 cases no free hydrochloric acid was found, and in 6 others extreme subacidity. A palpable tumor was evident in 25 cases, and in 18 the epigastrium was vaguely tender. Syphilitic changes in the liver were found in 3 of the 7 necropsy cases, and enlargement of the spleen in 3 of these and in 1 other case. A positive Wassermann reaction is not decisive as the proportion of syphilitics is so large everywhere. The anemia and emaciation may suggest cancer, and transient benefit may follow treatment as for syphilis even in malignant disease. Only when the benefit is durable is it decisive. A sudden onset and freedom from pain in the intervals point to tabes.

Duodenal Ulcer in Children.—Alsberg found an old healed duodenal ulcer in a child of 2 along with a recently perforated ulceration. The child recovered after suture of the ulcer and gastro-enterostomy. The prognosis is generally grave, as the ulcer is seldom diagnosed until too late. In the case described the melena and vomiting were ascribed to invagination, as the possibility of duodenal ulcer in so young a child was not considered. Transfusion of blood after profuse melena may render good service. If the condition permits, Kelling's method of drawing up the pylorus with threads, plus gastro-enterostomy, is promising; this was the technic applied in his case.

Beiträge zur klinischen Chirurgie, Tübingen

1921, 122, No. 1

Physiologic Basis on which Reaction Hyperemia and Collateral Circulation Develop. W. R. Hess.—p. 1.

*Hip Joint Disease. R. Scherb.—p. 20.

*Retrogression of Goiter After Shifting. A. Sträuli.—p. 44.

*Operative Treatment of Exophthalmic Goiter. E. Bär.—p. 87.

Accessory Intrathoracic Goiter. H. C. Brunner.—p. 114.

Gallstone Ileus. K. Schläpfer.—p. 122.

Pathology of Single Kidney, etc. A. Brunner.—p. 136.

*Foreign Bodies in Air and Food Passages. T. Hug.—p. 153.

Cysts in Mesentery or Omentum. R. Campbell.—p. 165.

*Mammary Cancer. E. Wiesmann.—p. 181.

*Fatal Hemorrhage After Tracheotomy. K. Schläpfer.—p. 212.

Estimation of Hip Joint Disease.—Scherb emphasizes the importance of analyzing the functional capacity of the diseased hip joint as an aid in diagnosis, prognosis, and in estimation of conditions generally. He gives an illustrated description of an apparatus—the ischiometer—devised for the purpose of control of function, and reports some illustrative examples of its records to show its clinical value.

Retrogression of Goiter After Shifting of Part of the Thyroid.—A man suffocating from the pressure from a very large old retrosternal goiter was relieved by shifting forward the large lower pole of the thyroid. Nothing else was attempted, but after healing by primary intention the goiter retrogressed until in seven months the neck was of normal aspect. After an interval then of two or three months, the thyroid began to enlarge again and the man died at the seventeenth month. Sträuli's operation was practically an

exothyropexy, and he compares with his case those on record in which this operation was done. The mechanical conditions for carrying away the blood and secretion are evidently modified by such interventions, and this explains the changes in the goiter thereafter.

Operative Treatment of Exophthalmic Goiter.—Bär relates that on the whole the expectations were realized in the 27 cases described treated by ligatures or partial resection. No aggravation occurred in any instance. All were improved except 3, and a complete cure was realized in 13 cases. There was recurrence later in 6 cases, but the recurrence was transient in most and was not severe in any. The best results were obtained in recent, florid cases, primary or secondary, but even in atypical, chronic cases improvement may be anticipated with confidence, and restoration of the earning capacity. Recurrence of the goiter is most common in endemic foci.

Foreign Bodies in Air or Food Passages.—Hug reviews his extensive experience with a nutshell, fishbone, pill or other foreign body in the esophagus or bronchus, and extols the immense assistance rendered by endoscopy in their removal.

Mammary Cancer.—Wiesmann says that 30.5 per cent. are still living of the 106 women with mammary cancer given operative treatment in Brunner's service, 1896-1916. In four of the cases with recurrence, it did not develop until after an interval of three years.

Fatal Hemorrhage After Tracheotomy.—The fatal hemorrhage occurred during quiet sleep, seventeen days after the tracheotomy in a case of diphtheria, and six days after detubation. In this as in several similar cases compiled, some small phlegmon was responsible for the erosion and hemorrhage. The cause was unmistakably some injury during the tracheotomy, during the hooking back of the soft parts. Defective hemostasis may be incriminated in some cases. Such cases teach the necessity for extremely gentle manipulation of the tissues and scrupulous hemostasis.

Deutsche medizinische Wochenschrift, Leipzig

June 9, 1921, 47, No. 23

Control of Work of Professional Mediums. Sommer.—p. 645.

Pharmacologic Observations. II. A. Bornstein.—p. 647.

*Vegetative Nervous System in Exophthalmic Goiter. K. Grunenberg.—p. 648.

Gonad Function with Psychic Disturbance. E. Kretschmer.—p. 649.

War Diet and Breast-Fed Infants. O. Bossert.—p. 650.

*Peculiar Pain in Flatfoot. K. Immelmann.—p. 651.

Gangrene of Leg After Illuminating-Gas Poisoning. Riedel.—p. 651.

Perforation of Gastric Ulcer. De Bruine Ploos van Amstel.—p. 652.

Lichenoid Dermatitis of Both Eyelids. Fumio Yano.—p. 652.

Fürstenau-Actinimeter and Dosage of Ultraviolet Rays. Fürstenau.—p. 653.

Milk Dilution in Infant Feeding. Fetscher.—p. 654.

Mechanism of Sex Transmission. T. Péterfi.—p. 655. Conc'n. No. 24, p. 682.

Infants Who Do Not Thrive Properly. L. Langstein.—p. 657.

Gallstone Ileus. P. Brück.—p. 658.

Treatment of Frostbite. Büsch.—p. 658.

Influence of Operation on Thyroid as Affecting the Autonomic Nervous System in Exophthalmic Goiter.—Grunenberg reports that in twelve exophthalmic goiter patients and ten cases of hyperthyreosis the excitability of the vegetative autonomic nervous system was tested before and after operation. Before the operation, the patients showed, for the most part, a sympathicotonic, but a minority presented a normal, type of the epinephrin blood-pressure curve after injection of 1 mg. of epinephrin. In the group with the normal parabolic curve, pronounced lymphatism was always present. After the operation, the excitability of the sympathetic system gradually decreased, so that the sympathicotonic epinephrin blood-pressure curve became normal. In some cases it became even markedly vagotonic. The results of other functional tests of the vegetative autonomic nervous system corresponded to these findings. At the same time, it was established that in sympathicotonic subjects the course of the epinephrin pulse curve corresponds closely to the blood-pressure curve. In spite of marked and rapidly increasing blood pressure, there is no primary retardation of the pulse. The result of the investigations points to an elective sensitizing effect of hyperthyroidism on the sympathetic nervous system.

Peculiar Pain in Flatfoot.—Immelmann states that the patient complains of a sharp pain in the region of the balls of the toes when he walks. On examination of the metatarsophalangeal joints between two fingers, the patient usually admits the existence of typical pressure pain when pressure is exerted on the second or third joint, or (occasionally) on several joints at the same time. Further examination will always reveal a mild type of flatfoot. According to Hoffa, this pain is caused by irritation of the terminals of the nerves of the joints, particularly the articular branches of the anterior tibial nerve, occasioned by overstretching of the articular ligaments. We can rid the patient completely of this pain in a short time by prescribing a metal insole that extends from the heel to the balls of the toes, whereby the weight on the foot is shifted back to the middle of the foot, and the weight is thus taken off from the paining joint.

Deutsche Zeitschrift für Chirurgie, Leipzig

June, 1921, 163, No. 1-2

*Lymphosarcoleukemia. T. Diemer.—p. 1.

*Acute Necrosis of the Pancreas. H. Zoepffel.—p. 24.

*Gas Cysts on the Intestines. H. Steindl.—p. 44.

*Collargol in Surgery and Gynecology. K. Boese.—p. 62.

*Surgical Tuberculosis. P. Harrass.—p. 85.

*Incarceration of Entire Small Intestine. E. Hempel.—p. 119.

Deep Lymphangioma in the Neck. H. Gödde.—p. 135.

Lymphosarcoleukemia.—Diemer reports the case of a previously healthy man of 42 who had influenza after serving through the war, and first one and then the other femur fractured spontaneously. All the lymph glands became enlarged, and the blood showed typical lymphatic leukemia. Other spontaneous fractures developed, and the assumption of lymphosarcomatous degeneration of the bone marrow and lymphatics was confirmed at necropsy. The reaction to arsenic had been suggestive during life. The development of the lesions and fractures had been strikingly symmetrical. The single organs, like the spine, showed symmetrical arrangement of the lesions in each half.

Acute Necrosis of the Pancreas.—Zoepffel was able to save two of five operative cases of this kind since 1913, and he compares these cases with ten on record with only one recovery. There was extensive retroperitoneal extravasation of blood at the first attack of "pancreas apoplexy" in these cases, or repeated exacerbations of the acute necrosis of the pancreas. In one of his cases, the young man of 19 had been having symptoms at intervals for three years, interpreted as gallstone colic. The pains were in the liver region and spread to back and shoulders, and were accompanied by slight jaundice. Finally an exceptionally violent attack with repeated vomiting of blood much weakened the patient, and the abdomen was tender throughout but most sensitive in the left lower quadrant. Perforation of the gallbladder seemed the most plausible explanation of the grave condition of the extremely emaciated young man, but the laparotomy revealed the pancreas in a lake of fresh and old blood, resembling the condition with a ruptured tubal pregnancy. The entire abdominal cavity was rinsed clean, an opening made in the left lower abdominal cavity for drainage, and saline infused subcutaneously and by the vein. The tampons in the bleeding area were all removed, one by one, in seventeen days. There was a movement of the bowels the third day and regularly thereafter. The young man had always been a hearty eater, fond of sweets. As the irritating, purulent, flaky secretion kept oozing from the drain, he was put on an anti-diabetes diet with large doses of sodium bicarbonate and under the influence of this the fistula healed by the end of the seventh week. In the meantime the patient had rapidly recuperated, gaining 17 pounds in the first three weeks. In Caro's case there had been symptoms for ten years before the operation. The hemorrhagic tendency may have been from embolic processes or a general tendency from toxic action from the decaying pancreas tissue. The blood may pass through the outlet of the pancreas into the duodenum and be vomited up. In this case the hematemeses is a sign of severe hemorrhage in the pancreas. Gallstones were found in some of the cases but not in the two with recovery here mentioned.

Gas Cysts in the Abdomen.—Steindl reports that pure cultures of an anaerobic bacterium were obtained from the gas cysts studding the intestines of the man of 67 with typical cystoid pneumatosis. These bacteria must get into the lymph stream through some erosion in the bowel mucous membrane, and the single cysts result from the dilatation of the lymphatics as their outlets become clogged, and the gas produced by the bacteria accumulates in them.

Treatment of Surgical Tuberculosis.—Only 4.2 per cent. of Harrass' 191 cases of surgical tuberculosis terminated fatally. The cures and improvement in the other cases under combined heliotherapy and operative measures justify the highest hopes when treatment can be applied before the process has become as severe as was the rule in these cases. Especially encouraging are the results of heliotherapy as a preliminary and supplement to resection. Kidney, epididymis and testicle tuberculosis proved constantly so refractory to heliotherapy that no time now is wasted on this before operating. In 16 cases of a tuberculous process in the talocrural joint, only 56.2 per cent. were cured, and 56.5 per cent. in the 23 knee cases, but all were cured of the 4 shoulder cases and 58.3 per cent. of the 12 cases of caries of the pelvic bones, and 80.5 per cent. of the 36 cases of vertebral caries. The age does not seem to affect the outcome with heliotherapy. The cure of 71.4 per cent. of 21 cases of hip joint processes confirms the value of heliotherapy in such cases; 12 of the 21 in this group were over 25 years old, including 2 in the forties. He declares that results such as he reports call for application of heliotherapy on a large scale for surgical tuberculosis, but he emphasizes that provisions must be made for the course of treatment to be long enough to accomplish its purpose. From five to thirty-five months was required in the rib caries cases, with an average of fourteen months. The sanatorium in his charge is at Dürreheim in Baden, 700 meters above the sea, and he does not trust exclusively to heliotherapy, with or without resection, but combines mineral baths, iodoform glycerin and tuberculin treatment as indicated in the individual cases. Besides a children's sanatorium, there is one for soldiers with surgical tuberculosis.

Retrograde Incarceration of Small Intestine in Hernia.—Almost the entire small intestine had slipped down into the huge right femoral hernia, in the middle-aged woman, but an operation restored conditions to clinically normal. The traction had modified the circulation in a way to confirm the "zugarkade" theory.

Monatsschrift f. Geb. u. Gynäkologie, Berlin

June, 1921, 54, No. 6

*Bilirubinemia in the New-Born. K. Hellmuth.—p. 341.

Etiology of Embryomas. F. C. Geller.—p. 352.

*Cancerous Ovarian Dermoid Cysts. D. Eisenstädter.—p. 360.

*Correction of Rectovaginal Fistula. W. Rübsamen.—p. 367.

Bilirubinemia in the New-Born.—Hellmuth found that the bilirubin content of the blood in fifty healthy women at term and during childbirth was no higher than in normal conditions. A normal pregnancy does not injure the liver in the sense of augmented production of bile pigment. He also declares that the placenta in normal conditions does not allow the passage of bile pigment from the fetus to the mother, as some assert. On the other hand, he states that the bilirubin content of the blood in the new-born is in a materially higher percentage than in the blood of adults, sometimes ten times the average proportion. His research on fifty just born normal infants confirms that insufficiency of the liver functioning is the main cause of jaundice in the new-born, but that an important supplementary factor is the changes which the blood undergoes just before and after delivery, supplying a further hematogenous source for the bilirubin. This is confirmed by the delayed response to the diazo test for bilirubin—the delay testifying to a hemolytic source—and also the hematin line in the spectroscop.

Cancerous Ovarian Dermoid Cysts.—Eisenstädter states that in Halban's service at Vienna three of the sixteen ovarian dermoids in the last ten years were the seat of malignant disease, in a total of 209 operative ovarian tumors. One of the three cancer patients succumbed to postoperative pneumonia, the others to metastases in bladder or mesenteric glands.

Treatment of Rectovaginal Fistula.—Rübsamen applied the technic described with illustrations in two cases of radium fistula, and in two congenital and one traumatic fistula, in all of which it proved a complete success although healing was by primary intention only in two of the latter group. The essential part of the technic is that the anterior portion of the sphincter ani is mobilized and shifted forward, so that as the sphincter contracts it includes the sutured fistula in its contracting area. He warns that, after a radium burn, fully two years must be allowed to elapse before attempting an operation of the kind. The cicatricial tissue does not become vascularized before this, and until this is the case, gangrene is almost certain to develop. Another patient died from this cause, the operation having been done only a year after the cervix cancer had been completely cured by the radium. There was a rectovaginal and also a vesicovaginal radium fistula in this case, and the woman succumbed to the postoperative gangrene.

Münchener medizinische Wochenschrift, Munich

June 3, 1921, 68, No. 22

Procedure for Testing Vascular Function. P. Morawitz and G. Dencke.—p. 659.

*Management of Infected Abortions. H. Schottmüller.—p. 662.

Abortive Treatment of Primary, Negative Syphilis. Mulzer.—p. 664.

Mendelism in Medicine. E. Bleuler.—p. 666.

Import of Blood Platelets in Blood Examinations. Stahl.—p. 667.

Treatment of Gonorrheal Rheumatism. J. Saphier.—p. 668.

Clinical Aspects of Epidemic Encephalitis. G. Kahlmeter.—p. 669.

Spread of Syphilitic Infection by Lymph Glands in Seronegative Period of Primary Stage. Eicke and Schwabe.—p. 671.

Treatment of Torticollis. E. Speer.—p. 672.

Roentgen Treatment of Pointed Condylomas. F. Matt.—p. 674.

Plastic Operations on the Urethra. F. Kroh.—p. 675.

Operation on Trachea by Using Tracheoscope. B. Tenckhoff.—p. 676.

*Repeated Injections of Blood in Pernicious Anemia. A. Waag.—p. 677.

Placental Remnants After Births at Term. E. Engelhorn.—p. 677.

Painless Evacuation of Body Fluids by Puncture. Franke.—p. 679.

Treatment of Infected Cases of Abortion.—Up to 1910, Schottmüller treated all cases of abortion by manual evacuation, with the exception of cases complicated by parametritis or salpingitis and those in which gonorrhea was diagnosed. The mortality rate with such methods was 3 per cent. During the period from 1910-1914 the mortality was reduced to 1.5 per cent. in 1,500 digitally evacuated abortions, probably owing to the fact that since 1912 the abortions infected with hemolytic streptococci have no longer been evacuated. The total number of abortions in this period was 2,000, with a mortality of 7.4 per cent. Schottmüller then gives the reasons that induced him since August, 1914, to abandon digital evacuation entirely and to use only Winter's abortion forceps and a large, blunt curet for removing portions of the fetus. He proved definitely that during manual evacuation of the infected uterus, through the finger introduced into the uterus and the pressure exerted by the other hand on the uterus from without, the pathogenic bacteria that are present in large numbers on the endometrium are pressed directly into the open vascular lumina; for in 77 per cent. of the cases immediately after manual evacuation pathogenic bacteria (and only such) were found in the blood stream.

Repeated Small Injections of Blood in Pernicious Anemia.

Waag refers to the surprisingly good results secured of late by the profession through the use of repeated small doses of whole blood injected subcutaneously in pernicious anemia. Pappenheim recommends the method because it is simple, conservative and free from severe, febrile sequels. Carnot interprets the improvement that follows as due to an increased erythropoiesis of the bone marrow. Waag reports in detail his remarkable success in treating a man who on admission to the hospital presented: hemoglobin content of blood, 25 per cent.; erythrocyte count, 285,000, and color index less than .1. After the usual arsenical preparations had failed, he injected subcutaneously into the thigh of the patient 5 c.c. of whole blood taken from the brachial vein of the donor. A like injection was given the following day. The effect was striking. Two days after the first injection there was a marked improvement in the patient's general condition. The hemoglobin had risen to 30 per cent. and the erythrocytes to 1,500,000. The patient now received twice a week 5 c.c. of blood. In a week the hemoglobin content had become 35 per cent. and the erythrocyte count, 2,000,000. In four weeks the

hemoglobin was 55 per cent. and the erythrocyte count, 2,600,000. The patient had gained about 13 pounds and felt well. Temperature was normal. The urine was free from albumin, sugar and urobilin. The patient had borne the injections (nine in all, 5 c.c. each) without other manifestation than a slight smarting sensation, which was relieved by hot compresses and ichthyol bandages.

Wiener klinische Wochenschrift, Vienna

June 2, 1921, 34, No. 22

*Pressure of Bile in Man. W. Robitschek and M. Turot.—p. 263.

Lumbar Puncture and Syphilitic Exanthems. Schreiner.—p. 264.

Corrosion of Esophagus in the Gassed. S. Sternberg.—p. 265.

Reduction of Abdominal Fat at Laparotomies. Frist.—p. 266.

*Dentation of Greater Curvature of Stomach. Bársony.—p. 267.

Secretory Pressure of Bile in Man.—Robitschek and Turot state, on the basis of their investigations, that the bile in a vertical tube 5.5 mm. in diameter (inside measurement) connected with the hepatic duct reaches a height of from 210 to 270 mm., which depends on the secretory power of the liver cells, intra-abdominal pressure and the condition of contraction of the musculature of the bile ducts. The pressure may be influenced by drugs. Pilocarpin raises, papaverin lowers the bile pressure.

Dentated Outline of the Greater Curvature of Stomach.—Bársony opposes the view that dentation of the greater curvature of the stomach is caused by peristalsis or spasm. He presents evidence to prove that it is a sign of marked wrinkling of the mucous membrane.

Zeitschrift für Kinderheilkunde, Berlin

June 3, 1921, 29, No. 3-4

*Case of Pure Pylorospasm. M. Mohr.—p. 111.

Food Requirements in Myxedema. M. Ambrozic.—p. 117.

*Convalescents' Serum in Prophylaxis of Measles. Rietschel.—p. 127.

*Monosymptomatic Hematuria in Children. E. Nassau.—p. 133.

*Convalescents' Serum in Prophylaxis of Measles. F. v. Torday.—p. 148.

Digestion Leukocytosis in Infants. L. Adelsberger.—p. 156.

Epidemic Encephalitis in Children. F. Hofstadt.—p. 190.

*Spontaneous Gangrene of Feet in Two Children. H. Frenkel.—p. 213.

Pure Pylorospasm.—Mohr knows of only two cases on record in which the symptoms had indicated stenosis of the pylorus but necropsy showed no trace of hypertrophy in this region. He adds a third case to the list, the child dying when less than two months old from parenteral infection as the pylorospasm had begun to subside.

Convalescents' Serum in Prophylaxis of Measles.—Rietschel hails as great progress the efforts in this line to protect the younger children against measles, and thus tide the younger ones past the danger age for measles. His own experience has confirmed the efficacy of the procedure, but how are we to obtain enough convalescents' serum? Mothers are not willing to sacrifice their own children for the hypothetical protection of others, but they would be willing to give some of their own blood to protect their own children against measles. His experience indicates that the serum of adults who have had measles contains enough antibodies to protect young children against the disease or, if they contract it, attenuates it to a remarkable extent. Antibodies from the mother are probably responsible for the immunity of very young infants to measles. In one ward that had been exposed to measles, six of the infants were injected with serum from some nurses or interns, and two developed measles, moderately severe in one case and mild in the other, after an incubation of twenty days. Adults' serum is thus not always a reliable preventive, but if further experiences confirm that it usually confers an exceptionally mild character on the disease, this may answer the purpose and may even prove to have special advantages.

Monosymptomatic Hematuria in Children.—Nassau remarks that we are still in the period of collecting material on which to base judgment as to the import in children of hematuria for which no cause can be discovered. Mechanical, nutritional and infectious-toxic factors may cooperate in some cases, and after their removal there may be no further hematuria. But children who respond to slight causes with a tendency to hematuria should be kept under supervision, as a substandard vascular system, especially in the kidneys,

must be suspected. Some children at puberty display a tendency to both hematuria and albuminuria whenever the circulation through the kidneys is hampered. In 36 boys doing gymnasium work, he found erythrocytes in the urine after the exercise in 9 and albumin in one, the urine previously normal in all. Herbst has reported similar findings in 27 per cent. of 282 boys; in 11 per cent. tube-casts were also found, and the erythrocyturia was still more pronounced in these healthy boys after long walks. Hematuria is one of the most constant signs of scurvy. Finkelstein noted it in about 33 per cent. of all infants with scurvy, but Nassau found it in 82 per cent. of 22 children with scurvy. The red urine in some of the cases was the first sign of trouble.

Convalescents' Serum in Prophylaxis of Measles.—Von Torday inoculated 261 children with convalescents' serum on thirty different occasions. They had all been exposed to measles, but only 15 developed the disease. In some of these refractory cases the serum had not been obtained at the proper period as established by Degkwitz, that is, from the seventh to the ninth day of convalescence. In every instance when the serum was injected between the second and sixth day after exposure it proved an absolute protection, even in wards where measles had long been prevailing. The epidemic was completely arrested as soon as enough serum could be obtained to inoculate all the children. The amount of serum injected ranged from 7 to 22 c.c. at first, but in the latest series of 81 children only 3.5 or 4 c.c. was used. The duration of the immunity conferred can be estimated from the fact that 3 of the children developed measles from seventy-two to seventy-five days later. His article issues from the Budapest state children's asylum which shelters on an average 250 sick and up to 150 well children.

Spontaneous Gangrene in Children.—Frenkel has been able to find only fifty cases of this kind on record, and in them the spontaneous gangrene was traceable to measles, diphtheria, syphilis or other infectious process in all but one in which there was severe chlorosis and four with Raynaud's disease. He encountered two cases himself, almost simultaneously, both in children with advanced pulmonary tuberculosis. In one both feet were affected.

Zeitschrift für urologische Chirurgie, Berlin

Jan. 26, 1921, 6, No. 1-2

- *Trigon of Bladder in Mammals. F. C. Krasa and R. Paschkis.—p. 1.
- *Septum in Bladder. A. Zinner.—p. 54.
- Diverticula of the Bladder. K. Simon.—p. 59.
- *Factitious Pyelitis. F. Necker.—p. 69.
- Cystography of the Bladder. H. Boeminghaus.—p. 92.
- Edematous Tumor in Trigonum. K. Paschkis.—p. 106.

The Trigon in Mammals.—This study in comparative anatomy embraces several specimens of twenty-four different species of animals, from sea urchins to camels, besides man, domestic animals and monkeys.

Septum in Bladder.—A man of 68 applied to Zinner for relief as he had had difficulty for a year in urinating and there was pus in the urine. Cystoscopy revealed typical vesica bipartita, the septum projecting downward from the fundus of the bladder. The consequences were like those of a huge diverticulum. Resection, as with a diverticulum, is the only means of warding off serious trouble. This patient would not consent to this until it was too late. He died with symptoms of acute insufficiency of the kidneys nine days after the operation.

Efficacy of Neo-Arsphenamin in Pyelitis.—Necker applies the term "artificial pyelitis" to ascending infection of the kidney pelvis from self-inflicted injury of the bladder to escape military service. He reviews the whole field of factitious disease of the urinary apparatus, and then describes seventeen cases on record of cystitis of the trigon region with leukocytes in the urine from each kidney. In a recent series of nine similar cases he obtained a confession that the cystitis had been induced by injection of urine from another person, to which some quinin or other powder had been added. The injection into the urethra was made with such force that the fluid entered the bladder. It set up an inflammatory process which in time involved the kidney pelvis on both sides. The pyelitis was the same in all the cases, in those with urine from healthy men as well as from those with gonorrhea.

The trigon cystitis soon healed in all, but the abacterial pyelitis developed a chronic course. The conditions indicate that the inflammatory process spread step by step upward from the bladder along the mucosa of the ureters to involve finally the kidney pelvis. Ascending infection by migrating micro-organisms can certainly be excluded, he declares, in these cases. They thus throw light, like a laboratory experiment, on the origin of pyelitis. In one of the cases this factitious pyelitis involved the parenchyma of the kidney, the clinical picture that of grave pyelonephritis. He relates some further experiences in this line and warns that even with severe bilateral infection of the upper urinary passages we must bear the possibility in mind that these may be the sequels of factitious cystitis.

This artificial pyelitis is extremely chronic, rebellious to years of the usual measures, but it seems to yield promptly to neo-arsphenamin. Cases are known in which the cysto-pyelitis of up to ten years' standing in tabetics subsided after a single injection of neo-arsphenamin. Necker has found neo-arsphenamin surprisingly effectual in 150 cases of pyelitis and cystitis in the last four years, but pathologic conditions in the kidney proper did not respond to it. It fails also when there is obstruction to the flow of urine, but otherwise it acts apparently regardless of the kind or number of causal bacteria or the intensity of the suppuration in the pelvis. Why it inevitably fails when the kidney proper is involved, is a mystery which he is now studying.

Zentralblatt für Chirurgie, Leipzig

June 4, 1921, 48, No. 22

- Mixed Infection in Wound Diphtheria. Frankenthal.—p. 782.
- Thymus Lipomas. S. Yamanoi.—p. 785.
- *Gastropexy. H. Havlicek.—p. 787.
- Excision of Neuroma Cures Trophic Finger Ulcer. J. Kirner.—p. 790.
- Screw in Appendix as Cause of Appendicitis. G. Kelling.—p. 792.

Gastropexy.—Havlicek uses free fascia transplants to reconstruct the hepatogastric ligament for gastropexy. The motility of the viscera is not impaired by adhesions thereafter, and whereas in other methods there is a tendency for the supporting band to stretch, with this method it contracts.

June 11, 1921, 48, No. 23

- Thoracoplasty in Persistent Empyema Cavity. Låwen.—p. 814.
- Electric Currents in Granulating Wounds. Melchior-Ralm.—p. 816.
- *Splanchnic Anesthesia by Braun Method. G. Buhre.—p. 818.
- Direct Anesthesia of the Peritoneum. Baruch.—p. 821.
- Asepsis in Relation to the Appendix. M. Kaehler.—p. 823.
- Trophic Ulcers After Nerve Resection. F. Brüning.—p. 824.

Splanchnic Anesthesia by the Braun Method.—Buhre is assistant in Braun's service, and the Braun technic for blocking the splanchnic nerves has been applied there in 200 cases during the last two and a half years, and all without by-effects or after-disturbances. He recalls that not all of the experiences with splanchnic anesthesia reported from different sources are favorable, especially as regards the by-effects, and some of the reports are of such a nature as to cause many surgeons to hesitate about using the method. He has found the Braun method superior to the Kappis method. With the former in the 200 cases there have been none of the bad results reported in regard to the Kappis method, such as deaths, collapse and lowering of blood pressure. By the Braun method the splanchnic nerves are blocked after opening the abdomen. With the Kappis method the anesthetic is introduced from the rear. Buhre thinks it is possible that in the Kappis method the needle is not carried far enough forward, to the anterior surface of the bodies of the vertebrae, and the injection is made too near to the vertebral canal or even in the spaces between the transverse processes, whence a too rapid resorption of the solution into the canal takes place. [Buhre described as follows the Braun technic in a previous communication, mentioned in THE JOURNAL at the time, 75:279, 1919: After the median incision, above the umbilicus to the xiphoid process, the left lobe of the liver is drawn upward and toward the right. The right forefinger is then worked down to the center of the spine, below the xiphoid process, pushing the aorta out of the way. With the left hand the needle, 12 cm. long, is introduced, sliding along the right forefinger, until the tip, after piercing the peritoneum, reaches the spine. There are no well vascularized parts covering the spine in this region. After ascertaining

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GRADUATE INSTRUCTION IN SURGERY*

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You no doubt have observed that the social unrest and desire for change prevalent today has affected even medicine, and not only here but also in England and on the continent. Teachers and students (in the broad sense) are dissatisfied with present conditions and are seeking a remedy. Much of this concerns the undergraduate schools and will not be discussed, except to point out that the present tendency among those interested in the pedagogic aspect of medical education is to lighten the undergraduate curriculum at both ends. The ancillary sciences do not trespass so much on the earlier years of the medical student in this country as they do in England. But at the other end, we have developed the specialties to such an extent as severely to tax the capabilities of the student.

The aim of the medical school, including the fifth or hospital year, should be devoted primarily to producing well-trained practitioners of medicine—the so-called “family doctor”—because at least three fourths of the recent graduates will settle into such practice and be entitled, by right of the state or national examining boards, to do whatever their conscience or the confidence of their patients allows them to do. In spite of the recent growth of what is known as “group practice,” the present generation at least will not see the extinction of this class. They should, on graduation, be well trained in the diagnosis and treatment of the common ills of mankind, skilled in preventive medicine and hygiene, and so taught in the methods of research that the obscure cases in their practice are studied out and finally diagnosed. In this they will often need the help of this or that specialist; but if they have the proper training and the wisdom to keep abreast of progress, the general practitioner will remain the “captain of the ship.”

Most physicians are content with the path they elect to tread, but some, impressed by the ever-increasing extent of medical art and science and discouraged by the attempt to master the whole of it, narrow their field and “specialize” in a part of the whole. Environment, opportunity, natural inclination and other factors enter into this choice of effort. I need not dwell on the lure of larger incomes believed to be enjoyed by the “specialist.” The net income is not as large as generally supposed, and those who are most successful in this

direction are men of distinction and ability, capable of incessant work, qualities which would place them in the forefront of any profession or industry other than medicine. But the fact remains that the machinery of medical service to the public demands the development of those who are expert in various fields.

We are here concerned only with general surgery and the training of the surgeon. Much literature has appeared on this subject, and some here may remember that in 1905 Dr. Richardson spoke on it in his chairman's address before this section: Organized effort, particularly by the American College of Surgeons, has been directed to the attempt to uplift the specialty of surgery. You may also remember that in 1917, after Dr. Bevan read his paper on “The Problem of Unnecessary Operations,” this section appointed a committee of ten of our most distinguished Fellows to report at a subsequent meeting. But again I must narrow the field and bring myself to the subject of this address. It is based on the problem as to how the surgeon of the future should be developed and the opportunities which should be given those who wish so to qualify in the practice of surgery that the confidence of the public will not be misplaced.

DEVELOPMENT OF THE GRADUATE MEDICAL SCHOOL

The limitations of time and space do not allow of any extended discussion on the development of postgraduate instruction by regularly organized bodies. “The postgraduate school was established to do what the medical school had failed to accomplish. At first the instruction was necessarily at once elementary and practical. There was no time to go back to fundamentals; it was too late to raise the question of preliminary educational competency. Urgency required that in the shortest possible time the young physician already involved in responsibility should acquire the practical technic which the medical school had failed to impart. The courses were made short, frequently covering less than a month; and they aimed preeminently to teach the young doctor what to ‘do’ in the various emergencies of general practice.”¹

The efforts of the American Medical Association through its Council on Education were gradually rewarded by a raising of the general level of medical education. The postgraduate schools adapted themselves to the changed conditions and offered special courses “adapted to the needs of those inclined to devote themselves more or less exclusively to some particular line of work” (Carnegie report). The courses on the “eye, ear, nose and throat” made notable progress, and the better class of schools, of which there were only four or five, offered excellent opportunities.

* Chairman's address, read before the Section on Surgery, General and Abdominal, at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Carnegie Report on Medical Education, 1910, p. 174.

But in the much broader field of general surgery no progress at all was made. The student did some dissecting, witnessed operations, occasionally assisted at operations, attended lectures and so on, but there was no systematic organization or thorough discipline. Clifford Allbutt well says, "Hitherto this kind of teaching has been by a selection of side shows, not organized about the central schools."

Bevan stated, two years ago, that postgraduate instruction in this country is about on a par with what undergraduate instruction was fifteen years ago, when the American Medical Association undertook the work of elevating the standards of education in our medical schools. In other words, it does not exist—it must be created.

The idea has gradually forced itself on us that the proper place for a graduate school of medicine is under the aegis of a university. In 1917, the clinic at Rochester, Minn., recognizing this fact, merged its foundation with the University of Minnesota, and became an integral part of that institution. The graduate school of medicine needs abundant resources, the highest type of teachers, opportunities for research and original investigations and, above all, the proper standards and traditions inseparable from a great university. Hence you will note that Minnesota, Harvard, Pennsylvania, California, Tulane, Chicago, Washington and others are seriously undertaking the difficult task of so organizing their schools of medicine as to include separate or partly combined schools of graduate medicine. Bevan stands squarely when he says: "The problem of inducting a medical school into a university is a difficult one, because medicine is more than a science. If it were simply a science it would be a simple matter to introduce it into a university and handle it without difficulty, just as the science of physics is handled; but it is an art, and it is a profession by which men make their livelihood." Some of these problems have been well worked out by Lyon.²

REPORT OF THE COMMITTEE ON POSTGRADUATE INSTRUCTION IN SURGERY

A further impetus to the development of the field of graduate medical teaching has been given by the attention paid to this subject during 1920 and 1921 by the Council on Medical Education and Hospitals of the American Medical Association. This year a committee headed by Drs. Frazier and Lewis, both former chairmen of this section, held meetings and formulated a report,³ published in *THE JOURNAL* last March. I will refer to this again. If our Association exerts the same powerful influence for graduate teaching as it did in the matter of the undergraduate schools, we can look forward with high hope to the future.

The proper organization of graduate instruction in surgery is a difficult matter. I have pointed out the reason why such instruction should be developed as part of the duty of the medical schools of the universities. All who have studied this matter are agreed that, except to a very limited extent, the work of the graduate student must be approached from a very different angle from that of the undergraduate. Makins says:

The most successful teachers of undergraduates, probably by reason of the dogmatic nature of the instruction given, and the necessary limitations of its scope, are by no means

necessarily those who can interest and enthuse the graduate, as any one who has passed his life in a medical school is well able to appreciate. Many teachers who are able to enforce broad general principles founded upon practical experience may lack the necessary knowledge of literature and acquaintance with the most recent methods of scientific research needed by the graduate; yet, literary erudition and extensive acquaintance with the most recent methods and results of research, while not essentials for a teacher whose task is to produce an efficient practicing "doctor," are necessary qualifications for the leadership of the graduate who aspires to follow the higher paths of medicine.

I am not intending to suggest that the higher qualifications are not necessary for the undergraduate teachers, but the best of these concern themselves with fundamentals. Again to quote Makins:

The atmosphere of a primary (undergraduate) medical school, where the main object is to impart elementary and practical instruction, is unsuitable to the acquirement of intimate acquaintance with detail, and in a considerable degree to the freedom of thought, the skeptical attitude toward received and adopted views, and the single-minded desire to advance medical science by research which should animate the graduate who seeks to follow the higher paths of medicine.

The organization of the work in the medical sciences, the provision for research, the library, etc., are comparatively easy matters if the financial resources are sufficient. But, except in the unusual Mayo clinic, I know of no place where the clinical material is large enough to furnish a sufficiently large turnover for the proper study of clinical surgery by a large graduate school. It can be done if the students are limited to very small numbers, but the cost per student in this event becomes almost prohibitive. For this and other reasons the university should seek affiliation with a number of high class local hospitals whose equipment, standards and staff correspond with the desideratum. There is but one difference between such an arrangement and the Mayo Clinic with its several hospitals, and that is the lack of control over the teaching in these places. This is not serious, however, and can be bridged over if mutual good will and a bond of sympathetic understanding exist.

We need not continue our clinical teaching to the immediate local environment. As Lyon says:

Every ethical private clinic in the country—every clinic large enough to afford advanced training for even one young medical graduate—should be affiliated with some university which should have the power to supervise that man's graduate training and in the end should attest, after proper examinations, his technical proficiency. . . . The leading specialists must be urged and taught to make their clinics more than places of business. . . . The undoubted reflex effect of a university connection should appeal to competent specialists and make the task of securing their cooperation easy. As the state-wide campus has become the watchword of agricultural colleges and state universities, so the nation-wide clinic should be the ideal in the training of medical specialists.

But even though there is enthusiastic cooperation between the university and the affiliated hospitals, we must acknowledge the necessity of the central hospital with the various units organized under university control. It emphasizes the university ideal to every student—the spirit of research—whether that student be a full graduate student or simply passing through certain courses of study (the so-called postgraduate student). It enables group study of surgical disease under experimental conditions, like the work on empyema at the

2. Lyon, E. P.: Graduate Education in the Clinical Branches, and the Minnesota Experiment, *J. A. M. A.* **69**: 1307 (Oct. 20) 1917.

3. Frazier, C. H., and Lewis, Dean: Report of the Committee on Postgraduate Instruction in Surgery, *J. A. M. A.* **76**: 732 (March 12) 1921.

Rockefeller Institute during the war, and, above all, enables the central faculty to teach minutely by reason of the fact that the graduate student furnishes the personnel of the hospital. He is clerk, assistant, surgical resident, assistant surgeon and research worker at different times.

At Pennsylvania we have started under ideal conditions. We have the university, a central hospital for graduate teaching exclusively, and a group of affiliated hospitals, at present eight in number. At least two private clinics in the state will probably be available.

Is there any need of graduate teaching in surgery? This question is easily answered for the shorter courses for general practitioners. Well-balanced instruction in the diagnosis and treatment of malignant disease, fractures and dislocations, wounds and the newer methods of wound treatment, the diagnosis of acute abdominal emergencies, etc., cannot fail to be instructive and extraordinarily valuable to the community. There are also surgeons in small cities who find it difficult to keep in touch with technical progress except by reading. A few months spent in the clinics of the large cities and certain special courses, such as cystoscopy, brain or chest surgery, wound treatment, etc., are of infinite value.

The English speak of these as "refresher courses," and they prove refreshing to the spirit as well as to the mind. I always feel spurred to new endeavor by my attendance at the meetings of the Clinical Surgical and Interurban Surgical societies each year, even though sometimes nothing new in technic is learned. Contact with other surgeons in a different field is always stimulating.

The Committee on Postgraduate Instruction in Surgery concluded that provision must be made for two separate and distinct groups. First, those who, on graduation in medicine, may wish to pursue a course which, on its completion, will prepare them for the practice of surgery and lead to a degree; and, second, those who have been engaged in the practice of general medicine for a number of years and wish to prepare for the practice of surgery; or, having practiced surgery, are desirous of perfecting themselves in the more recent developments in diagnosis and practice.

The first is the ideal type for the graduate school, and the one to which, I think, Minnesota and Rochester confine their efforts. Those of us who practice in the large cities and particularly in medical school centers are familiar with the type of recent graduate, finished with his hospital internship and determined to be a surgeon. He works in the outpatient clinic, one or more laboratories and dissecting room, and especially if earnest and hard working, soon attains the position of assistant surgeon to a surgical service. He does a certain amount of clinical research, acquires the art of surgery, and in many cases succeeds to a major position on the hospital staff. He is spurred to endeavor by the knowledge that there will be keen competition for the post he desires. To all intents and purposes he is a graduate student, but he would benefit markedly if he was not only under the guidance of his clinical chief but also placed himself under the organized direction of the graduate school in order to prevent the clinical part of his career from becoming top heavy.

Some of these men leave the medical school center and radiate in different directions, sometimes in another city and sometimes in the towns, wherever opportunity

beckons. Too often, however, the ambitious student of surgery is held down by lack of opportunity for advancement in the institution in which he begins work. The director of the course in the graduate school should become familiar with vacancies and with opportunities and endeavor to place these men before they become discouraged.

A different problem is presented by the second group of the committee, namely, those who have been engaged in the practice of general medicine for a number of years and wish to prepare for the practice of surgery; or, having practiced surgery, are desirous of perfecting themselves in the more recent developments in diagnosis and practice. At present I believe that practically all of this group should start in a well-planned course of eight months' duration termed the "instructional year," with the time about equally divided between the clinical and scientific (ancillary) branches. At Pennsylvania we began with a definite time schedule, but I realize that graduate work can be done only to a limited extent in classes. We reduce the school to the dead level of mediocrity by so doing. No two men have exactly the same capabilities, the same ambitions, the same opportunities. Their problem must be met individually.

By personal contact and reports from the instructors, the director can soon learn the capabilities of the individual, and by a sorting process meet each requirement even to the point of discouraging further attendance in the school. The instruction in anatomy, pathology, physiology and biochemistry is rigid at first, but becomes flexible in time, and finally so loose as to allow the student full play in the cultivation of initiative in surgical research. By the end of the year the better type of men will be on a par with those referred to as Group 1 and become eligible as candidates for the degree. The others will, at least, have spent a profitable year.

I cannot outline in a few words the details of the three or more years proposed for the course in surgery. The student becomes part of the machinery of the school; he is not regarded as a "student" but as a fellow. He may be an assistant, a resident surgeon, the chief of the outpatient department; he may teach his juniors, share responsibilities with his seniors. He will be judged by his thoroughness and attention to detail more than anything else. He must "catch the scientific idea" as well as develop technical proficiency. His work must be organized; otherwise it might be so unsystematic as to be incomplete; but individual initiative must be encouraged. He "must be held back from clinical plethora, from engorgement with routine observation, diagnosis and care of the sick. He must be given time for laboratory and library work; for meditation and expansion; for the development of originality and the evidence thereof—his doctoral thesis" (Lyon).

CAREER OF THE PH.D.

What, then, when the university has set the final seal of approval on the finished product and conferred the Ph.D.? I have no fear for the future. The pioneer work may be somewhat disappointing, but the time is near when the demand for trained men in surgery will force the hospitals to recognize their superior value to the institution, and to the patients, over those who have simply marked time and have nothing but faithful years of service to their credit. But few of the smaller cities or towns, in my vicinity at least, offi-

cer their hospitals with full-time surgeons. Mostly, they are served by general practitioners who do a very limited amount of surgery and lack experience in modern methods. Public opinion in future years will want something better done for its surgical ills and the appointments made from applicants trained in their specialty irrespective of their local affiliation.

The graduate school must, however, be in a position to finance or partly finance its students by a system of stipends; otherwise the years of instruction and study become too costly except for the well-to-do.

I do not believe that the graduate school of medicine should limit its efforts to the picked candidates except for certain essential entrance requirements. He should be the mainstay of the school. But there should always be proper provision for every sort of instruction demanded, provided it is modern, scientific and imbued with the high standards and ideals of university training. Not only must we be able to train practitioners in specialties, but we must include facilities for those who want to do pure research, for those who will be the future teachers or professors, often on a full-time basis.

Arnold well says:

The extent to which the graduate school may carry its advanced instruction is limited only by its equipment and the ability of its teachers. Even the most experienced physicians and the most highly trained scientists may profit by such opportunities, for no one has mastered so much of medical knowledge that there are not many others capable of teaching him many useful things.

1930 Spruce Street.

THE SANATORIUM CARE OF TUBERCULOUS SOLDIERS BY THE FEDERAL GOVERNMENT

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Early in the World War, there were brought to us from overseas reports of the prevalence of tuberculosis in the military forces and in the civil population which caused the tuberculosis war problem to assume staggering proportions. These first reports were doubtless exaggerated. At any rate, they were sufficiently inaccurate to cause the pendulum of medical opinion to swing backward in its characteristic fashion, and there were found those who minimized the importance of tuberculosis in its connection with the war until it apparently ceased to be a problem of any considerable magnitude. In fact, some of the articles published at that time gave one the impression that military service would prove beneficial rather than hurtful to the man with dormant tuberculosis.

Be that as it may, we find ourselves at the present time possessed of sufficient evidence to justify the conclusion that after all others, save one, of the medical problems of the war have been satisfactorily settled, tuberculosis will remain the paramount problem of the government whose solution will not be reached for two decades at least. The other problem will be that of the proper care of nervous and mental cases.

The incidence of tuberculosis as the result of the war cannot as yet be determined. It is certain, however, that the maximum has not been attained, and it is asserted by those who have given the subject serious consideration that the peak will not be reached for a number of years to come.

The war-time tuberculosis problem of the United States may not be the staggering thing at one time anticipated. It has been sufficiently big, however, for the nation to be proved incapable of meeting the situation. Neither in hospitals, sanatoriums, nursing service nor competent medical personnel were we prepared for the great increase in recognized tuberculosis among our soldiers, sailors, marines and nurses, and, if the truth be known, we are not yet prepared to meet our war-time emergencies. Possibly it would have been better for us had we remained gravely concerned as we were by the first exaggerated reports from overseas. It is quite likely that the conservatism or optimism causing the backward swing of the pendulum has been partly responsible for our lack of preparation and has cost many human lives.

Before we were fairly engaged in the war, scores of young men, unfortunately passed in the selective draft, although definitely tuberculous, were coming back to their home communities, in many states to find inadequate sanatorium provision and, in not infrequent instances, to die in almshouses. Before any other agencies were functioning, be it said to its credit, the National Tuberculosis Association had assumed its war-time responsibility of caring for these unfortunates and, in many of the states, the state and local tuberculosis associations secured the means for institutional care and relief which otherwise would have been unprovided.

Until the signing of the armistice, the policy generally prevailed of retaining the tuberculous individual in service and caring for him in army and navy hospitals; but after the signing of the armistice and with the outside influence brought to bear to obtain the discharge of patients regardless of their physical condition and welfare, it became evident that this policy must be abandoned. From that time until the present, with promise of perpetuation into the future, political and other outside influences have been the greatest obstacle to the federal government in doing its full duty to its sick men.

HOSPITALIZATION AND CARE OF RETURNED SOLDIERS

With the wholesale discharge of tuberculous persons from military service and from army and naval hospitals, it became necessary to develop an enormous machinery including hospitals, sanatoriums, dispensaries and medical service to care for returned soldiers on their voluntary application for such care.

Somewhat more than two years ago, this gigantic task was imposed upon the United States Public Health Service. The Public Health Service is accustomed to emergencies, but this was one for which it was quite unprepared both in institutions and in technical personnel. The old marine hospitals had been permitted to fall into a condition of comparative disuse, and some of them had been abandoned. The temporary military hospitals, turned over to the service, were for the most part unsuited for the proper care of tuberculous persons. In many instances, when these institutions were taken over, it was found that the equipment

was hopelessly inadequate and, for a time, supplies and new equipment were seriously delayed or were quite unobtainable.

Regardless of the character of government-owned institutions, their bed capacity was entirely insufficient and it became necessary for the Public Health Service to enter into contracts or agreements with existing private and public sanatoriums for the care of tuberculous persons. This contract service has given rise to a great deal of controversy and discussion. After a rather careful study of the facts, we believe we may say that the average service rendered by contract hospitals has been reasonably satisfactory. The shortage of beds throughout the nation made careful discrimination in the selection of institutions impossible. Many of the private sanatoriums of the higher class have accepted government patients at considerable sacrifice, in money as well as in institutional morale, cheerfully made in a patriotic spirit, and it is certain that these institutions have given better service than can ever be expected from the large government-owned sanatoriums.

It was necessary, however, to utilize beds in some private institutions whose standards are not so high, and it was unfortunately also necessary to place patients in institutions designed for the care of paupers and destitute persons. Regardless of the character of service afforded by these institutions, the stigma of the so-called "charity institution" made it impossible for them to be in any way acceptable.

INSPECTION OF SANATORIUMS

In undertaking its great task of the hospitalization and care of returned soldiers, the Public Health Service apparently fully recognized its unpreparedness and further recognized that the tuberculosis problem would be, perhaps, the most difficult it would have to encounter. The Surgeon General and an efficient chief of the Tuberculosis Section, with unusual breadth of vision, were not only receptive of constructive criticism, but unhesitatingly sought what they regarded as authoritative guidance. As a result of numerous conferences with a special committee of the National Tuberculosis Association, five physicians were selected to visit and inspect the existing government sanatoriums and to recommend changes and corrections contemplated to bring about better methods of diagnosis, care and treatment. We were selected in this group, together with Dr. David R. Lyman of Connecticut, and Drs. Victor F. Cullen and Martin F. Sloan of Maryland. To Dr. Lyman, Dr. Cullen and Dr. Sloan were assigned the tuberculosis sanatoriums and the tuberculosis divisions of general hospitals throughout the eastern and southeastern sections of the country, while we were asked to make studies of the hospitals at Fort Bayard and Fort Stanton, N. M.; Prescott, Ariz.; Palo Alto and Camp Kearney, Calif.; Tacoma, Wash.; Houston, Texas; Alexandria, La.; Evansville, Ind., and St. Louis.

While it cannot be denied that there were many conditions found in these institutions subject to criticism, we ourselves returned from our inspections with our chief impression one of admiration for the efficient manner in which the Public Health Service had met its tremendous obligation in the face of many serious difficulties, and we are satisfied that this impression is shared by the other members of the inspection committee and must likewise be entertained by any fair minded person whose opinion is based on actual knowl-

edge of facts rather than on sensational rumors and irresponsible misstatements.

The members of the committee were asked to remain in each institution long enough to become acquainted with the members of the medical and nursing personnel; to familiarize themselves with the methods employed in diagnosis and treatment, and to obtain definite knowledge as to discipline, food, amusements and diversions of the patients and the application of special diagnostic and therapeutic procedures. They were asked to direct their attention particularly to institutional operation and management, devoting themselves to buildings and physical equipment only so far as these might affect the medical service and the care and welfare of patients. Physical property is frequently inspected by the regular inspectors of the government.

DIFFICULTIES IN SUCCESSFUL OPERATION OF GOVERNMENT SANATORIUMS

One of the most serious obstacles in the operation of government sanatoriums is the scarcity of physicians and nurses specially trained in tuberculosis. It is asserted by the American Sanatorium Association that the medical and nursing services are three times as important as climate, site, buildings and equipment. The United States Public Health Service has doubtless had occasion to verify the truth of this assertion.

In times past, medical colleges have stubbornly neglected the diagnosis and treatment of tuberculosis in their curriculums, and the vast majority of nurses have been graduated from their training schools without having had the slightest instruction relative to this disease, with the result that there has not been a sufficient specially trained medical and nursing personnel to meet even the normal needs of our civil population.

Theoretically, many of the government sanatoriums are too large to attain the maximum of service for the individual patient, six of them ranging in capacity from 500 to 1,000 beds. On account of the shortage of medical personnel, it has been found impossible to secure entirely satisfactory commanding officers and chiefs of medical service for all of the existing institutions, and it would be out of the question to man satisfactorily a large number of hospitals of smaller bed capacity. To overcome the disadvantages of the large institution as far as possible and to give to the patient that personal contact with his physician essential to the best results, the Public Health Service is striving to make the ward surgeon the administrative and medical head of his own ward, so far as this may be practicable, thereby creating within each large institution a considerable number of units, constituting, in fact, small individual sanatoriums whose successful operation will depend in a large measure on the intelligence, efficiency and personality of the ward surgeon.

PROBLEMS REQUIRING ATTENTION

It is the earnest desire of the Public Health Service and of the Assistant Secretary of the Treasury, Col. Edward Clifford, under whose jurisdiction all of the activities for the care of soldiers are now centered, to operate government sanatoriums in such a manner that they may be entirely above criticism. To accomplish this desirable end, the physicians who made studies of government sanatoriums have recognized that a number of basic faults will have to be overcome and that there will have to be modifications and

changes in a great many details. In the attainment of this end, much may be done by the Public Health Service itself, but much will also have to be done in the creation of public sentiment which will eliminate those conditions over which the Public Health Service now has little or no control.

A satisfactory medical and nursing service will have to be developed by the government through the education and instruction of such physicians and nurses as are available, this being done in most of the institutions through classes of instruction which are usually being intelligently conducted.

The nursing service will have to be improved by a little closer cooperation between the medical and nursing staffs and by the provision of better living conditions and more amusements and diversions, especially in the more isolated posts, whereby there may be overcome the pernicious social relationship between patients and nurses which was found to be a demoralizing factor in most of the institutions inspected. If the present shortage of graduate nurses of the better class cannot be overcome, it will be necessary for the government to train female attendants as is done in most of the private sanatoriums.

The most serious fault in these government sanatoriums, and one which will be overcome only with the greatest difficulty, if at all, is the flagrant lack of discipline to be observed in practically all of the institutions. This is recognized by the more intelligent and serious minded patients as a distinct bar to their recovery. The patients generally are restive of restraint. They claim to be tired of military discipline and, on this account, it is possible that the uniforms and military titles of the medical staff serve as an irritant. There is considerable gambling. In most of the institutions, the use of liquor and of narcotic drugs is not unknown, while the use of tobacco and especially of cigarets, which seems to have been made a cardinal virtue during the war, is generally excessive. The patients apparently fail to recognize that reasonable discipline is an essential part of the treatment of tuberculosis, and seem to regard all disciplinary efforts as an arbitrary and offensive use of authority.

It was the opinion of each member of the inspecting committee that the men are being distinctly harmed by the possession of an excessive amount of money derived from federal compensation, and it was recommended that some legislative action be taken by Congress whereby compensation funds may be turned over to the members of the soldiers' families or accumulated with interest until the soldier is discharged from the sanatorium. In our opinion, it is only through some such action that the demoralization of discipline can be overcome; and, even then, that type of discipline essential to the well ordered sanatorium and the recovery of the patient will not be obtained unless public opinion can be in some way aroused to eliminate the well-intentioned but misdirected outside interference of politicians and others. So long as these restive and restless patients feel that their insubordination and hurtful indiscretions are condoned, and so long as the authority of the institutional heads is overridden by powerful political influence, government sanatoriums will fail to measure up to any sort of high standards and will fail to compare favorably with well conducted private institutions.

It is impossible at this time to go into detail in regard to these government sanatoriums; but the great problems, which will require the utmost effort on the

part of the service, are the attainment of the necessary institutional discipline and the building up of the medical and nursing personnel.

As the problem of caring for the returned tuberculous soldiers will confront the federal government for perhaps twenty years to come, and as it will be necessary for the Public Health Service and the Bureau of War Risk Insurance to educate institutional physicians, medical examiners and nurses, if returned service men are to receive the type of care to which they are entitled, an educational machinery must be created by the government, and it appears that this machinery can be utilized not only to meet the government's needs, but in the elevation of professional standards throughout the nation.

If every physician and every nurse connected with the government sanatoriums is required to become proficient through special training and instruction, there will ultimately be available a large group of physicians and nurses who will find ready employment and who will be exceedingly valuable in the many county and municipal sanatoriums which are being established in all parts of the country through the influence of the war.

The Bureau of War Risk Insurance now has in every county and parish in the United States at least one medical examiner with a large number of acting assistant surgeons responsible for the medical care of soldiers. For the most part, this gigantic staff is entirely untrained in tuberculosis; but the Public Health Service has already created classes of instruction in the diagnosis and treatment of tuberculosis for its representatives, and these schools are now being taken over and operated by the Bureau of War Risk Insurance. While the courses are necessarily brief, the carrying out of the plan will result in our having in each county in the nation at least one physician who has given some serious thought and some study to the modern conception of tuberculosis.

In many of these schools, it has been found that private physicians, in no way connected with the public service, are making applications for admission. As the United States Public Health Service is primarily interested in the prevention and suppression of disease in the civil population, it is believed that these classes can be made tremendously valuable by becoming permanent teaching centers available to all physicians.

It also appears possible in the future to utilize the government sanatoriums now in operation or under construction, and especially those situated near the large centers of population, as more pretentious schools for longer courses of instruction similar to the private schools now operated at Saranac Lake and at Colorado Springs.

The development of this educational service in tuberculosis will not only tend toward the betterment of tuberculosis practice throughout the entire nation, but will stimulate interest in and about government sanatoriums in such manner as to guarantee to the tuberculous soldiers of the country an infinitely better type of medical service and institutional care than they are receiving at the present time.

Specialization in Tuberculosis.—All the available resources for giving intensive and yet comprehensive practical instruction in tuberculosis should be organized and placed within the reach of all who wish to specialize in this subject, and any others who would care to avail themselves of the opportunity.—D. B. King, *Brit J. Tuberc.* 5:56, 1921.

PUERPERAL MASTITIS *

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The appearance of acute infection in the nursing breast is sufficiently frequent, even in well regulated hospital services, to receive careful attention. The occasional termination of such an infection in mammary abscess is an obstetric calamity. Therefore, we believe that without apology, in spite of a number of excellent recent articles on this subject, further consideration of this infection may not be untimely.

As the title "puerperal mastitis" suggests, we propose in this discussion to devote our attention to those disturbances which occur in the early weeks post partum. The hospital supervision of maternity patients in many cases ceases, provided there has been a normal puerperium, after two weeks. Therefore, many late infections are not seen unless reported back for treatment or detected in the follow-up work.

Our present hospital system keeps in touch with the patients until three weeks post partum.

Undoubtedly, the care of the breasts in the first two weeks has much to do with the avoidance of later infection. From the relatively rare occurrence of breast disturbance in cases in which nursing has been well established, it is certain that much of the morbidity from breast infections will be prevented by proper guidance and instruction of the nursing woman.

The importance of this condition cannot be overestimated. A sharp infection of breast parenchyma, even if quickly subsiding, may cause a termination of successful lactation. There is profound nervous disturbance in many of the cases. It is conceded that some of these inflammations may leave an irritation that will be the cause of later malignant growth. A substantial percentage will suppurate, with the sequelae of operative interference, destruction of breast tissue, more or less protracted convalescence, and profound nervous depression. To this is added loss of function for the time and probably in later pregnancies. In hospital or private practice, such an experience causes much dissatisfaction.

As this is a condition due to infection, it is our duty to inform ourselves of the normal incidence of this complication and to strive for the irreducible minimum.

There has been too much vagueness both in definition and in diagnosis of mastitis. Some teachers have failed in definiteness. When promptness of recognition and treatment weigh so much, this should not be.

An attempt to find the various recorded incidence of mastitis revealed wide variations in statistics, from Jewett's statement of from 5 to 6 per cent., to the statistics collected from varying sources by Norris in the *American Journal of Obstetrics* for July, 1918, in which he quotes a range of from 0.5 to 4 per cent. Gardiner¹ quotes Webringhaus with 2 per cent., and Fehling, 3.18 per cent.

Our statistics were compiled from a consecutive series of 2,000 patients delivered at the Woman's Hospital. There were fifty-seven cases diagnosed as mastitis, an incidence of 2.8 per cent. Our patients are

kept in the hospital for fourteen days post partum. Nine of these cases occurred after the date of customary discharge; three of them were readmissions.

CAUSES OF INFECTION

The causes of breast infection may be summed up as germ contamination plus diminished resistance. The old theory of "catching cold" is disappearing from the textbooks, but is still difficult to extirpate from the lay mind. The cause of the persistence of this tradition probably lies in the initial chill, which is the first symptom recognized.

The presence of the contaminating germ, especially *Staphylococcus albus*, in the normal maternal ducts, has caused much emphasis to be laid on the theory that milk stasis with increased germ activity has permitted bacterial invasion of the tissues. Accordingly, much zeal on the part of nurses in the use of massage or breast pump has in the past been encouraged to avoid such a development.

It is believed that a saner view of the situation is now prevailing. As breasts in which nursing is suspended or not attempted rarely show mastitis, it is more probable that manipulation of distended breasts may diminish the natural resistance of the tissues and increase the liability to infection.

The contamination of nipples by outside organisms is probably the commonest method of infection, especially in those of the severer type. Damage to the nipples from cracks, fissures or erosions undoubtedly favors the entrance of these germs. Infectious contacts may be from fingers of attendants or from fingers of the patient herself, possibly contaminated by handling lochial pads or from the nightdress or breast binder. De Lee, in his textbook, emphasizes the importance of the infant as the source of infection, whether from sprue, pharyngitis, coryza, ophthalmia, or pustular infections—especially of the face. To this list, might be added paronychia.

Our statistics showed 22.75 per cent. of infantile complications were recorded in the histories of these mastitis cases, as against 10 per cent. as a general nursery record. Of these, eight were conjunctivitis cases; three, pustular, and two, coryzas.

Some years ago, a private patient of mine suffered repeated mastitis attacks in different parts of both breasts, which disappeared after the healing of some mildly inflamed but discharging forceps injuries on the cheek.

The chance of the nursing's transmitting infection from an inflamed to a normal breast by changing the child immediately from the affected side to the other is so great that the nurse and mother must be instructed to avoid such a sequence. Blood stream infection is probably rarely encountered.

TYPES OF INFECTION

The types of infection vary from parenchymatous to primary interstitial. There is a phlegmonous type, usually with severe reaction, and there may be the slowly developing abscess with but slight initial rise of temperature. Another type, exceedingly mild, is that due to infection of the tubercles of Montgomery, the end-result of which is the areolar abscess. Rarely, the submammary abscess may result.

The early diagnosis of the infected breast is indispensable for successful treatment, as the opportunity for help is greatest in the early stages. There are

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

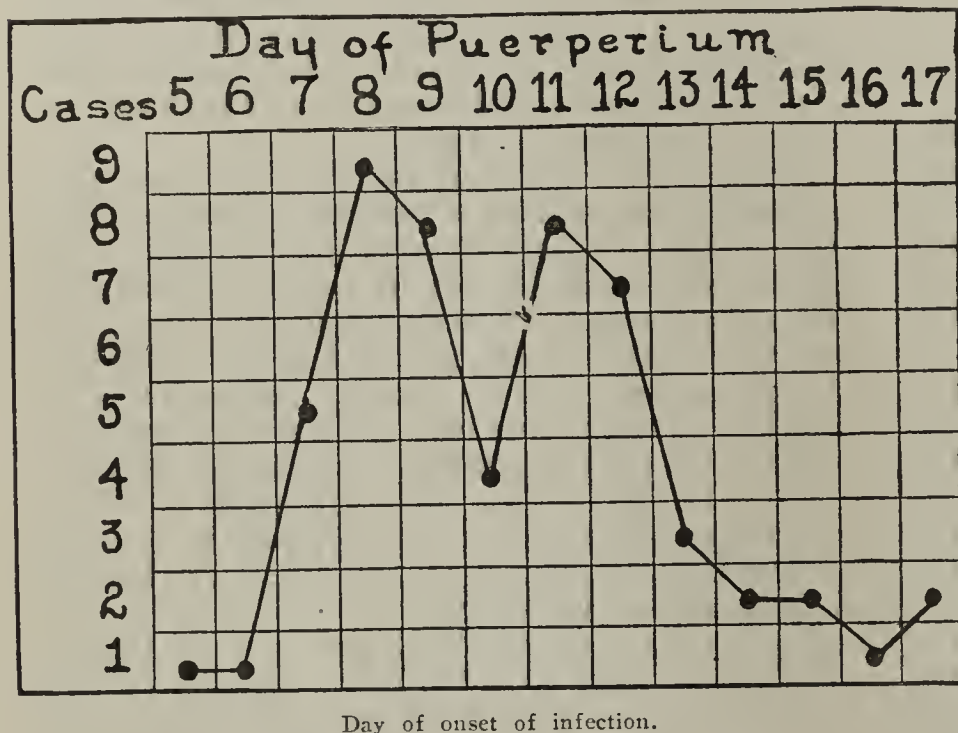
1. Gardiner, J. P.: *Am. J. Obst.* 80: 506 (Nov.) 1919.

usually the chill or chilliness, malaise, and headache; the rapid rise of temperature, the localized tenderness of a segment of one breast, and possibly early redness—especially in the superficial interstitial cases. The infected breasts may show general congestion.

The onset of the infection in our cases showed that from the seventh to the twelfth day was the commonest time of incidence.

In our experience, the eighth day is the one peculiarly liable to show a beginning mastitis.

The local pain is not always marked. In confirmation of the diagnosis, palpation to elicit the area of tenderness may be necessary. On the other hand, nervous symptoms are pronounced. There is often a severe occipital and vertex headache. The rise of temperature is sudden, and may, considering the local degree of inflammation, be disproportionately high—from 104 to 106. These symptoms are explained by the close relationship of the organs of lactation to the central nervous system, and by the ready absorption of toxins from the breast.



The differential diagnosis between this condition and distended breasts ought to be simple usually: first, because of the time of the onset of the infection, that is, in the second week; second, because of the localization of the process, and last, because of the very slight rise of temperature that is likely to occur with distention. It is true that occasionally with uncomfortable breasts, in the presence of some sapremic temperature there may be a temporary obscurity in the diagnosis. The lay term "caked breasts" is partly responsible for confusion in diagnosis. There is also the general impression that congested breasts are the forerunner of infection.

Even among the profession, we find a careless use of this term. The term "caked breasts," if used at all, should be applied to those that are hard, congested, or distended, while mastitis should be clearly visualized as a local infection and inflammation due to germs, and with possibilities of suppuration.

Usually the course of the disease tends toward rapid resolution. The fever, from its initial high peak, under proper treatment promptly and progressively declines until at the end of twenty-four or forty-eight hours it has reached normal. Some local tenderness may continue for several days. If the fever does not

disappear, pus formation is probable. Should the temperature fail to show a steady decline or develop recessions in the initial twenty-four or forty-eight hours, either there is pus formation or the infection of another segment of one of the breasts.

FREQUENCY OF OCCURRENCE OF BREAST ABSCESS

The frequency of the occurrence of breast abscesses is variously given by different authorities. Baer and Reis report from the Michael Reese Maternity Hospital, 0.23 per cent. occurrence in normal times, with a rise to 1.74 per cent. during the influenza period. Weibringhaus reports 0.21 per cent.; Fehling, 0.6 per cent.; Norris, 0.45 per cent. Our own statistics showed 0.4 per cent.

The occurrence of suppuration in proportion to mastitis attacks is given by Weibringhaus as 8.33 under Baer treatment to 16 per cent.; Fehling, 19.3 per cent., our own statistics, 14 per cent.

The abscess may be of slow formation, and its recognition thereby delayed for some days after the beginning of infection, and even after the subsidence of fever. If deeply placed, fluctuation is late in appearing, the only symptom being an indurated lump, gradually increasing in size. In slight cases, the formation of pus may be in the larger ducts near the nipple, where, at times, a cure has been effected by the systematic emptying of these ducts.

TREATMENT

In approaching the subject of the treatment of mastitis, one almost hesitates to advocate his method. The fierce conviction with which various authorities urge treatments of great diversity and give different indications argues Nature's response to be kind under many different handlings. Teachers seem to have varying theories, and in this connection, it is interesting to note Baer and Reis' ² article, with their careful study of the technic of breast care in twenty-nine different maternities.

They note "the great diversity of opinion is found in those conditions in which prophylactic treatment is most imperative, i. e., the treatment of pathologic nipples, of breast congestions, lymphangitides, and threatened abscesses," and suggest that possibly a study of the various treatments may serve to unify the kind of treatment in a particular condition.

Is there a possibility of developing a standard treatment for mastitis? Probably not, until some one can bring forward satisfactory statistics in a large number of cases which will carry conviction.

In prophylaxis, there cannot be such a wide divergence of opinion. That prenatal care, with advice, especially to the primipara, in regard to cleanliness, and in the case of depressed nipples massage is helpful, no one can doubt. After birth until the milk comes in, very brief nursings, from three to five minutes, with intervals of from four to six hours, is important. Cruel damage to the delicate epithelium is often accomplished before the need for nursing exists. To diminish the acute congestion of the beginning of lactation, the lavish fluid diet so often given by nurses to hurry up the coming in of the milk should be forbidden. With the bugbear of distended breasts as a cause for infection cast from our minds, the prophylaxis

² Baer, J. L., and Reis, R. A.: Surg., Gynec. & Obst. 32:353 (April) 1921.

laxis in mastitis resolves itself into prevention of trauma to breasts and nipples and to the elimination of contact infection as far as possible.

Appreciable lesions of the nipples are not the only cause of infection, for breast abscess occurs not infrequently with the nipple apparently intact, while many patients with severely damaged nipples show no breast inflammatory reaction.

Our technic in the case of damaged nipples is to use a constant dressing of either tincture of benzoin or bismuth and castor oil, from 1 dram to 1 ounce, or the lead nipple shield. The last is the most valuable of all. With a damaged nipple, all nursing should be through a glass nipple shield. In cases of bleeding, nursing is temporarily discontinued.

In the prevention of contact infection, the nipples are, when not in use, covered by a sterile compress or pad of gauze, 4 inches square, held in place by adhesive strips. This does away with the necessity of a binder to protect the nipple, besides providing a sterile dressing which remains in place unless removed by the nurse or physician. The effect on the patient is educational, establishing a *noli me tangere* attitude toward the nipple.

Further prophylaxis involves the rapid clearing up of all infantile infections, and in case of one-sided mastitis, the prohibition of consecutive nursing from the infected side to the normal one.

In our first 1,000 cases, in which the particular protective dressing described above was not employed, the mastitis incidence was thirty-six cases, with five abscesses. In the last 1,000 cases, coincident with the adoption of this dressing, the mastitis incidence was twentyone, with three abscesses.

The treatment of the mastitis, as soon as diagnosed is a cardinal point in success. The diversity of treatment may be seen in the accompanying table.

DIVERSITY OF TREATMENT OF MASTITIS

	Mas- sage	Pump- ing	Nurs- ing	Tight Binder	Ca- tharsis	Restrict Fluid	Cold	Heat
De Lee.....	No	No	No	Yes	Yes	Yes	....	....
Williams.....	....	Yes	No	Yes	....	....	....	....
Jewett.....	No	No	....	Yes	Yes	Yes	....	....
Cragin.....	Yes	Yes	Yes	Yes	....	....	Yes	....
Norris.....	No	No	Yes	Yes	Yes	....	No	Yes
Michael Reese Hospital.....	Yes	Yes	No	Yes	Yes	Yes	Yes	....

Certain therapeutic measures seem to have almost universal acceptance. These are the use of cathartics and the employment of a binder for pressure and support. The limitation of fluid in the diet is generally accepted also. An overwhelming majority use ice locally until the presence of suppuration is suspected. The moot points are those which involve the emptying of the breasts by massage, pumping or nursing.

From the study of Baer and Reis' table, it would seem that the statistics of those continuing nursing were about the same as those who stopped it. We believe that the breasts, in the absence of nipple injury, are most safely emptied by the infant, and that the continuation of nursing increases the chance of successful lactation. If, therefore, the attendant believes in the value of depletion at this time, the infant may be the safest agent for accomplishing this purpose. Massage and pumping must be most carefully and gently employed, but may be necessary to supplement the child's nursing.

The failure in the treatment of simple mastitis is evidenced by the proportion of cases in which there is pus formation, and it is by this result that the therapy must stand or fall. When the physician can show a lower incidence than one half of one per cent. in abscess cases in women who have been followed for a period of three months, that treatment should be regarded with respect. Moreover, the ratio of pus cases in proportion to the mastitis cases should be of value.

It is obvious that the mastitis incidence in a hospital in which the patients are discharged on the eighth or tenth day post partum will be insignificant, and statistics based on such short observation valueless.

When the presence of suppuration is suspected, a change from cold to heat gives comfort and hastens localization. All breast manipulation should cease, including nursing. Free incisions with counter drainage by rubber tubes and irrigation with surgical solution of chlorinated soda (Dakin's solution) will hasten recovery.

CONCLUSION

We would urge: (1) more effort toward the prevention of contamination in the first and second weeks of the puerperium; (2) general training of staff and nursing force, that the earliest recognition of infected breasts may be achieved; (3) prompt treatment of the infection by some rational method which will stand the test of figures showing a minimum of suppurative termination.

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ABSTRACT OF DISCUSSION

DR. HOWARD T. SWAIN, Boston: I wish to emphasize the importance of prophylaxis in these cases. Few cases of breast abscess are not preceded by some difficulty in nursing. It is of the utmost importance to be careful in putting the baby to the breast in the early days following its birth. Long nursing of the nipple from which nothing is obtained is probably one of the most common causes of injury to the nipple, which goes from bad to worse, and forms the opening in the tissues through which infection enters. With reference to protecting the nipple, I believe the lead nipple shield is a great aid, not only when the nipple is small, so that the baby is unable to get hold of it, but also when the clothing moves about and irritates the surface of the nipple. The lead nipple shield will prevent such disturbances. If we regulate the nursing of the baby, being sure it goes to the breast at long intervals and for only a few moments, until the nursing is established, we shall have far fewer breast abscesses. With reference to the treatment, massage should be absolutely omitted. I do not believe that massage of a tender breast should ever be allowed. Also, after we have put ice to the breast it is a great mistake to put the baby to the breast without allowing sufficient time for the freezing or chilling which the ice causes to pass away. It is very wrong to take the ice cap off the breast and put the baby to the other breast immediately, as is so often done. There should be an interval of twenty minutes or half an hour after the removal of the ice cap before the baby is put to the breast. With reference to fluctuation as a determination of the presence or absence of pus, I have never found that of any special importance, because it is so hard to make out in breast tissue. I do believe that the presence of edema over the area is important. Up to the time that edema of the skin appears there may be a question as to whether or not actual suppuration is going on. But once definite edema of the skin over the inflamed area appears, there is no question that pus is present, and the sooner it is evacuated the more rapid will be the recovery of the patient.

DR. FRANKLIN A. DORMAN, New York: I do not want this discussion to end without approving the occasional use of massage. The baby is a good source of depletion in mastitis, but intelligent massage may be necessary, even the occasional use of the breast pump. The appearance of edema, while a rather late sign, may be misleading, because it is not invariably a sign of suppuration. It may indicate a superficial inflammation rather than a deep one.

COOPERATION BETWEEN A CENTRAL STATE LABORATORY AND LOCAL MUNICIPAL AND COUNTY LABORATORIES *

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It may be taken for granted that every state has one or more public health laboratories connected with its department of health, and it is unnecessary here to dwell at length on the importance of laboratory service. The growth of laboratory work in general medical practice, as well as in connection with all the specialties; the great increase in public health laboratory service during the war, together with the marked increase in the appropriations made for laboratory work in the federal and state services—all these facts bespeak a real interest, not only on the part of physicians, who understand their practical application, but also on the part of the lay public, who, after all, support the legislatures that make the necessary appropriations.

Although the public health laboratory has received extraordinary impetus, its growth has been so rapid that nowhere is there to be found a corresponding growth in standardization of its methods, nor is there cooperation in their work between different laboratories. In Great Britain, the Medical Research Council, since 1916, has taken steps with a view to standardizing methods in the laboratories. In this country, there is federal control, and some state control, of biologic products that are manufactured and distributed by laboratories. Nowhere, however, is the physician assured that the examination of his specimen is made in the most approved manner. He relies solely on his personal confidence in the laboratory technician who undertakes the examination. The service rendered depends entirely on a personal equation, and may suffice wherever the physician is in constant and close touch with the laboratory. In the public health laboratories which serve larger districts, however, and which are not in close contact with all the physicians they serve, standardization of methods is necessary.

PROBLEM OF STANDARDIZATION

There are doubtless many ways of approaching the problem of standardizing public health laboratory work, but, to obtain the desired results, it is wise to formulate a definite plan. It may be admitted, for instance, that there must be supervision and control by some recognized and responsible authority who has power to act: that minimum standards should be set, and thus an opportunity be given the laboratories that are capable of attaining the highest standards of work to improve on them. A system of inspection and of

methods for testing the work that is done in the different laboratories is necessary, and, finally, a close cooperation between the central and all other laboratories is most desirable, if it is hoped that the results will be of reciprocal benefit.

A definite illustration of public health laboratory standardization is to be found in New York State. In fact, my chief reason for discussing this subject is to present in outline what has been done here along the lines indicated. In spite of serious and distracting interruptions, definite progress has been made each year, since 1914. At that time, the Division of Laboratories and Research, a small laboratory with only seventeen workers, was completely reorganized. Since then it has developed until, today, it carries on practically all the public health laboratory work that is of definite value to health officers in the field, and to physicians in their practice. The first problem was to organize and standardize the work within the central laboratory.

The first step toward reaching out to the standardization of the laboratory work generally throughout the state was made when the Sanitary Code established by the Public Health Council of the state, under legislative authority, prescribed that certain diagnostic examinations must be made in a laboratory approved by the Commissioner of Health. Later, not only the Sanitary Code, but also the laws of the state have amplified and extended these requirements. These laws require the laboratories engaged in public health work to secure the approval of the Commissioner of Health. In order to secure this approval, the local laboratories are to agree to adopt the prescribed methods of examination. Laboratories are approved for one year, and this approval is renewed on the first day of January each year. Laboratories are required to adopt uniform methods of reporting and of keeping records, and also to keep permanent microscopic preparations for inspection on file for six months. All the local laboratories were inspected, to be certain that these requirements were such as were needed; and they are visited at intervals, to be sure that the approved standards are maintained. The inspection was found to be far from complete, so it was later supplemented by the practice of sending to the laboratories sets of specimens to be examined and reported on. By sending these specimens to a number of laboratories, and at the same time having examinations made in the central laboratory, it is possible to check not only the work of the local laboratories but also that of the larger central laboratory.

TRAINING OF WORKERS

The minimum amount of training and experience of the laboratory workers is prescribed. Since the war, the standard has been steadily advanced, in order to secure more competent and responsible bacteriologists and technicians. In the course of inspection and observation, workers were occasionally found who needed special training and experience, and they were advised to spend a short time in the central laboratory in order to perfect their technic. This privilege, instead of proving onerous, has been so frequently welcomed by the workers in the local laboratories that a few of them now make a practice of visiting the central laboratory at regular intervals. The workers in the local laboratories are isolated by the very nature of their work and an exacting routine, with all sorts of handicaps in the way of insufficient funds and all that lack of money entails;

* From the Division of Laboratories and Research, New York State Department of Health, Albany.

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

and with, perhaps, little sympathetic or understanding encouragement, even if they chance to be located in some of the large centers of medical education. The central laboratory, having the authority to insist on certain standards, is often in a position to secure for these local laboratories satisfactory conditions of work which they are unable to get for themselves. Thus, instead of antagonizing the workers in the local laboratories, the work of inspection and supervision has aroused a most gratifying interest in the whole problem of standardization, as is witnessed by the formation of the New York State Association of Public Health Laboratories, which has now a rapidly increasing membership.

GOVERNMENT OF THE ASSOCIATION

In order that the larger laboratories may not predominate in the councils of the association; each laboratory has only one vote in all matters of policy. There are regular and associate members, and two meetings are held each year, one with the New York State Medical Society and the other, in midyear, at the central laboratory in Albany. This association, by lending its support and wise counsel, promises to make permanent and to stabilize the work of the central laboratory. The high aim and purpose of the association as set forth in the constitution and by-laws are of interest:

The purpose of this Association shall be to increase the efficiency of the several laboratories engaged in public health work in this state; to unify the interests of their workers by stimulating among them the spirit of common understanding and cooperation; and to encourage the constant effort toward the improvement and standardization of technical methods to the end of securing increasingly high standards of scientific achievements in the work performed by the several laboratories.

EQUIPMENT

Cooperation between the laboratories, and the standardization of their work, have now progressed to a stage at which the benefits are reciprocal. The central laboratory is so much larger and so much more completely equipped that it is obviously better qualified, not only to perform a large amount of daily routine, but also to make complicated and unusual examinations; and it offers exceptional opportunities for the prompt testing of difficult technical procedures. It is especially fitted to prepare the standard serums, vaccines and antitoxins, and other biologic products. In emergencies, the central laboratory, with its large staff, is able to assign workers to the local laboratories for the time necessary. It maintains a large bacterial collection, which is available for the other laboratories, and similarly a museum for unusual and interesting specimens, to be used for demonstration and teaching purposes. The central laboratory thus constitutes a scientific background, not only for the local laboratories engaged in public health work for a district, but also for the university laboratories. Local laboratories, on the other hand, are much better qualified to carry on the routine diagnostic work for a district, and to exert an important educational influence, not only on the members of the profession who come in daily contact with the laboratory, but also on the laity.

CONCLUSION

The public health laboratories in all the states should unite, to secure for themselves a centralization of authority, and of responsibility for the direction and

the results of standardization. They have opportunities for developing the work of standardization which are not to be found elsewhere, and it is a work which will dignify their profession. The laboratories which are engaged with the more abstract problems of research will turn to them to formulate and to test the practical application of their discoveries, and the university laboratories, in order to fulfil their teaching responsibility, will turn to the public health laboratories as models for the demonstration of technical procedure.

New Scotland Avenue.

MEASURES FOR INCREASING THE SUPPLY OF COMPETENT HEALTH OFFICERS *

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The existing demand for health officers far exceeds the supply. Though an exhaustive analysis of the situation has not been made, those who are in touch with it know that there is a real shortage of men qualified to give direction to public health programs, and they feel that unless immediate remedial steps are taken, this shortage is certain to become more and more acute.

Public health executives are experiencing greater difficulty in finding qualified health officers than they are in securing appropriations for the expansion of public health activities. At least three state health officers within recent months have expressed concern as to whether or not they can use all of the money at their disposal, because of their inability to secure competent directors for the work.

The number of full-time medical health officers in this country at present is estimated to be above 1,000. The distribution of those in governmental health work, according to estimates, is given in Table 1.

TABLE 1.—FULL-TIME MEDICAL HEALTH OFFICERS
ENGAGED IN GOVERNMENT HEALTH WORK

Public Health Service—commissioned.....	225
State boards of health.....	200
Cities and towns.....	250
Counties	175
Total governmental health officers.....	850
Nongovernmental health officers.....	150
	1,000

The demand for health officers comes from the United States Public Health Service, which has vacancies for commissioned and reserve officers; from states, which have vacancies for state health officers; from state health officers, who have vacancies for division chiefs and for district or county health officers; from cities and towns; from nongovernmental health agencies, and from progressive industrial corporations which, like the more progressive political units, have come to look upon hygiene and sanitation as essential to any program of intelligent and efficient industrial administration.

Any exact measure of the combined present and prospective demand for health officers is impossible, of course, but it seems clear that ultimately at least 7,000

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

full-time men and women—most of them medical graduates—will be needed to fill directive positions in this field. As indicated above, about 1,000 such officers are now employed on a full-time basis.

Experience in county health organization indicates that for each typical county of 20,000 population, one full-time county health officer will be required, besides a staff of two public health nurses, a sanitary inspector, and a technician or clerk. Certain health officers feel that a somewhat smaller unit of working force will be adequate for the 20,000 unit of population. Public health nursing authorities, on the other hand, feel there should be ten public health nurses for each such unit, or one for every 2,000 inhabitants. The suggested basis is probably conservative and, in any event, it will aid in visualizing the situation. The cities, with their congestion and their special problems, it seems reasonable to assume, will require at least as large a health staff as the county requires for every 20,000 of their population. Applying this unit of health organization throughout the United States to the population of more than 105,000,000, and allowing the states and the federal government each a number of health officers equiv-

Removal of Work from Politics.—Capable men will not enter the public health field unless there is a reasonable prospect that their work will be recognized as professional rather than political, and unless they can have reasonable security of tenure. In a number of states, the selection of the chief executive is a function of a board, which has a rotating membership similar to that of universities. In these states, the chief health officer and other staff members may expect to hold their positions on the basis of satisfactory service. As a result, a high type of professional spirit has developed. Elsewhere, instances have occurred in which the evil influences of politics have caused competent health officers to lose their positions, and this, in turn, has discouraged promising men from taking up the work as a vocation.

Much might be accomplished in correcting the present situation if a suitable agency could, after making a thorough survey, formulate a plan to be recommended to the states which would insure the selection of the most competent health officers available, and give to these, when selected, assurance of security of tenure on the basis of satisfactory service.

Adequate Salaries.—Where the position of public health officer has been regarded as more or less political in character, there has been a tendency to base the compensation on the scale allowed other office holders, who, in many instances, can qualify for their positions on the basis of merely a high school education, or less.

The competent health officer of today is required to invest from eight to ten years in completing his medical education, and in acquiring some of the fundamental principles underlying public health. If he needs all this training in order to discharge his responsibilities, his compensation should be sufficiently large to justify the investment. A scale of living which will compare favorably with that ordinarily to be had by competent practitioners of medicine, law, and the other professions, should be permitted him. Unless, in addition to making tenure secure for competent men, the compensation scale is made sufficiently attractive, capable men in adequate numbers will not choose public health as a vocation.

The progress which has been made in recent years has been encouraging, but much remains to be done. Where qualified health officers have produced tangible results, the communities giving them employment have generally shown a disposition to meet competition in the matter of salary. Time, educational work in its broadest sense, and sound public health programs, including striking demonstrations, will be necessary before those who shape governmental policies will fully recognize the professional character of the health officer and compensate him accordingly.

Encouragement to Students.—Public health work as a career should be kept constantly before students. Special provision should be made not only for teaching public health to students in medical schools, but also for acquainting them with the opportunities open to capable men, for finding careers in preventive medicine. Even in elementary and secondary schools, the principles of hygiene and public health should be systematically taught. Schools of engineering, and colleges and universities, in addition to teaching hygiene and public health, might well encourage their students to specialize in the public health aspects of such subjects as sanitary engineering, sanitary and food chemistry, sta-

TABLE 2.—FULL-TIME HEALTH EMPLOYEES NEEDED

Health officers of first rank:		
Federal government	525	
States	525	
Local	525	
Total		1,575
Health officers of second rank or specialists:		
Federal government	525	
States	525	
Local	4,725	
Total		5,775
Public health nurses:		
Local		10,500
Sanitary inspectors:		
Local		5,250
Technical-clerical workers:		
Federal government	525	
Local	5,250	
Total		5,775
Clerical or special workers:		
States		525
Health workers of all classes combined:		
Federal government	1,575	
States	1,575	
Local	26,250	
Total		29,400

alent to 10 per cent. of the number of local health officers, more than 7,000 full-time health officers will be needed, to say nothing of the public health nurses, the sanitary inspectors, and the technical and clerical employees, which would bring the total employees to over 29,000, as shown in Table 2.

If twenty years is taken as a reasonable period to allow for the development in public health work here anticipated, there will be need of 300 new health officers for directive positions every year, exclusive of those needed for replacement in governmental work, and exclusive of those who will be needed for nongovernmental health work. About 10 per cent. of the present number of medical school graduates, in other words, will need to be directed into public health work, if the service is to be cared for adequately. Only a small fraction of this number are now going directly into training for public health.

MEASURES NECESSARY TO DEVELOP SUPPLY OF
COMPETENT WORKERS

What are the steps that must be taken, then, to develop an adequate supply of competent workers in this field? Several remedial measures suggest themselves.

tistics, and public health nursing. The opportunities for careers in preventive medicine should not only be taught in the schools, but should also be presented by public lecturers, and by publishers of professional and popular periodicals. Press articles regarding striking achievements might prove helpful in stimulating interest in this field.

Provision for Advanced Training.—There must be more adequate provision for advanced training in public health. Generous support should be given to such institutions as the Harvard School for Health Officers and the School of Hygiene and Public Health established by Johns Hopkins University. The existing training facilities are inadequate. Further development in this direction is imperative. In addition to teaching the fundamental sciences, each public health school, by having an intimate working relationship with federal, state and city health authorities, can provide practical field training for its students and fellows. The schools of public health, moreover, by research as to disease, its mode of spread, and the methods for its prevention and cure, may enlarge and extend our knowledge. Thus we shall be aided in conducting field demonstrations, which afford the most effective method of educating the public as to the wisdom of supplying the money and the conditions essential to the success of public health activities.

Better Teaching of Hygiene.—There should be better teaching of hygiene to undergraduates in the medical schools. It is the duty of the physician to safeguard not only the patient, but also the patient's family and the patient's neighborhood, against preventable sickness. He may neglect opportunities to render service if he is not taught to view a case of communicable disease from the public health or the community standpoint.

Practically all of the birth and death certificates, which give us a basis for morbidity and mortality statistics, and, in turn, afford guidance to public health authorities, and a measuring rod of progress in the prevention of sickness and death, are prepared by physicians. Unless physicians know the significance of accurate reports, and the fundamental importance of their cooperating with the health authorities, the welfare of the public will suffer.

Moreover, the majority of the health officers at present are selected from the ranks of practicing physicians, and it is not generally practicable, or at least it has not been in the past, for them, on assuming such duties, to take special training; and even in instances in which physicians may not serve as health officers, they are frequently called on to serve as counselors on boards of health.

Increasing interest in this matter has been manifested on the part of medical organizations during recent years: and only this spring the Conference on Medical Education in Chicago adopted a committee report recommending an undergraduate department of hygiene in every first-rate medical school, under a full-time instructor, with a minimum of ninety hours devoted to the subject.

Provision for Training Facilities.—Training facilities should be provided by federal and state health organizations. Short courses for health workers in service should be instituted. Although accurate information is not available, we may assume that there are now from 6,000 to 10,000 public health workers, of all

grades, in this country. Most of them entered the field without first obtaining special training. Many of them have demonstrated exceptional ability, and they should have the opportunity to advance. If intensive practical training courses are provided for them there will be improvement in the quality of their work, and many of them will be enabled to advance to more attractive positions.

A number of state boards of health have conducted, with encouraging results, institutes for health officers and public health nurses. It is to be hoped that these significant beginnings will be developed and extended, so that the rank and file of public health workers may better equip themselves for their duties and thus raise the standard of public health service rendered. As the state and local health organizations grow, there will be an increasing demand for training facilities of this character, which may also be expected to serve incidentally as feeders to the institutions for more advanced training in public health.

Education of the Public.—The public should be educated to know and value public health work. The public provides the funds and sanctions the laws regulating the conditions pertaining to service in this field, and only through intelligent public opinion is it possible to obtain the community cooperation essential to satisfactory results.

A successful demonstration in health work often removes the work of the health officer from the plane of theory and generalities to that of a definite, clear-cut business undertaking, the value of which can be appreciated by the average citizen. Where such demonstrations have been conducted, the public has shown a willingness to provide adequate funds, to give due consideration to compensating the health officer, and otherwise to render his work interesting and satisfying.

Establishment of Fellowships.—Fellowships should be established for men and women of unusual promise in this field. Many health officers possess the personal qualities essential to successful careers, and would gladly qualify themselves for better positions by taking advanced training in public health, if such a course were possible. Usually they are underpaid and are unable to meet the cost of further training. Again, men of exceptional ability who have taken an academic course, the course in medicine, and a year in a hospital come to appreciate the possibilities and attractiveness of a career in public health; but having been taught the importance of thorough training for duties to be undertaken, they are unwilling to engage in public health work without special training, and they are financially unable to prolong their studies. In cases like these, the cause of public health can be served in a most constructive way if provision is made for granting scholarships or fellowships. The International Health Board is already contributing aid in this direction, in this country and in a number of foreign countries, and it is hoped that other health agencies and individuals may see the wisdom of providing fellowships in public health.

SUMMARY

The demand for qualified health officers already exceeds the supply, and the rapid expansion of public health activities will be limited by the supply of qualified health officers to a much greater extent than by a lack of funds. Measures that have suggested themselves for increasing the supply of qualified men are:

1. The divorce of health work from politics.
2. Increase in the compensation of health officers.
3. The acquainting of students, medical and academic, with the opportunities for careers in preventive medicine.
4. Provision of advanced training in public health in a few institutions well equipped and strategically located.
5. Teaching of public health in medical schools.
6. Encouragement of federal and state institutes for training health workers.
7. Education of the public to understand and value health work.
8. Provision of scholarships and fellowships in schools of public health for present and prospective health officers.

61 Broadway.

ABSTRACT OF DISCUSSION

DR. MILTON J. ROSENAU, Boston: If we are to entice men into public health work, this cannot and should not be done by pressure from without, but by allurements from within. When the profession of public health becomes attractive enough, then there will be a natural flow of good men into the field. I see a number of men here who have made a success in public health administration and whose achievements are acknowledged not only in this country but also abroad. Which school did these men attend? They went to the school of experience. There were no schools of public health in those times. Nevertheless, I am quite sure that not one of these men would advise that that rocky road should be followed by coming generations. Our curriculum and our drift is not toward that "practical" aim, but to give the fundamental education on which sound health administration must rest. All that we can hope to do is to give the training and direction for the innate qualities which our students may have. Therefore, we have stressed what may be called the fundamental sciences in giving training for public health service. A distinction should be kept in mind between "the medical officer of health" and "the health officer." When you look more intimately into the work of the medical officers of health, you find that most of their work is medical work. They deal with the sick and the problems of sickness, and I should say that it would be better to call them medical officers of sickness than medical officers of health, because they do not handle the questions of prevention in the way that we think should be done by the health officer. The distinction has been made several times this morning between preventive medicine and curative medicine. That distinction is artificial, although it requires special direction and special application in order to achieve success in either one. While it is quite true that health administration and health work deal rather with diseases of the community, whereas private practice deals with individuals and individual problems, yet there is another field which should always be kept in mind, and that is the question of personal hygiene. This is strictly individual, although truly a problem of public health. And by personal hygiene I do not mean the prevention of contagious or communicable diseases. I mean increased efficiency, which will make for individual happiness and greater usefulness in the world. It is a problem of physiology and for that reason we have given it prominence in our schools. The reason for shortage of health officers in the country, in my opinion, are (1) education—professional education and education of the public; (2) political independence, at least a sure tenure of office, otherwise you cannot expect to attract good men and keep them; (3) economic satisfaction, which every man should have, and (4) recognition of service by the public.

DR. DAVID L. EDSALL, Boston: I quite agree with what Dr. Ferrell and Dr. Rosenow said, but there are one of two things about which I do have some strong feeling, and one

of them was mentioned by Dr. Ferrell, namely, the influence of the medical school itself. We do not realize the influence of the college and the instructors on the professional choices that the men make subsequently. A student depends openly or subconsciously on the influence he gets from his instructors, and I believe that item very largely determines the interest the men take in special lines. Unquestionably, the great majority of men in the schools should go into the practice of medicine, and it would not be good public service if we directed them into other lines. But there are certain men who are temperamentally better fitted for other work, and it is our duty to open the door to them and let them see what it is. One of the duties which we have begun to meet is to provide this opportunity. A young man very properly hesitates to go on and spend time and money, unless he has some confidence that he is thoroughly attracted to and fitted for the line of work he is contemplating, particularly after he has spent the many years he has in obtaining his medical degree. Imitating the colleges which have done so much in this way in the last few years, we have arranged opportunities for men, in the elective time they have, in order that they may choose their careers more intelligently. We have arranged in industrial medicine opportunities for men while in the medical school to take systematized electives for a period of two or three months at least, in which they may get a course which will make them better practitioners if they go into practice; but, on the other hand, if they want to go into public health work, they will have a taste of what it means and see whether they are thoroughly attracted to this career, and whether their qualifications fit them particularly for it. I hope that the medical schools can do a part which I think they have really neglected. The attitude of the medical school is still largely that the practice of medicine is only the study and treatment of the individual sick. It is still the principal duty, but in justice to the students there ought to be made apparent to them the other opportunities which are open, and let them choose which they want to take up.

DR. JOHN A. WATKINS, Cincinnati: I want to call Dr. Ferrell's attention to the fact that he omitted from his discussion a group of medical men who are health officers in every sense of the word—industrial physicians. They are prosecuting intensively all, and more, than a city health officer prosecutes only extensively. They take the man and follow him from physical examination, the discovery of remedial disease in its incipience, his prompt treatment and institutional care, the supervision of his working environment, his home conditions and habits of personal hygiene to disability relief, rehabilitation, and old age pensions. I suggest also to those who are concerned with the problems discussed by Dr. Ferrell that it might be profitable for them to look to industry for successful methods of meeting such. One thing, industry appropriates adequate funds to carry on the work and pays adequate salaries to the men who do it. Being out of politics, these physicians are also out of the seasonal unemployed class. Some industries in this country expend from \$10 to \$15 per capita a year for industrial health work against about 50 cents per capita spent by communities in public health work.

DR. JOHN A. FERRELL, New York: Practical field experience is an essential part of a man's training for public health work. The majority of our most competent health officers have secured their training in the school of experience. In former years, our leading physicians gained their training by reading under and associating with other physicians. Today no one would, of course, argue for a return to this plan. Thorough courses in medical schools are regarded as essential for men seeking careers in these fields. Does not the same principle hold in training men for the profession of public health? In all professions, the collegiate training must be supplemented by practical experience. The practicing physician can be immensely valuable in the field of preventive medicine. He should be taught, and the teachers in the medical schools be taught of the opportunity of the physician to render a great service to the community through the application of preventive measures. Dr. Watkins referred to

the service being rendered by physicians in the field of industrial hygiene and medicine. I wish to concur in his opinion, and to express appreciation for the valuable contributions that are being made in the field of preventive medicine by industrial physicians. From the standpoint of adequate compensation and security of tenure, the field of industrial medicine offers very attractive opportunities for careers.

RETROPHARYNGEAL ABSCESS *

IRA FRANK, M.D.

CHICAGO

To those of us whose work frequently entails the examination of the young for morbid processes the symptomatology of which lies outside the ordinary routine of diagnosis, there comes now and then a case of postpharyngeal abscess with a history of one or more previous examinations, possibly by men of known ability, with actual failure to locate the seat of disease. That this circumstance is not uncommon is indicated by a study of hospital case records of the disease, a majority of which show admitting diagnoses ranging from marasmus to meningitis, including pneumonia, croup, diphtheria, etc.; and we can all recollect cases of these abscesses to which we have been called as specialists to "examine the ears and sinuses" for possible foci of infection, in little patients with vague symptoms involving fever and leukocytosis, and affecting the digestive apparatus, and possibly the respiratory tract.

I have been sufficiently interested in retropharyngeal abscesses, owing perhaps to an unusual number of recent cases, to feel that, though possibly all that there is to say about them has already been said, nevertheless their occurrence is a possibility too rarely thought of in routine examination and therefore too frequently overlooked. With our modern conception of the physiologic activity and pathologic importance of the nasal, postnasal and pharyngeal lymphatics, the significance of their condition in diseased states of the nose and throat should be more universally held in mind, and I believe that any effort we can make to popularize the seriousness of the condition and its diagnosis, will be instrumental in relieving acute agony and, possibly, in saving life.

In preparation for this exposition, I have looked over the records of seventy-four cases of retropharyngeal abscess, which include my own cases and those of my colleagues at Michael Reese Hospital during the last ten years. This number of cases constitutes about 60 per cent. of the actual number of such abscesses treated during this period; the remainder were disregarded because of the lack of histories and records in the out-patient department.

HISTORY

Morell Mackenzie¹ states that the first mention of abscess in the retropharyngeal region is made by Galen, in the second century of the Christian era, who described a case terminating in spontaneous rupture, and who apparently had seen other instances of the same kind resulting fatally. Mackenzie then refers to a rather careful description of a case reported by Morgagni, in the middle of the eighteenth century, a fatal

case because of rupture of the abscess into the trachea. Further references to the subject are made by Bleuland (1785), Abercrombie (1819), who reported three cases occurring in young children, and Sir Astley Cooper (1836).

Henoch,² who reported some cases in 1851, says that the first cases of retropharyngeal abscess were described by Fleming, in 1840. This statement is doubtless true so far as a careful diagnostic description is concerned, for Fleming gave a careful account of the affection, and even devised an instrument for the safe opening of these abscesses.

During most of the latter half of the nineteenth century, postpharyngeal abscesses were described as phlegmonous inflammations in the areolar tissue beneath the mucous membrane of the lateral and posterior pharyngeal walls, resolving with suppuration. For a time, following the teaching of Dupuytren,³ subsequently indorsed by others, it was believed that the phlegmons were due either to injury of the throat with foreign bodies or to caries of one of the vertebrae or of the occipital bone.

It was through the anatomic investigations of Gillette⁴ in 1867, demonstrating the lymph nodes and vessels of the retropharyngeal space, and the complete and painstaking study of a large number of cases by Bokai who, in his second communication, advanced the theory that the primary seat of morbid change occurred in the lymph structures, that the trend of medical opinion was altered. Bokai⁵ was probably the first to show that the majority of these abscesses occurred independently of lesions of the spine. He regarded the formed abscess as primarily an affair of the lymphatics; but as he was unable to locate the etiologic factors in a majority of his cases he termed the largest group in his classification "idiopathic," which term persisted in the literature of the subject up to comparatively recent years.

ETIOLOGY

It has long been known that retropharyngeal abscess is essentially an affection of very early childhood; that it is seldom seen in children approaching puberty, and that it is rarely found in adult life. Bokai's series of 204 cases was gathered at the Children's Hospital at Budapest and of course included no adults. Brown,⁶ in a recent article, maintains that 96 per cent. of the cases occur in the first six years of life. Henoch, in his *Pediatrics*, states that in his series of approximately thirty-five cases only one patient had reached the age of 3½ years. S. Vere Pearsons⁷ asserts that only one of his seventeen patients was more than 2 years of age. All of Koplik's⁸ seventy-seven patients were less than 10 years of age. Vas⁹ has made a similar report from the Stefania Children's Hospital at Budapest.

Of my own seventy-four cases, seventy occurred in children under 10, four in adults, aged 18, 20, 28 and 45.

Brown⁶ states that 50 per cent. of the cases in children occur in the last six months of the first year of infancy, and my own series would serve to confirm this statement.

2. Henoch, cited by Koplik: *New York M. J.* **63**: 440, 1851.

3. Dupuytren: *Gaz. d. hôp.* **5**: 374.

4. Gillette: *Paris thesis*, 1867.

5. Bokai: *Jahrb. f. Kinderh.* **10**: 108.

6. Brown, J. M.: *Laryngoscope* **29**: 9.

7. Pearsons, S. V., cited by Watson: *Northwest. Lancet* **123**: 192.

8. Koplik: *New York M. J.* **63**: 440.

9. Vas: *Orvosi hetil.* **153**: 61.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Mackenzie, Morell: *Manual of Diseases of the Nose and Throat* **2**: 39.

Vas' series numbered 1,054 cases, a continuation of those of Bokai, and shows 59 per cent. occurring in the first year of life, 35 per cent. in the first to third years, and less than 1 per cent. after the seventh year.

That the disease occurs in suckling infants was early recorded by Besser, Winternitz and others. In my seventy cases, the youngest patient was 3 weeks old. This case was one of four, all patients being under the age of 3 months. Exactly 90 per cent. of our patients were less than 3 years of age.

Thus definitely placing childhood as the important predisposing factor in retropharyngeal abscess, we must, while keeping in mind the lymphatic basis of the infection, take up, in similar detail, the exciting causes. In all of the following considerations, the chronic and "cold" forms of abscess due to tuberculosis and syphilitic caries of the vertebrae are excluded, as are the atypical abscesses due to direct injuries by foreign bodies, etc.

It will be shown in subsequent paragraphs how recent investigators are gradually completing the definite anatomy of the lymphatic distribution and drainage in the nose, throat and ear. In the light of these expositions, it has become somewhat less of a problem to account for the appearance of abscesses in the pharyngeal wall. It is no doubt a fact that, had the earlier studies of the process been made by laryngologists instead of pediatricians, the number of idiopathic cases would have shown a far less marked proportion in the etiologic considerations. (Bokai's tables show 10 per cent. of his cases following the exanthems, and 85 per cent. idiopathic).

Among early observers, Lewandowsky¹⁰ commented on two cases which impressed him as originating in the nose. He traced a connection between the lymphatics of the nasal chambers and those of the pharynx, and actually attributed the pharyngeal abscess to the diseased condition in the nose (1882). In this country, Agnew,¹¹ in the same year, published a case (of an adult) in which he was inclined to believe a carious and ulcerating tooth was the exciting cause, and Wiel,¹² about the same time, reported a case following a suppurative otitis media.

More recently, though there is a positive dearth of case reports, especially in American literature, there appears to be a general concession by writers on the subject that the abscess is the end-stage of a lymphatic gland involvement, due to a neighboring or remote infectious process occurring in the nose, sinuses, ears, mouth, teeth, pharynx and larynx.

ANATOMY

The retropharyngeal glands lie in the loose areolar tissue behind the pharyngeal wall and in front of the deep prevertebral muscles at the level of the upper two or three cervical vertebrae. They are placed in the so-called retropharyngeal space, a pocket of connective tissue extending from the base of the skull to the lowest extremity of the deep cervical fascia. Most¹³ states that the glands are arranged in four groups, two on each side of the midline of the pharynx.

The most important of these two groups is the more lateral chain composed of one or two glands, rarely more, arranged vertically. These lateral groups are

constantly present in infants and young children; in adults one of the chains may be absent. Superiorly, they are found just median to the carotid interna, near the entrance to the carotid canal. Projecting downward to the level of the mouth, they are often found below the soft palate in the posterior wall of the pharynx, lateral to the midline and almost hidden by the posterior pillars.

In children and infants there is found, very frequently, in addition to these lateral groups, a group of small glands in a more median position. These glands, described by Bokai and Most, occur unilaterally or bilaterally close to the midline, in the retropharyngeal space, and vary both in size and in number.

This variation of the lymphatic system in early childhood and adult life has, then, a most important bearing on one etiologic factor. In the first years of life there is actually present a number of glands which varies from three to ten or more; in the adult there is rarely found more than one or two in the entire postpharyngeal space. Beyond a time, therefore, when retrogression and atrophy of the glands take place there is, coincidentally, an actual and relative diminution in the liability and frequency of attack.

That the retropharyngeal glands receive afferent lymphatic vessels from the accessory sinuses of the nose, the nasal fossae, the pharynx and larynx, is mentioned in Gray's Anatomy, by Most, and by Delamère, Poirier and Cuneo.¹⁴ The retropharyngeal group send efferent vessels to the internal jugular group of the superior deep cervical chain. Most asserts that the drainage to the postpharyngeal group from the nose and throat is only minor, and is accomplished by characteristic lymphatic anastomosis. He states that the principal drainage from the upper respiratory passages is behind the large vessels of the neck to the deep cervical glands. According to his investigations, only a small part of the lymph stream is diverted through the retropharyngeal nodes. In any event, it is now definitely proved that directly or indirectly the lymph passing through the retropharyngeal glands contains in part that draining through the passages and cavities of the upper air tract.

By injection in child cadavers, André¹⁵ followed the lymphatics of the antrum through the middle meatus as far back as the eustachian tube. Grünwald¹⁶ had a similar result for all the accessory sinuses in the adult cadaver. With animal injection (dogs), Noyes and Dewey¹⁷ demonstrated a lymph way from the teeth to the submaxillary chain. More recently, Mullin and Ryder¹⁸ have demonstrated in rabbits a lymphatic absorption from the antrum, the frontal sinus, the palate, and the tissues of the face, through the submaxillary and internal jugular groups, the latter being the chain corresponding to the retropharyngeals in man.

PATHOLOGY

There has been an effort made by a number of writers to classify and distinguish between abscess formation in the lateral and that in the more median groups of glands. Broca¹⁹ applied the name "peripharyngeal abscess" to what should now be considered as the more common type of retropharyngeal suppu-

10. Lewandowsky: Berl. klin. Wchnschr., 1882, p. 116.

11. Agnew: M. & S. Reporter 46: 313.

12. Wiel: Monatschr. f. Ohrenh. 15: 43.

13. Most: Chirurgie der Lymphgefäße und der Lymphdrüsen, 1917, p. 27.

14. Delamère Poirier and Cuneo: The Lymphatics, p. 254.

15. André: Ann. d. mal. de l'oreille, et du larynx 31: 425.

16. Grünwald: Arch. f. Laryngol. u. Rhinol. 33: 1.

17. Noyes, F. B., and Dewey, K. W.: The Lymphatics of the Dental Region, J. A. M. A. 71: 1179 (Oct. 12) 1918.

18. Mullin and Ryder: Laryngoscope 31: 158.

19. Broca, quoted by Irish: Illinois M. J. (May) 1919.

ration Heiman²⁰ later substituted the term "parapharyngeal" to the affections of the lateral group, which he considered as continuous with the jugular chain.

There is, however, no reason to subdivide and classify the clinical retropharyngeal suppuration. Such classifications are apt to be more confusing than helpful in arriving at a diagnosis. Anatomically, the various subgroups of the deep cervical glands lie close together; physiologically, they are continuously interdraining; clinically, one or more of the glands suppurating and pointing in the retropharyngeal space becomes a retropharyngeal abscess.

Such is the simple mechanism for the presentation of the abscess in the posterior and lateral walls of the pharynx; and it is logical and convenient to suppose that all the variations of retropharyngeal abscess are merely suppurative processes in one or more of the postpharyngeal groups, pointing in the direction of least resistance, increasing in size and content, and controlled in its spread by the neighboring planes of deep cervical fascia, as a circumscribed intraglandular abscess, or rupturing and burrowing beneath the fascial planes.

For the abscess, left to itself, the following courses are open:

1. It may burst spontaneously and drain its contents into the pharynx.

2. The pus may burrow its way laterally to the side of the neck behind the large vessels and the sternocleidomastoid muscle, guided by the prevertebral fascia, behind which it is situated, into the posterior lateral triangle of the neck. Or should it weaken and rupture through the fascia, it may present itself anterior to the sternocleidomastoid muscle in the anterior triangle.

3. The pus may be guided downward by the prevertebral fascia to the lower part of the neck. The fascia passes behind the subclavian trunks, and, forming the posterior wall of the sheath of the axillary vessels, may actually guide the pus under the clavicle and into the axilla. (This rare type is usually the chronic cold abscess of a cervical Pott's disease.)

4. The abscess may travel downward behind the esophagus into the posterior mediastinum.

Cases illustrating these peculiar and remote presentations appear occasionally in the literature. Thus, in cases reported by Ripley²¹ and by Richards,²² the abscesses extended as far down as the first and third dorsal vertebrae, respectively. In Mercier's²³ case, the pus passed downward behind the subclavian trunks and appeared below the clavicle. The early cases of Agnew and Trelat are typical of the burrowing of pus laterally behind the prevertebral fascia, with presentation at the sides of the neck. Taptas²⁴ has recently reported a case, and there are a number of similar instances in the literature in which the pus traveled downward, producing an involvement of the mediastinum.

Very little has been written in explanation of the greater frequency of the condition in early childhood as compared with its incidence in adult life. Goldstein,²⁵ in 1908, said that, in the light of the known unusual activity of the lymphoid tissue and the

lymphatic ring in very young children, it would be logical to "assume that whenever an acute infectious process takes place in the nose, nasopharynx, accessory sinuses, ear, tongue or larynx, a continuity of lymphoid tissue may carry such an infection into the depths of the pharynx walls"—where, during childhood, are an unusual number of nodes. Goldstein says, further:

If the presence of this lymphoid tract in the larynx areas is accountable for the frequency with which retropharyngeal abscess occurs in very young children, then the scarcity of its occurrence as the age of the subject advances may also be conversely proven, for with adolescence and maturity, the lymphoid tissue which is so great a productive agency of hypertrophy or disease of any part of Waldeyer's ring greatly atrophies, and the pathology depending on this tissue is of necessity lessened.

The presence of these glands in infancy and early childhood, and their disappearance *during* childhood, are problems yet to be solved by physiologists. It is easy to agree with Goldstein in the conclusion that these nodes are intimately associated with the adenoid vegetation, the life cycle of which runs in quite a remarkable parallel with the activity of the retropharyngeals.

I, myself, am of the opinion that these lymph nodes in early life are among the chief filters of efferent vessels from the adenoid growths, acting as such while the lymphoid structure of the adenoids is functioning at the peak of its physiologic activity. When this ultimate stage of usefulness has passed, and atrophic degeneration of the glandular substance of the adenoids takes place, it is probable that the sphere of utility of the retropharyngeal glands has also passed, and that they are gradually destroyed by a chronic progressive fibrosis and degeneration. To this hypothesis may be added a suggestion that the entire mechanism may at some future time be shown to be a legacy from some early period in the developmental history of the human species.

SYMPTOMS

The development of a retropharyngeal abscess in the adult is heralded by a number of well marked indicative signs, calling attention at the onset to the existence of some morbid process in the throat. The symptomatology parallels that of quinsy, with the exception that the course of the former is more prolonged and the pain less agonizing.

In infants and young children, the diagnosis of the condition presents some difficulties to the general practitioner, and at times also to the pediatrician and laryngologist. The inflammatory process, which eventually becomes the abscess, sets in insidiously, and, by the character of its onset, may put the unwary off the proper diagnostic trail. It is the experience of most pediatricians that the symptoms are often not sufficiently prominent to attract attention until the local process has increased to such an extent that it interferes to a greater or a less degree with respiration, deglutition, or both. The variations in symptoms in different cases are due to two principal factors: the location of the abscess, and the extent of it. If the tumefaction is situated high in the pharynx wall, respiration is not interfered with; there is, however, a difficulty in deglutition, and a nasal intonation is noticeable in the voice. If the swelling is lower in the throat, respiratory symptoms become more prominent. Symington showed some years ago that, though the neck as a whole is relatively longer in children than it

20. Heiman, Henry: The Effect of Subcutaneous Injections of Magnesium Sulphate in Chorea, *Am. J. Dis. Child.* 12: 109 (Aug.) 1916.

21. Ripley: *Arch. Pediat.* 1: 184.

22. Richards: *Lancet* 2: 659.

23. Mercier, cited by Bosworth: *Dis. Nose and Throat* 2: 76.

24. Taptas: *Gaz. méd. d'Orient.*, 1905, p. 74.

25. Goldstein: *Laryngoscope* 18: 46, 1908.

is in adults, the larynx in infancy is fully one vertebra higher in position. Encroachment, therefore, and interference with the respiratory function are relatively more possible in the child than in an adult.

In addition to these signs, there are a number of symptoms which vary in constancy and prominence in individual cases. Bokai was impressed with the position of the head as a valuable diagnostic sign. He observed that when the abscess occurs laterally (which is the case in a majority of instances), the head may be drawn toward the healthy side and held with some degree of rigidity in this position. Other writers quote Reigenier's term "*cri de canard*," in describing the throaty quack one hears more frequently in quinsy.

Dyspnea becomes a prominent symptom, in most cases, some time in the course of the disease, owing to forward pressure on, or lateral displacement of, the larynx, and this pressure earlier in the course of the affection is responsible for the frequently noted irritative cough, which later simulates a croup.

There are on record a number of unusual cases displaying symptoms of more remote origin. Winslow²⁶ has reported an instance of retropharyngeal abscess situated high in the pharynx, in which the history and signs indicated adenoids. In a case published by Thompson,²⁷ the first and practically only symptom was due to a paralysis of the esophagus. (This patient, an adult, showed a subadenoid abscess.) A patient of Spingarn's²⁸ exhibited definite symptoms of pressure on the vagus trunk.

In an illness of early childhood, involving difficulty in respiration or deglutition, whether acute or insidious in onset, the retropharyngeal space must be regarded with suspicion, and an effort should be made to examine the pharynx walls thoroughly by palpation, as well as by inspection. The tumor mass may not be visible to the eye in the brief interval of inspection, owing, in some cases, to its hidden position; but usually to the struggling and gagging of the little patient. It is agreed by all writers on the subject that palpation offers a more satisfactory means of diagnosis, the extent, the location and the condition of the abscess being more readily determined, in the majority of cases, by a single diagnostic maneuver. The lateral and posterior walls must be investigated, it being already noted that the clinical retropharyngeal abscess may be a suppurative process in a lymph gland not a member of the true retropharyngeal group.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis may at times offer some difficulties, judging by the experience of some writers, though in individual experience they rarely present themselves. For example, many years ago Duke reported a case of aneurysm of the common carotid which burrowed into the retropharyngeal space, and, mistaken for abscess, was opened, with disastrous result.

The history and a careful examination of the neck and spine will arouse a prompt suspicion, in cases of cervical Pott's disease, and the roentgen rays will confirm the diagnosis of cold abscess. A type of retropharyngeal abscess due to a nontuberculous spondylitis is far more difficult of diagnosis, and may remain unidentified until the usual treatment for the more common abscess has failed. This is an acute osteomye-

litis of the vertebrae, which, when located anteriorly in one of the cervical segments of the spine, forms a burrowing abscess in the retropharyngeal region. Symes' report, in 1826, of a patient with caries of the cervical vertebrae, which healed on discharge of a sequestrum, is probably the first case of the kind on record. In our series, the case of one of my colleagues was such an instance, a sequestrum being found and removed by operation, with recovery. Nast-Kolb²⁹ has reported a few of these cases, and Kirmisson³⁰ has compiled a number of similar examples.

In one case, reported by Goldstein, the clinical picture was misleading, prompting the surgeon in charge to consider the possibility of malignant new growth. A section of tissue from the tumefaction was submitted for microscopic examination, and the pathologic report showed lymphosarcoma. In this case, the author, suspicious of retropharyngeal abscess, demonstrated pus with an aspirating trocar. Speedy and complete recovery followed operation. Bosworth reported a similar instance many years ago.

It must be remembered that infections of the upper respiratory tract may produce a lymphadenitis in the retropharyngeal nodes, without the formation of pus. It is logical to assume that these glands may become infected and enlarged as frequently as the more superficial glands of the neck, suppurating similarly to the latter in only a small proportion of the cases. Palpation demonstrates the swelling, which rarely attains sufficient size to cause symptoms. It should be borne in mind that the absence of fluctuation does not rule out abscess, nor does failure to locate a soft area. In many instances, the pus pocket is deeply buried behind the thickened indurated pharynx walls, making it sometimes impossible, in even fully developed abscess, to obtain fluctuation.

Occasionally, differentiation must be made between cases of abscess and those of acute pharyngitis in throats of patients with cervical scoliosis, this condition causing a unilateral projection of the posterior wall of the pharynx. A lateral twist of the cervical spine destroys the transversity of the back wall, and, in this oblique position, the forward mass may be confused with abscess, especially when the mucous membrane is inflamed though the absence of fluctuation, and the palpation of the vertebral bodies renders this mistake unlikely.

In articles written on this subject in recent years, the differential diagnosis between retropharyngeal and peritonsillar abscess receives little or no attention. It has been almost customary to state merely that the former never occurs after the age of 3 years, and that the latter never occurs prior to this time. I do not hold with this view, having had experience with two cases of frank quinsy in which postpharyngeal abscess was no more to be thought of than in adult cases. Both were opened in the usual way, with the usual recovery.

It is not possible to differentiate these cases by strict palpation, but primary inspection will lead to suspicion of this atypical position, the tonsil being displaced medianward instead of forward, and a peritonsillar bulging, with edema, being noted in the anterior pillar.

The early symptoms of postpharyngeal abscess are usually of too mild a degree to excite suspicion of the actual morbid process; it is only when the functions of

26. Winslow: *Eye, Ear and Throat Diseases* 7: 57, 1902.

27. Thompson: *Laryngoscope* 21: 1081.

28. Spingarn: *Med. Rec.* 78: 529.

29. Nast-Kolb: *Ergebn. d. Chir. u. Orthop.* 3: 386.

30. Kirmisson: *Presse méd.*, 1909, No. 38.

respiration and deglutition are interfered with that the clinical picture presents a suspicious aspect.

The dyspnea may suggest a laryngeal affection. Combined with the croupy cough, it is often suspected as a diphtheria before a careful oral examination is made. I have seen cases strongly resembling a laryngeal stenosis due to foreign bodies; in a recent case, the house physician had ordered a roentgenogram of the larynx before my arrival at the bedside. Alexander,³¹ Fedde³² and other recent authors, in reporting series of these cases, lay special stress on the similarity between abscess and croup and laryngeal edema. Kyle³³ points out that gentle pressure backward on the larynx greatly decreases the dyspnea and cyanosis, in cases of abscess, but has little or no effect in croup diphtheria.

COMPLICATIONS

The complications arising from suppuration in the retropharyngeal lymph nodes are due to: (1) spread of the infecting process by blood and lymph streams, causing septicemia, pyemia or distant infections, such as meningitis; (2) spread of the process by continuity, producing spontaneous and serious hemorrhage by infectious erosion of the large vessels of the neck, and by spreading or burrowing of the abscess downward, involving the mediastinum, or by rupturing into the esophagus; or (3) some mechanical process, such as pressure of the tumefaction forward on the epiglottis and larynx, with edema and air hunger sufficient to require emergency tracheotomy; or such as spontaneous or artificial rupture of the abscess, with aspiration of the infected content, producing pneumonia, lung abscess or sudden asphyxia.

Many of these complications were recorded in the early literature of the subject soon after the recognition of the condition as a clinical entity. Bokai, Schmitz and Carmichael, on the continent, and Lidell, in this country, are on record with serious and fatal cases in the seventies. Lidell,³⁴ Bokai, Carmichael³⁵ and, more recently, Wylie and Wingrave,³⁶ Travers³⁷ and others, reported fatal hemorrhage from the carotid arteries. Justi and Gaupp are on record with cases of sudden suffocation through spontaneous rupture of the abscess. Schmitz's patient died of edema of the glottis. One of Spingarn's²⁸ cases is typical of the septicopyemia group of complications, and less than two years ago Mosher³⁸ published a report of jugular thrombosis following a retropharyngeal abscess. Szmurlo³⁹ has reported the spontaneous rupture of the abscess intracranially, through the internal auditory canal.

Of my own patients, two died of hemorrhage despite efforts at ligating, following the opening of the abscess. There were three other deaths in the series; in one, the condition became complicated by pyemia, in the other two by bronchopneumonia and lobar pneumonia.

TREATMENT

For fifty years, the question of opening retropharyngeal abscesses through the mouth or of draining them externally has caused some dispute, and, at the present

time, there is still some difference of opinion. Chiene⁴⁰ and Burkhardt,⁴¹ in 1877 and 1888, respectively, advocated opening the abscess through the neck, the former, along the posterior edge of the sternocleidomastoid muscle, the latter, along the anterior edge. At that time, Chiene's approach was considered advantageous, because it is further removed from the large vessels, and is thus less liable to cause erosion, and serious or fatal hemorrhage, if the drainage is long continued. Trelate, in 1882, accomplished external drainage by operating through the mouth, and pushing through the abscess from the pharynx to the neck. At the same period, the instrument of Fleming and the pharyngotomes of Schmitz and Stoerk were also popular. Abelin of Stockholm, in 1871, recommended that the abscess be opened with a trocar, with the view of avoiding the danger of pus flowing into the larynx; while Niemeyer recommended the use of the finger nail. During the last decade of the nineteenth century, the bistoury, sometimes guarded with gauze or adhesive, was more universally used, and with many operators it is still the method of choice. Schmidt,⁴² Myer,⁴³ Mierhof,⁴⁴ Lilienthal,⁴⁵ Dean⁴⁶ and a number of other writers have contributed to the problem more recently. Schmidt, Myer, Pierson and Dean favor external drainage. Pierson operates externally behind the sternocleidomastoid. Dean's report, one of the most recent on the subject, advocates operation in cases of tuberculous caries; but he regards it as so simple and safe a procedure that he recommends it for the acute abscesses. Dean uses the Burkhardt incision, through skin, platysma and vaginal fascia, following which the finger is inserted between the vascular and visceral fascial sheaths, along the prevertebral fascia, into the retropharyngeal space.

We have been accustomed at our center, for a great many years, to open these abscesses when convinced of their acute nature, after the manner described by Mierhof, in 1905. This operation consists in inserting the index finger of the left hand into the child's mouth, using a gag in older children, to locate fluctuation or the most pronounced area of pointing. With the finger maintained in this position, an artery snap without teeth, somewhat curved and moderately pointed, is introduced closed into the mouth along the inserted finger, and is directed by the latter to the point of election. The hemostat is pushed quickly into the body of the abscess and withdrawn with the blades widely opened.

There has been considerable discussion recorded in the literature regarding the position of the patient during the mouth operation—suggestions being offered for every conceivable posture, in an effort to diminish the likelihood of pus being aspirated into the trachea. Mierhof opened the abscess with dressing forceps, having the child held in an upright position on the knee of an assistant, who, as the abscess was opened, threw the patient's head and body forward.

Our method has been to wrap the child in sheet or blanket, with the arms at the side of the body and legs extended, this procedure minimizing the struggle and permitting a single assistant to have perfect control of the child. The swathed patient is laid flat on the table,

31. Alexander: New York M. J. 98: 227.

32. Fedde: Med. Rec. 86: 1009.

33. Kyle: Diseases of the Nose and Throat, p. 548.

34. Lidell: Am. J. M. Sc., 1883, p. 321.

35. Carmichael: Edinburgh M. J., 1881, p. 24.

36. Wylie and Wingrave. Lancet 1: 1042, 1906.

37. Travers: Brit. M. J. 2: 703, 1902.

38. Mosher: Tr. Am. Laryngol., Rhinol. & Otol. Soc., 1920, p. 327.

39. Szmurlo: Gaz. lek. Warszawa 24: 454.

40. Chiene: Brit. M. J., 1877.

41. Burkhardt: Zentralbl. f. Chir., 1888, p. 57.

42. Schmidt, W.: Ztschr. f. Chir. 55: 129.

43. Myer: Am. Med. Surg. Bull. 9: 454.

44. Mierhof: Laryngoscope 15: 467.

45. Lilienthal: M. Times 41: 355.

46. Dean: Ann. Otol., Rhinol. & Laryngol. 38: 566.

with head turned toward the operator, and the moment the abscess is opened, is turned quickly on its stomach, with the body elevated somewhat above the level of the head.

This method has proved very successful in my experience, and I remember only an occasional instance in which reopening of the abscess on account of insufficient drainage has been necessary.

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ABSTRACT OF DISCUSSION

DR. ROBERT SONNENSCHNEIN, Chicago: There are only two points I want to touch on: an anatomic and pathologic consideration—the course of the pus, depending on the location of the infection. In the acute case, as pointed out by Dr. Frank, the abscess forms from the breaking down of the retropharyngeal glands. As a rule, the pus burrows directly beneath the mucosa of the pharynx and usually points into the pharynx. Those cases are the most favorable ones, and rarely do serious results follow. In the second variety, when the pus comes from disease of the bodies of the vertebrae, the pus burrows down behind the scalenus muscles, and, unless recognized early, usually descends into the posterior mediastinum and causes death. We should make careful examination of the pharynx in young children with a temperature curve which is otherwise unaccounted for. On superficial examination in many of these cases there is apparently no swelling of the pharynx; and yet if the space just back of the tonsils is examined closely, infection is found to account for the rise of temperature, and if not arrested early may cause serious difficulties.

DR. CULLEN F. WELTY, San Francisco: A girl, aged 5 years, complained of pain and discomfort for a few days. There was a swelling in the region of the tonsil that had been removed. It looked and felt as if an abscess was located beneath the tonsillar fossa. Under general anesthesia a small incision was made in the posterior pillar. Pus was there under considerable pressure. It was cared for very nicely, as we care for bleeding following a tonsil operation. As the pressure was relieved, the incision was enlarged and the same procedure repeated until all the pus was evacuated. Afterward the cavity was packed with gauze an inch wide and a yard long. The packing was removed the following day and a tight packing inserted daily until the cavity was obliterated. A number of patients have suffocated from the pus escaping too rapidly, and by doing the operation in this way there is no possible chance for such a complication to develop.

DR. H. W. LYMAN, St. Louis: I have seen three cases of retropharyngeal abscess in adults. The most interesting occurred in an acute exacerbation of chronic mastoiditis. When the patient was placed on the table for a mastoid operation, the discharge, which previously had been very scanty, was seen to be quite profuse. The canal was filled with pus. This was sponged away and more pus welled up from the middle ear cavity. After the operation was performed, the conditions found did not account for this free discharge of pus. The mastoid pain was relieved, but the patient did not get along as well as I had hoped. An examination of the throat was, of course, made, and there was some argument as to whether or not there was a pathologic condition in the throat. Eventually, a slight swelling in the posterior pharyngeal wall just above the eustachian tube was opened, and a free discharge of pus from a retropharyngeal abscess occurred. From that time on the recovery was uneventful. Careful study of the case convinced us that the infection had occurred along the lymphatics around the eustachian tube. Another case occurred after a mastoid operation. The patient came in with acute mastoiditis and with the posterior cervical glands indurated and enlarged. After operation the bony part of the wound healed, but a retropharyngeal abscess developed. It was opened, and pus could be expressed not only from the retropharyngeal abscess, but also from the broken down posterior cervical glands, which were the source of infection in this case. The third case occurred in a man who was brought into the hospital for

some alcoholic condition and was removed the next day for the reason that he was opposed to any medical treatment. A retropharyngeal abscess had opened spontaneously and was discharging huge amounts of pus. Examination disclosed that it had already extended to the mediastinum. The man died soon afterward of sepsis. Unless the roentgenogram reveals a pathologic condition of the cervical vertebrae, the method of opening through the mouth is preferable. One point should be strongly emphasized—that is, the danger of general anesthesia in operating for retropharyngeal abscesses. Several fatalities have been reported. One should never use a general anesthetic in this condition. In the case of children, simply wrap the patient in a sheet and have an assistant hold him with the head hanging down. The pus then runs out the nose, and there has never been any aspiration of pus in cases so treated.

DR. JOHN A. PRATT, Minneapolis: I, too, have seen three adult cases of postpharyngeal abscess, and they occurred within a period of three weeks: One patient, a man, aged 30, was a syphilitic; the second, a girl, aged 16, had had a tonsillectomy previously, and the third case, in a woman, aged 45, also followed a tonsillectomy.

DR. E. L. MYERS, St. Louis: I have had six cases of retropharyngeal abscess. Two were in babies, one of which was diagnosed before operation; the other was undiagnosed, and operation was performed for adenoids. On palpation we were surprised to find evidences of pus. The child recovered. Two cases occurred at the age of puberty. A child of 14 came in for torticollis with a growth similar to sarcoma in the nasopharynx, and I opened it with hesitancy. He apparently recovered, but six months later died of general tuberculosis. In another case the complaint was a torticollis, with retropharyngeal abscess, and in another case the torticollis presented itself first. On going into the history of the latter case we found that the man had had otitis purulenta chronica. He refused mastoid operation; later the mastoid drained through a retropharyngeal abscess. This was four years ago, and the patient is now apparently well. The abscess drained into the right lateral pharynx. The remaining case was that of a man who came in for an extreme torticollis. I did a mastoid operation and found that I was dealing with a digastric mastoid abscess. The pus was entirely digastric, and four or five days later the patient complained of difficulty in swallowing. I then drained the balance of the mastoid pus through the pharynx.

DR. JOSEPH C. BECK, Chicago: Did you find in these cases that the action of the constrictor muscles has anything to do with mechanically forcing the pus one way or the other? Why not resort to the use of suction while you are operating to get the pus out?

DR. WILLIAM B. CHAMBERLIN, Cleveland: I should like to report one unfortunate experience in this condition. A child not over 3 years old was brought into the dispensary. In demonstrating this case to one or two students I put in an ordinary mouth gag, when suddenly the child stopped breathing. All possible efforts to resuscitate the child were made, but were unsuccessful. I think the abscess was pressing on the larynx, as a large amount of pus drained out on incision. Facilities were not immediately available for the introduction of a tracheotomy tube or for intubation, and the child died. Possibly this suggests the danger that might result from demonstrating these patients to students, especially with the use of the gag.

DR. IRA FRANK, Chicago: In regard to Dr. Beck's questions, the first one I cannot answer. As to the employment of suction in these cases, I found nothing in the literature on this point. We have always found the operation such a short one and done so quickly that we have looked upon the use of suction as superfluous. Regarding anesthesia, we have never given a general anesthetic to any of these children. I have brought nothing new to your attention, except, perhaps, the possibility of these abscesses being overlooked in routine examination. When we can exclude a foreign body in an illness of early childhood involving difficulty of respiration and swallowing, I feel that the retropharyngeal space should be regarded with suspicion.

FUNDAMENTAL FACTORS IN THE
CONTROL OF TUBERCULOSIS

WITH ESPECIAL REFERENCE TO THE SANATORIUM *

HENRY BOSWELL, M.D.

SANATORIUM, MISS.

In presenting a paper on the subject of tuberculosis, I offer my apologies for repetition of papers on the same subject written in the past several years. However, as tuberculosis is a preventable disease, so classed at least, no public health program would perhaps be complete without something being said with reference to this, the most common of all known diseases, especially since it produces the greatest number of deaths of all preventable diseases of history.

For several years, the fight has been waged in many instances against the disease alone, rather than as a broad public health movement. Within the last few years, in Mississippi, we have attempted to start a campaign, the foundation of which is laid upon a broad vision of the tremendous fight before us, and our law is so framed in its conception of the educational and curative work that we are able to launch a campaign commensurate with the immensity of the problem. In this, we took into consideration the fact that science regards this disease as preventable, and that we know less about tuberculosis than almost any other disease known and classed as preventable. We recognize this disease as one of peculiar significance, in that it is not quarantinable nor will it be for many years, if ever, as public sentiment is always necessary to a successful quarantine. We likewise took into consideration the fact that any campaign against tuberculosis must, in addition to fighting the disease as an entity, be properly linked with a broad public health movement, as we believe that, in a great percentage of cases perhaps, this disease is a by-product of circumstances, social conditions, and other diseases. It is true also that a great number of people are carriers of tuberculosis, though not having the active disease themselves. In fact, where examinations have been carried out scientifically, about 10 per cent. of people showing tubercle bacilli in the sputum are classed as having inactive cases; yet they furnish a constant source of infection.

FACTORS IN A SUCCESSFUL CAMPAIGN

With these facts before us, it seems self-evident that a successful campaign against a disease of this type must be one built on a broad basis and anticipating an enormous expenditure of money over a long period of years. With this in view, our ideas of a successful campaign are well exemplified in our law, which, in many respects, is similar to the laws of other states in the Union, in that a campaign must be linked with the state or municipal health department, as one of its bureaus, and that it must be coordinated with all public health movements, and in many instances be subservient to other bureaus, and with all private or charitable institutions, social welfare organizations, volunteer agencies and the Bureau of Animal Husbandry.

A successful campaign must be launched, first, through the educational department, which has for its object the education of the public to the prevalence and the infectiousness of the disease, instructing them constantly in everything modern science is able to give

us; the employment of physicians and public health nurses (not special tuberculosis nurses), the organization of local agencies, particularly local health departments, both county and municipal, whose duty it is to deal with local communities; the improvement of health conditions, in order to control that part of the morbidity rate which is, or should be, classed as "end-products," and the dissemination of information to the public as to the general program, in order to hold their confidence, and insure their cooperation, which is the only method of securing monies in sufficient sums to insure success.

Secondly, attention must be given the other division, which may be termed that of the sanatorium. This division serves both for treatment and for educational purposes. It is undoubtedly true that the public demands care for the sick before they are willing to contribute liberally to prevention of disease. This unfortunately is a characteristic of the American people, and, when properly appreciated, returns to the health department and the organized campaign dividends in the form of cooperation and money for the final work. The sanatorium may be compared to our school systems in that, if properly handled, it becomes a school for the education of a large tuberculous population and sends back into the communities over the state or municipality a properly trained individual, who is potentially a carrier of the infection. This tuberculous population, receiving a general health education, and a broader conception of the beauties of health, and of the value of the physically perfect people, will return to their respective communities with an influence for good and for the up-building of the general health conditions, far greater than that of the average paid employee; for the patients command a degree of respect and confidence from their people to a degree that it would take years of work for a trained employee of the bureau of tuberculosis or the state board of health to secure. This alone will finally be a powerful factor in the eradication of the disease. If properly conducted it is a connecting link between the health department and the people. It is said by some who are perhaps better informed than I, that nurses sent out over a community could educate the people in the same way, that a sanatorium might better be dispensed with, and that the large sums of money would hasten the eradication of the disease when insuring a greater number of workers over a given area. This argument might be advanced against our school system. In order to secure a cheaper education we might send teachers to the various homes to educate the children, instead of using the tremendous sums of money for the erection of school buildings. I dare say that there are few who would be willing to concede this, and yet the education of a human being along the lines of health demands the same care and expenditure of money that a child does in reaching that stage of educational enlightenment necessary to a progressive civilization.

INFLUENCE OF THE SANATORIUM

In the sanatorium, we are enabled, if the institution is of sufficient size and properly equipped, to teach a large tuberculous population such scientific facts as are known and to get it to them as a college training. That general public health work will reduce the morbidity rate in a given community, without regard to the fight against it as a definite entity, is amply proved. But it is also known that through this work we are bringing up a population of nonimmunes, to be later

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

exposed to the uneducated carriers who are apparently healthy people, doing the work of the average citizen, and who will be responsible in later years, as is believed to have occurred in certain communities, of increasing mortality from this disease. This will undoubtedly be true if the present system of handling tuberculosis is continued. For instance, we are fighting to protect the young against exposure to the disease for the very good reason that perhaps most of the infections occur in early life. Yet, if they are protected until they reach adult life, and then become exposed to the uneducated carrier population as nonimmune, they fall victims to the disease in its most acute form, and will in the end cause an increased mortality. With a properly organized campaign, it is possible to find the carriers, to get them into the institution for an education, and to turn them back so instructed that, in the main, it will be safe for a nonimmune population to live with them.

In the treatment of the sanatorium as a part of the campaign, I would suggest the need of a home for the indigent incurables, most of whom are carriers over a number of years and, regardless of their education in the institution for curable cases, they are unable from a financial standpoint, unless protected by the state or local government, to carry out those things necessary to the protection of the general public.

SUMMARY

1. Tuberculosis is a preventable disease.
2. A certain percentage of people are carriers of the disease.
3. The campaign is one of education and not of quarantine.
4. It must extend over a long period of time and be on a big scale.
5. It must take cognizance of the fact that as the disease decreases, the fight must be more carefully made, because our race becomes one of nonimmunes.
6. It will require constantly increasing sums of money, which must be secured from the public.
7. It can be secured only by keeping in touch with the people, to insure their cooperation. To do this the workers must not travel too far ahead of public sentiment, nor forget public ideals.
8. No campaign can be successful unless it is a part of a general health movement, coordinated with the various bureaus of the health department, subservient to the general health movement, and coordinated, further, with all welfare agencies and the Bureau of Animal Husbandry.
9. The educational system must include the extension department of the bureau, keeping in touch with the tuberculous population, presented to them in their own language, catering to their ideals, and to local and sectional peculiarities.
10. The sanatorium is the fountain head from which all this should work and through which public sentiment for the final work may be crystallized. The sanatorium is a failure, as far as the prevention of the disease is concerned, unless it is operated as an educational institution rather than as a hospital.
11. A place must be had where the indigent tuberculous population may be cared for during the remaining days of their lives, in order to protect an increasingly large number of the "nonimmune" race from the dangerous carrier.

ABSTRACT OF DISCUSSION

DR. F. R. LOVE, Denver: We, in Colorado, are great believers in sanatoriums. The value from the educational standpoint is tremendous. We have realized that the education of people with tuberculosis has been neglected through the carelessness of the average physician in charge of the case. Sanatoriums are the quickest and most efficient means to train these people not only to maintain their own health but also to protect the health of others. We remember the dictates of fresh air, good food and rest as being most important in the cure of tuberculosis. I want to add to that the factor of altitude. Altitude does not affect the ordinary person, but it will affect any of you if you go from your customary pursuits, more or less sedentary, to any clear, dry stimulating atmosphere which excites you to enlarged activities. It has happened more than once that a person sent to Colorado to regain his health will run a race a mile above sea level when he would not do it here in Boston or New York. And what is the result? It is the race that causes acute dilatation of the heart, and not the altitude. Many patients sent to Colorado are sent home later to die. They are sent out there when it is evident that it is too late. Another cause of failure is the individual susceptibility to the disease. Third is the virulence of the secondary infection. People die generally of secondary infection, with the streptococcus and pneumococcus in particular.

DR. EDWARD O. OTIS, Boston: The tuberculosis dispensary is a great factor for disseminating instruction in regard to tuberculosis. There are, of course, dispensaries and dispensaries; but a well conducted dispensary with a nurse trained in tuberculosis work, or, better still, a social worker, is a great opportunity to promote the prevention of the spread of tuberculosis. Massachusetts has four sanatoriums, one of which has 300 patients and the others 150 or more, and one with 150 or more children. Massachusetts is spending on those sanatoriums over a million dollars annually. Our law requires that every city and county of more than 10,000 inhabitants shall establish a tuberculosis hospital for indigent consumptive individuals. One question I would like to ask the author, and that is in regard to immunization. Some scientific men maintain that we are all tuberculized. Germany, for example, before the war had the lowest death rate from tuberculosis of any country that I know of, and the cause of that fact is attributed to their complete tuberculization. The question is how many of us are immune, how many of us receive our infections during childhood. As to the carriers of tuberculosis, I believe there are well carriers of tubercle bacilli, people who do not feel sick and never consult a physician, and yet are carriers of bacilli. And, therefore, we can never wholly eliminate from the community the danger of infection from tuberculosis. And if we look on the matter in the way that some do, perhaps then we should regard tubercle bacilli as a friendly ally under the circumstances of our present civilization.

DR. C. B. WOOD, Monongahela, Pa.: For almost twenty years I have had charge of a tuberculosis dispensary in our county. I practice in one of the busiest industrial spots on earth. There are boarding houses with rooms about 14 by 16, containing seven beds, each bed doing double duty. The friends and relatives of these people are still coming over, bringing incipient cases. Congress has never had ten minutes to devote to the restriction of immigration, and by this neglect another torch is added to the tuberculosis conflagration. Unrestricted immigration is one of the strongest factors today in keeping tuberculosis in this country. Then, the lack of professional cooperation. For frequently you see newspapers on the floor, at the bedside, the rags and handkerchiefs. Not a word is said by the attending physician about keeping the flies out, or the use of a sputum cup. We have not had from the attending physician the cooperation which we should have had. Carelessness, on the part of the family, and a disregard of repeated warnings lead to spread of the disease in the same family. Quackery and advertising in newspapers help to keep it going, and then there are the religious and quack health journals.

DR. HENRY BOSWELL, Sanatorium, Miss.: There may be merit in altitude, we don't know—the fellow at the bottom

of the hill says "No," the fellow at the top of the hill says "Yes"; but we are lacking in scientific information to prove either. Nobody knows positively whether altitude has any material effect one way or another in the treatment. The doctor very truthfully says that many patients go to Colorado and the West with a feeling of perfect confidence and freedom, but thoroughly ignorant of how to care for their own health and the health of others. In the last few years I have visited every state in the Union, and have heard the same story in every one. I have secured from every sanatorium in North America their reports in the last several years of their actual results of treatment. They were grouped into New England, North Atlantic states, Middle Atlantic, Southern Atlantic, Southern, Middle Western, Western and Southwestern states. The incipient cases showed the same general average, and down through each category there was but little change in the percentage. In the moderately advanced cases there is a small percentage in favor of the Southwest, and in the advanced cases the average was 13 per cent. in the Southwest, and I believe that the advantage comes from the psychologic effect of the man living in other states and going up in the mountains in the belief that he will get well, and he does. I don't believe that a home for incurables is a sound undertaking with a population of less than 40,000. The preventoriums for children constitute an important part of our work, and I hope the result of this discussion will be that we may study the subject and will do some investigation looking to the further and more scientific treatment of tuberculosis.

Clinical Notes, Suggestions, and New Instruments

CASE OF MASSIVE TUBERCULOUS KIDNEY

S. W. SAPPINGTON, M.D., PHILADELPHIA

While the tuberculous kidney is sometimes small, it is usually considerably enlarged and occasionally forms a huge mass completely filling one side of the abdomen. Of the last instance, the case here reported is illustrative.

REPORT OF CASE

History.—R. W., aged 41, negro, single, cook, was admitted to the Hahnemann Hospital, May 2, 1921, complaining of swelling of the abdomen. His past history included a doubtful chancre at 20, pulmonary tuberculosis at 21, and paraplegia at 22. The patient stated that the chancre was followed by inflammation of the bladder with milky urine and heavy mucus which has persisted to date. The pulmonary tuberculosis, which began with hemoptysis, incapacitated him for only a short time. The paraplegia in the form of a flaccid paralysis also disappeared. He had perineal abscesses in 1912 and 1916. In 1916, he first noticed a small lump in the right side of the abdomen. This painless mass slowly but steadily increased in size up to the present time.

Examination revealed a large, firm mass, flat on percussion, filling the right side of the abdomen. A small amount of fluid was detected in the peritoneal cavity. The size and position of the liver and spleen were normal. The heart was negative. There were râles at the right apex. There was marked kyphosis. To the left of the median raphe of the perineum was a urinary fistula. The average temperature was normal morning, rising to 101 F. in the evening. There was moderate anemia, the last blood report reading: hemoglobin, 40 per cent; red cells, 3,280,000; white cells, 15,100. The Wassermann reaction was negative. The sputum contained tubercle bacilli. Urinalysis revealed: 1,750 c.c.; alkaline; specific gravity, 1.028; albumin, bare trace; considerable pus. The phenolsulphonephthalein test was: first hour, 21; second hour, 15; total, 36. The cystoscopist reported: "Bladder capacity normal. Ulcerated areas worse on the right side near the ureter. Left ureter catheterized; right could not be located. Indigocarmin test shows right kidney not functioning."

The rapid increase of peritoneal fluid necessitated its removal, and about 4 liters of clear fluid were evacuated. A few days later, the weakened patient died.

Necropsy.—This was performed, June 5, thirty-six hours after death. The body was emaciated. The pleural layers were entirely free on the left and completely adherent on the right side. The left lung was negative; the right lung showed a quite small fibrocaseous lesion at the apex. The heart was not examined. There were few or no glandular enlargements in the mediastinum. There was a chronic peritonitis with numerous firm adhesions, especially on the right side where the intestines were tightly bound to each other and to the tumor mass. There was no specific evidence of tuberculosis in the peritoneum, such as tubercles or caseation. The liver was negative. The spleen was slightly enlarged and firm, but showed no tubercles. The pancreas was negative. There was no peripancreatic glandular enlargements. The stomach presented no important change. The intestines, save for the adhesions just noted, were negative and gave no evidence of tuberculous involvement. The mesenteric and retroperitoneal glands were negative for gross tuberculosis.



Tuberculous kidney (at left) contrasted with one of normal size.

The right kidney formed a great tumor filling the entire right side of the abdomen from the liver to the pelvis. Removed with difficulty, the organ, which simply presented the appearance of a big kidney, was found to weigh 3,600 gm. It measured 33.5 cm. from pole to pole, and 17.8 cm. from cortex to pelvis. Section revealed the typical lesions of chronic, renal tuberculosis in a series of ragged, sacculated excavations filled with milky, caseous material. The left kidney was very moderately enlarged and congested, but gave no gross evidence of tuberculosis. The bladder wall was normal in thickness, and the mucosa showed only a few ulcerations.

COMMENT

The illustration presents in contrast the tuberculous organ and a kidney of normal size. The diseased kidney was in reality larger, as some of the fluid content had escaped before the photograph was taken. The weight, 3,600 gm., is twenty times that of a normal kidney and about twice the weight of a normal liver. A kidney of this size is exceptional but not, of course, unique. A limited search of the literature for similar cases was disappointing, only vague or indefinite statements of enlargement being found instead of exact figures. Between Jan. 1, 1894, and Jan. 1, 1918, 85,000 patients were operated on at the Mayo Clinic, 532 of these for renal

tuberculosis.¹ This encouraged us to write to Dr. Braasch for information. He replied in part: "In regard to tuberculosis of the kidney, we have no exact statistics as to the size of the largest kidney which we have removed, but I recall very well one which we removed some two years ago which was the size of a watermelon."

The relative immunity exhibited by patients with renal tuberculosis is noteworthy. With many opportunities for multiple or general infection, the subject's high resistance tends to prohibit, heal or limit foci in and out of the kidney. This is well illustrated in the present case. The renal lesion was evidently of the type of so-called occluded tuberculosis with early stricture of the ureter and ultimate autonephrectomy. The duration was certainly five years and, from the history, not improbably ten or twenty years. At the end, the massive wreck of the kidney was the only impressive lesion. The other kidney was grossly free, the bladder involvement was almost trivial, the spondylitis was healed, liver and spleen were negative, the lung lesion was surprisingly small and limited, glandular enlargements were not in evidence, there was no intestinal tuberculosis, and the peritoneal effusion was a terminal affair.

1327 Spruce Street.

SMOKING IN PULMONARY TUBERCULOSIS

E. A. DUNCAN, M.D., EL PASO, TEXAS

There is a notable lack of uniformity in the practice of physicians treating tuberculosis in regard to their instructions to patients as to smoking. Some physicians discourage or even prohibit the use of tobacco; others permit smoking in great moderation with instructions not to inhale; some are little or not at all interested in whether their patients smoke or not, perhaps saying, perfunctorily, that they are better off without it, and so dismissing the subject. Fishberg¹ states that "smoking has no effect on the tuberculous process in the lungs." Krause² does not believe that chronic inflammatory conditions favor bacterial infection. Webb³ concluded from a statistical study of soldiers that smoking does not predispose to tuberculosis. Duboff⁴ found tuberculous throat complications no more frequent in smokers than in nonsmokers. Cornet⁵ states that consumptives are allowed to smoke moderately, provided they have no throat symptoms. On the other hand, Wittich⁶ believes that the use of tobacco cannot have any but hurtful effects on the patient. Brown⁷ states that "it is far better for every patient to stop, for a time, all tobacco if he possibly can." Pottenger⁸ believes that "tobacco does the patient no good and some harm, therefore should not be used." It seems that the writers who have discussed this subject have had in mind largely the possibilities of damage to the tuberculous lung by local irritation. There is, however, another side to the question which has been neglected; namely, the circulatory stimulation of tobacco which to some patients is decidedly disadvantageous.

My attention to the possibilities of untoward effects of smoking in pulmonary tuberculosis was called by a highly intelligent patient who stated that smoking caused his temperature to rise. Investigation verified his assertion. This patient was a man with a minimal degree of lung involvement, well nourished and in good general condition. But in spite of ideal conditions he had had for some months a pulse rate of from 90 to 100 and an afternoon rise of temperature to 99.3 or 99.5. He was a moderate cigaret smoker. Investigation showed that his pulse rate remained at from 70 to 76 until he had had his after-breakfast cigaret, after which it promptly rose to from 90 to 100 to remain at that level throughout the day. If this patient abstained from smoking, his pulse rate

continued at from 70 to 80 and no rise in temperature occurred. This reaction could be provoked at will. I have since made similar observations in other patients.

The mechanism of this phenomenon is based on the well known fact that in habitual smokers tobacco increases pulse rate and, to a certain extent, the blood pressure. As a result of this circulatory stimulation, there occurs an increase in the movement of the blood which is shared by the pulmonary circulation. In this respect, the effect of smoking is analogous to that of exercise. It is obvious that this increased flow of blood through the lungs can only favor the access of toxins to the circulation, certainly undesirable if sufficient to cause a rise in temperature. It is also evident from the foregoing that smoking should be stopped by those patients with bloody expectoration or recurrent hemorrhages.

This effect of tobacco does not occur in every individual. Some patients may smoke without ill effect; but in any case in which the question arises whether or not smoking is inadvisable, decision can be made only by observation of the effect of tobacco on that particular individual. In other words, the effect of smoking deserves investigation in every case.

610 Martin Building.

A CASE OF CHRONIC ACETANILIDISM

JOHN W. SHUMAN, M.D., SIOUX CITY, IOWA

A nurse, aged 28, complained of severe pain of two days' duration in the right mastoid region, requiring morphin for relief. She was deeply cyanotic. Her previous history was unimportant except for numerous operations since entering training six years prior. They were: "three tonsillectomies; three mastoidectomies (left); appendectomy; laparotomy (left); postoperative hemorrhage demanding a second operation for ligature, etc.; six weeks later the left abdomen was opened to explore the spleen; surgical infection of the left hand, wrist and forearm (streptococcus), necessitating three separate operations." Scars verified the main assertions. She denied taking any drug which might cause the color (cyanosis), but stated that this "was due to anemia, as her urine had been bloody since the kidney operation."

Surgical consultation ruled out any middle ear disease. Blood examination revealed: hemoglobin, 85 per cent.; leukocytes, 7,000. Differential count and chemical examination gave all findings within the normal limit. The urine contained many red blood cells; in fact, the color was chocolate brown. Following the statement of the ear surgeon that "the right ear was normal;" the patient developed what appeared to be renal crisis (left), requiring morphin. It was noted, however, that she did not sweat during these attacks. Her temperature (axillary) ranged from 99.5 to 101.5 F. This, it was discovered, was due to an electric heating pad which was her constant companion; and she said that she chilled so that she could not trust a thermometer between her teeth. Later her temperature became normal, after the oral method was definitely instituted. Cystoscopic examination revealed healthy mucous membrane of the bladder wall, and urine collected from each ureter contained only an occasional red blood cell.

The patient had now been under hospital care for over two weeks. At about this time it was discovered that she had entered the hospital with 350 5-grain acetanilid tablets, and she admitted that she had been using acetanilid for more than three years.

She thoroughly deceived the staff of physicians (six) who had attended her for a period of more than two weeks. She presented symptoms which were baffling: (1) pain—a subjective symptom which cannot be measured; (2) hyperpyrexia (false); (3) hematuria (not constant, the source not determined, possibly menstrual). She was a malingerer and a drug addict. Had we tested the urine for anilin after noting her blue color, the hospital course might have been shortened.¹

[COMMENT.—In connection with the foregoing report, read that of Dr. Nadler (THE JOURNAL, June 19, 1920, p. 1717). Dr. Shuman believes that it is the same patient.—Ed.]

1. Braasch, W. F.: Surgical Renal Tuberculosis: The Prognosis, *Am. J. M. Sc.* 159: 3 (Jan.) 1920.

1. Fishberg: Pulmonary Tuberculosis, Philadelphia, Lea & Febiger, p. 559.

2. Krause, A. K.: *Am. Rev. Tuberc.* 2: 63 (April) 1918.

3. Webb, quoted by Krause (Footnote 2).

4. Duboff, quoted by Fishberg (Footnote 1).

5. Cornet, in Nothnagel: *Encyclopedia of Practice of Medicine*.

6. Wittich: *Information for the Tuberculous*, St. Louis, C. V. Mosby Company, p. 91.

7. Brown: *Rules for Recovery from Pulmonary Tuberculosis*, Philadelphia, Lea & Febiger, p. 52.

8. Pottenger: *Tuberculosis and How to Combat It*, p. 246.

1. Cohn (Tests and Reagents, p. 336) gives this method: Extract urine with chloroform, evaporate and heat residue with mercurous nitrate. A green color develops if acetanilid is present.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1921 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The tabulated statistics herewith presented are for the year ending June 30, 1921, and are based on reports received from the medical colleges and other reliable sources. We acknowledge here the splendid courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1, on pages 528-530, gives the colleges in session during 1920-1921; the population of the city; the rating given to the college by the Council on Medical Education and Hospitals; the number of students, men and women, registered during the year; the number of 1921 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 547 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 532-533, shows from what state the students came who were in attendance at each medical college during the session of 1920-1921. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,¹ which show the distribution of the alumni of each college, is interesting. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York with 2,103. Illinois contributed 1,136 and Pennsylvania 1,050. The next states, in the order of the number of students contributed, are: Ohio, 781; Massachusetts, 699; Missouri, 615; California, 520; Michigan, 514, and Texas, 462. Two states had less than 10 each, these being Nevada, 7, and Wyoming, 6. There were 124 students from Hawaii, Porto Rico and the Philippine Islands, and 285 students from foreign countries.

NUMBERS OF STUDENTS BY CLASSES

In Table 3, on page 534, the student enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year

was 4,825 as compared with 4,234 last year and 3,104 in 1919. The second year attendance was 3,588, as compared with 2,837 last year, and 3,587 in 1919. The third year attendance was 2,637 as compared with 3,464 last year, and 3,272 in 1919. The enrolment of the fourth and fifth (intern) years, combined this year, is 3,822, as compared with 3,553 last year, and 3,089 in 1919. The first, second and fourth (including the fifth) year class enrolments, therefore, show increases respectively, of 591, 751 and 269 over the enrolments in those classes last year. The third year class shows a decrease of 827 below that of last year which corresponds with the reduction shown a year ago in the enrolment in the second year class. This is the smaller class which entered medical schools in 1918, the War

TABLE 4.—MEDICAL COLLEGE ATTENDANCE

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	9,776	1,220	830	...	...	11,826
1890.....	13,521	1,164	719	...	...	15,404
1900.....	22,710	1,909	522	...	...	25,171
1901.....	23,846	1,683	664	80	144	26,417
1902.....	24,878	1,617	765	91	150	27,501
1903.....	24,930	1,498	848	149	190	27,615
1904.....	23,662	1,309	1,014	123	234	28,142
1905.....	24,119	1,104	578	114	232	26,147
1906.....	23,116	1,085	644	110	249	25,204
1907.....	22,303	1,039	545	97	292	24,276
1908.....	20,936	891	479	90	206	22,602
1909.....	20,554	899	413	52	227	22,145
1910.....	20,136	867	455	49	19	21,526
1911.....	18,414	890	433	49	...	19,786
1912.....	17,277	827	308	...	...	18,412
1913.....	15,919	850	256	...	...	17,015
1914.....	15,438	794	270	...	...	16,502
1915.....	13,914	736	241	...	...	14,891
1916.....	13,121	638	263	...	...	14,012
1917.....	12,925	580	250	...	...	13,764
1918.....	12,727	540	138	...	225	13,630
1919.....	12,259	397	86	...	310	13,052
1920.....	13,220	386	93	...	389	14,088
1921.....	14,033	440	98	...	301	14,872

year. The increase in the total enrolment for the last two years indicates that readjustments under the higher entrance requirements have been completed.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (Table 4) in the United States for the year ending June 30, 1921 excluding premedical, special and postgraduate students, was 14,872, an increase of 784 over last year. This is the largest enrolment of students since 1914. It is noteworthy (Table 12, page 535) that in the high grade (Class A) medical colleges both the number and the percentage of students has increased. Of the total number of students, 14,033 (94.4 per cent.) were in attendance at the nonsectarian (regular) colleges, 440 (2.9 per cent.) at the homeopathic, 98 (0.7 per cent.) at the eclectic, and 301 (2.0 per cent.) were enrolled in three nondescript colleges.

(Continued on page 530)

1. THE JOURNAL A. M. A., State Board Number, April 30, 1921, pages 1232 to 1237, inclusive.

TABLE 1—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located (1920 Census Reports)	Classification by Council on Medical Education	No. of Students Registered 1920-21		Graduates 1921		Grads. with A.B., B.S., or Ph.D.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1921-22		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1921	Ends 1922	
1	ALABAMA University of Alabama School of Medicine, University (Tuscaloosa)*	11,996	A	26	...	...	...	...	5	34	200	200	...	...	Clyde Brooks, M.D., Dean.....	Sept. 7	May 20	1
2	ARKANSAS University of Arkansas Medical Department, Little Rock*	65,030	B	20	2	2	...	...	20	34	50	50	...	...	Morgan Smith, M.D., Dean.....	Sept. 19	June 7	2
3	CALIFORNIA College of Medical Evangelists, Los Angeles.....	576,673	B	496	78	18	8	64	109	34	230	231	221	221	P. T. Magan, M.D., Dean.....	Aug. 28	May 9	3
4	College of Physicians and Surgeons, Los Angeles ¹	576,673	..	27	5	16	2	2	...	...	...	...	...	...	W. Ophüls, M.D., Dean.....	Oct. 1	June 17	4
5	Leland Stanford Junior University School of Med., San Francisco.	506,676	A	138	23	14	3	17	114	34	201	196	186	186	L. S. Schmitt, M.D., Secretary.....	Oct. 1	June 17	5
6	University of California Medical School, San Francisco ²	506,676	A	181	32	30	...	27	208	35	290	235	210	200	L. S. Schmitt, M.D., Secretary.....	Aug. 15	May 10	6
7	COLORADO University of Colorado School of Medicine, Denver ²	256,491	A	74	9	13	2	4	64	34	106	106	98	93	Charles N. Meader, M.D., Dean.....	Sept. 26	June 12	7
8	CONNECTICUT Yale University School of Medicine, New Haven.....	162,519	A	112	7	15	1	12	107	35	305	300	300	310	Milton C. Winteratz, M.D., Dean.....	Sept. 29	June 21	8
9	DISTRICT OF COLUMBIA Georgetown University School of Medicine, Washington.....	437,408	A	405	12	78	1	49	99	34	215	200	200	210	George M. Kober, M.D., Dean.....	Sept. 26	June 14	9
10	George Washington University Medical School, Washington.....	437,408	A	107	7	27	...	18	89	34	200	200	200	200	William C. Borden, M.D., Dean.....	Sept. 28	June 7	10
11	Howard University School of Medicine, Washington.....	437,408	A	126	5	30	...	25	39	33	165	155	155	162	Edward A. Balloch, M.D., Dean.....	Oct. 1	June 9	11
12	GEORGIA Emory University School of Medicine, Atlanta.....	200,616	A	294	...	59	...	23	112	35	212	195	190	215	W. S. Elkins, M.D., Dean.....	Sept. 28	June 6	12
13	University of Georgia Medical Department, Augusta ²	52,548	A	83	...	39	...	15	45	34	65	60	60	60	W. H. Dougherty, Jr., M.D., Dean.....	Sept. 15	May 31	13
14	ILLINOIS Chicago Medical School, Chicago ³	2,701,705	C	1736	119	303	16	191	77	...	180	175	175	205	...	...	...	14
15	Hahnemann Medical College and Hospital of Chicago.—H.....	2,701,705	B	66	2	11	...	7	90	34	166	162	176	192	J. C. Blake, Ph.D., Dean.....	Sept. 26	June 15	15
16	Loyola University School of Medicine, Chicago.....	2,701,705	A	228	16	63	7	5	126	34	165	165	165	185	Louis D. Moorhead, M.D., Dean.....	Oct. 1	June 15	16
17	Northwestern University Medical School, Chicago.....	2,701,705	A	432	...	78	...	51	172	33	225	220	216	210	Arthur I. Kendall, M.D., Dean.....	Oct. 4	June 10	17
18	Rush Medical College (University of Chicago).....	2,701,705	A	621	82	123	9	127	250	34	230	225	235	235	John M. Dodson, M.D., Dean.....	Oct. 1	June 14	18
19	University of Illinois College of Medicine, Chicago.....	2,701,705	A	301	19	3	...	...	156	34	165	160	150	170	A. C. Eycleshymer, M.D., Dean.....	Sept. 26	June 14	19
20	INDIANA Indiana University School of Medicine, Bloomington-Indianapolis..	314,194	A	241	10	57	3	55	150	35	130	125	150	150	Charles P. Emerson, M.D., Dean.....	Sept. 12	June 7	20
21	IOWA State University of Iowa College of Medicine, Iowa City ²	11,267	A	259	9	46	...	24	62	33	160	150	150	160	Lee Wallace Dean, M.D., Dean.....	Sept. 26	June 6	21
22	KANSAS University of Kansas School of Medicine, Lawrence-Rosedale ⁴ 2.....	433,261	A	128	6	27	2	17	62	35	131	131	133	133	Mervin T. Sudler, M.D., Assoc. Dean.....	Sept. 12	June 7	22
23	KENTUCKY University of Louisville Medical Department, Louisville.....	234,891	A	172	6	48	1	12	117	34	215	170	175	180	Henry Enos Tulcy, M.D., Dean.....	Sept. 20	June 8	23
24	LOUISIANA Tulane University of Louisiana School of Medicine, New Orleans...	387,408	A	365	15	115	3	47	128	33	200	225	215	245	Lillian A. Collens, Secretary.....	Sept. 26	June 7	24
25	MAINE Bowdoin Medical School, Brunswick-Portland ⁶	258,288	A	65	...	8	...	3	...	...	...	...	...	...	...	...	...	25
26	MARYLAND Johns Hopkins University Medical Department, Baltimore.....	733,826	A	552	62	147	16	103	202	34	267	267	267	267	J. Whitridge Williams, M.D., Dean.....	Oct. 1	June 13	26
27	Univ. of Maryland Sch. of Med. and Coll. of P. & S., Baltimore..	733,826	A	301	62	76	16	92	161	32	215	215	215	215	J. M. H. Rowland, M.D., Dean.....	Oct. 1	June 1	27
28	MASSACHUSETTS Boston University School of Medicine, Boston.....	748,060	A	1072	43	232	12	96	81	33	200	200	200	230	John P. Sutherland, M.D., Dean.....	Oct. 6	June 19	28
29	College of Physicians and Surgeons, Boston ⁶	748,060	C	28	4	6	1	7	34	...	125	150	120	125	...	...	...	29
30	Harvard University Medical School, Boston.....	748,060	A	442	...	105	...	84	251	35	330	300	300	300	David L. Edsall, M.D., Dean.....	Sept. 26	June 22	30
31	Tufts College Medical School, Boston.....	748,060	A	372	26	73	7	4	135	35	236	221	211	216	Charles F. Painter, M.D., Dean.....	Sept. 19	June 14	31
32	Middlesex College of Medicine and Surgery, Cambridge.—N. ⁶	109,694	C	121	...	39	...	...	52	...	150	150	150	150	...	...	...	32
33	MICHIGAN University of Michigan Medical School, Ann Arbor ²	19,516	A	622	35	122	7	41	100	35	150	140	140	150	C. W. Edmunds, M.D., Asst. Dean.....	Sept. 27	June 19	33
34	University of Michigan Homeopathic Med. School, Ann Arbor.H. ² ..	19,516	A	422	27	66	5	31	17	35	150	140	140	150	W. B. Hinsdale, M.D., Dean.....	Sept. 27	June 19	34
35	Detroit College of Medicine and Surgery, Detroit ⁷	993,739	A	152	6	51	2	8	206	35	150	150	150	150	W. H. MacCraken, M.D., Dean.....	Sept. 26	June 17	35
36	MINNESOTA University of Minnesota Medical School, Minneapolis.....	380,582	A	359	25	51	2	53	205	34	198	198	198	198	Elias P. Lyon, M.D., Dean.....	Sept. 28	June 14	36
37	MISSISSIPPI University of Mississippi School of Medicine, Oxford [*]	2,150	A	46	3	...	...	...	17	34	133	133	...	...	W. S. Leathers, M.D., Dean.....	Sept. 14	May 30	37

38	University of Missouri School of Medicine, Columbia * 2	10,392	A	832	21	208	6	61	28	32	100	100	...	...	Guy L. Noyes, M.D., Dean	Aug. 29	April 26	38
39	Kansas City College of Medicine and Surgery, Kansas City.—N. 4	433,261	C	90	...	12	2	...	32	...	200	200	...	...	A. L. McKenzie, M.D., President	...	...	39
40	Kansas City Univ. of Physicians and Surgeons, Kansas City.—N. 4	433,261	C	80	10	...	3	...	22	...	180	180	...	...	...	...	...	40
41	St. Louis College of Physicians and Surgeons, St. Louis	773,000	C	120	...	65	...	...	30	...	150	150	...	...	Hanan W. Loeb, M.D., Dean	Oct. 1	June 1	41
42	St. Louis University School of Medicine, St. Louis	773,000	A	284	...	65	...	...	32	...	250	250	...	...	Nathaniel Allison, M.D., Dean	Sept. 22	June 8	42
43	Washington University School of Medicine, St. Louis	773,000	A	183	5	44	1	29	146	33	221	216	...	...	...	...	...	43
44	Creighton University College of Medicine, Omaha	191,601	A	302	10	71	1	27	56	34	175	165	...	...	Hermann von W. Sehulte, M.D., Dean	Sept. 21	June 3	44
45	University of Nebraska College of Medicine, Omaha	191,601	A	115	1	22	...	...	82	35	140	120	...	...	Irving S. Cutter, M.D., Dean	Sept. 14	June 4	45
46	Dartmouth Medical School, Hanover *	1,551	A	18	...	...	...	...	...	...	...	...	...	...	John M. Gile, M.D., Dean	Sept. 22	June 20	46
47	Albany Medical College, Albany	113,344	A	1824	138	551	23	203	64	35	245	240	...	...	Thomas Ordway, M.D., Dean	Sept. 19	June 12	47
48	University of Buffalo Medical Department, Buffalo	506,775	A	205	14	57	3	12	118	33	292	292	...	...	C. Sumner Jones, M.D., Dean	Sept. 26	June 9	48
49	Columbia University College of Phys. and Surgs., New York City	5,620,048	A	329	35	111	6	92	360	33	355	345	...	...	William Darrach, M.D., Dean	Sept. 28	June 7	49
50	Cornell University Medical College, New York City	5,620,048	A	188	40	41	5	46	180	33	300	295	...	...	Walter L. Niles, M.D., Dean	Sept. 26	June 8	50
51	Fordham University School of Medicine, New York City	5,620,048	A	66	...	65	...	9	...	...	...	...	...	...	Adam M. Miller, M.D., Dean	Sept. 26	...	51
52	Long Island College Hospital, New York City—Brooklyn	5,620,048	A	264	12	80	1	5	132	32	356	350	...	...	R. F. Rabe, M.D., Dean	Sept. 15	May 31	52
53	New York Homeopathic Med. Coll. and Flower Hospital.—H.	5,620,048	B	120	10	36	5	1	61	35	270	270	...	...	Samuel A. Brown, M.D., Dean	Sept. 14	June 10	53
54	University and Bellevue Hospital Medical College, New York City	5,620,048	A	410	18	114	...	17	189	35	320	320	...	...	John L. Hefron, M.D., Dean	Sept. 13	June 7	54
55	Syracuse University College of Medicine, Syracuse	171,717	A	155	4	30	3	19	113	35	267	267	...	...	...	...	...	55
56	University of North Carolina School of Medicine, Chapel Hill *	1,483	A	72	...	...	...	...	31	33	195	195	...	...	I. H. Manning, M.D., Dean	Sept. 29	June 14	56
57	Wake Forest College School of Medicine, Wake Forest *	1,425	A	49	...	...	...	...	15	34	200	200	...	...	Thurman D. Kitchin, M.D., Dean	Sept. 6	May 26	57
58	Univ. of North Dakota School of Med., University (Grand Forks) *	14,010	A	38	1	...	...	...	15	35	85	...	...	...	H. E. French, M.D., Dean	Sept. 23	June 13	58
59	Eclectic Medical College, Cincinnati.—E.	401,247	B	670	38	182	14	114	41	32	160	150	...	...	John K. Seudder, M.D., Dean	Sept. 15	May 15	59
60	University of Cincinnati College of Medicine	401,247	A	220	18	59	1	39	180	34	309	260	...	...	Henry Page, M.D., Dean	Oct. 3	June 17	60
61	Western Reserve University School of Medicine, Cleveland	796,836	A	147	5	36	9	45	129	34	285	260	...	...	Carl A. Hamann, M.D., Dean	Sept. 29	June 15	61
62	Ohio State University College of Medicine, Columbus 2	237,031	A	172	8	27	4	28	96	35	152	152	...	...	Eugene F. McCampbell, M.D., Dean	Sept. 20	June 13	62
63	Ohio State University College of Homeo. Medicine, Columbus.—H.	237,031	B	34	6	9	...	2	15	35	152	152	...	...	Glaude A. Burrett, M.D., Dean	Sept. 20	June 13	63
64	University of Oklahoma School of Med., Norman—Oklahoma City	91,258	A	98	5	15	2	13	70	34	60	60	...	...	LeRoy Long, M.D., Dean	Sept. 19	June 6	64
65	University of Oregon Medical School, Portland	258,288	A	118	13	13	3	6	81	32	165	160	...	...	Richard B. Dillehunt, M.D., Dean	Oct. 3	June 1	65
66	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,823,779	A	152	...	49	...	6	97	32	245	245	...	...	William A. Pearson, M.D., Dean	Sept. 26	June 1	66
67	Jefferson Medical College of Philadelphia	1,823,779	A	514	...	114	...	63	175	34	330	325	...	...	Ross V. Patterson, M.D., Dean	Sept. 21	June 2	67
68	Temple University School of Medicine, Philadelphia	1,823,779	B	73	1	25	...	1	103	35	175	170	...	...	Frank C. Hammond, M.D., Dean	Sept. 19	June 15	68
69	University of Pennsylvania School of Medicine, Philadelphia	1,823,779	A	404	29	109	9	64	213	35	348	320	...	...	William Pepper, M.D., Dean	Sept. 30	June 21	69
70	Woman's Medical College of Pennsylvania, Philadelphia	1,823,779	A	...	103	...	15	29	66	33	198	202	...	...	Martha Tracy, M.D., Dean	Sept. 28	June 14	70
71	University of Pittsburgh School of Medicine, Pittsburgh	588,193	A	145	12	32	2	29	119	34	325	310	...	...	Raieigh R. Huggins, M.D., Dean	Sept. 26	June 14	71
72	Medical College of the State of South Carolina, Charleston	67,957	A	76	4	10	...	6	61	33	150	150	...	...	Robert Wilson, M.D., Dean	Sept. 22	June 1	72
73	University of South Dakota College of Medicine, Vermilion *	2,580	A	32	...	...	...	...	11	35	60	60	...	...	C. P. Lommen, M.D., Dean	Sept. 19	June 17	73
74	University of Tennessee College of Medicine, Memphis	162,351	A	407	4	112	...	18	86	34	117	112	...	...	James B. McElroy, M.D., Chairman of Faculty	Sept. 30	June 12	74
75	University of West Tennessee Medical Department, Memphis	162,351	C	12	...	26	...	7	32	31	80	80	...	...	M. V. Lynks, M.D., Dean	Sept. 26	May 20	75
76	Meaharry Medical College, Nashville	118,342	B	197	3	41	...	2	27	31	112	112	...	...	John J. Mulowney, M.D., President	Oct. 3	May 25	76
77	Vanderbilt University School of Medicine, Nashville	118,342	A	144	...	40	...	8	88	33	182	168	...	...	Lucius E. Burch, M.D., Act. Dean	Sept. 28	June 14	77
78	Baylor University College of Medicine, Dallas	158,976	A	328	19	64	2	28	92	32	195	190	...	...	McIver Woody, M.D., Dean	Sept. 26	May 30	78
79	University of Texas School of Medicine, Galveston 2	44,255	A	204	13	26	...	14	39	32	88	40	...	...	W. S. Carter, M.D., Dean	Oct. 1	May 31	79
80	University of Utah School of Medicine, Salt Lake City *	118,110	A	54	1	...	...	...	26	34	130	130	...	...	Perry G. Snow, M.D., Dean	Sept. 22	June 6	80
81	University of Vermont College of Medicine, Burlington	22,779	A	101	2	36	...	5	41	35	200	200	...	...	Henry Crain Tinkham, M.D., Dean	Sept. 21	June 19	81
82	Medical College of Virginia, Richmond	171,667	A	280	18	50	...	18	99	34	220	220	...	...	E. C. L. Miller, M.D., Dean	Sept. 14	May 30	82
83	University of Virginia Department of Medicine, Charlottesville	10,688	A	125	5	20	...	12	45	36	205	208	...	...	Theodore Hough, M.D., Dean	Sept. 15	June 13	83

E.—Eclectic; H.—Homeopathic; N.—Nondescript.
 * Gives only the first two years of the medical course.
 1. The College of Physicians and Surgeons of Los Angeles was suspended in 1920 but retains a nominal existence for three years to graduate the remaining classes which are being taught elsewhere.
 2. The following state universities make an additional charge for students who are non residents, as follows: California, \$175; Colorado, \$90; Georgia, \$90; Iowa, \$25; Kansas, \$10; Michigan, \$60; Minnesota, \$30; Missouri, \$10; Ohio, \$50; Tennessee, \$50; Texas, \$150; West Virginia, \$150; Wisconsin, \$124.
 3. Figures for enrollment and graduates are those for 1919-20.
 4. Population given is the combined figures for Kansas City, Mo., Kansas City, Kan. and Rosedale, Kan.
 5. Bowdoin Medical School has just been suspended.
 6. Figures for enrollment are approximate; graduates exact.
 7. Residents of Detroit are charged only \$25 for tuition.
 8. Figures for enrollment and graduates are approximate.
 9. This school was ordered closed by the trustees in 1919, but continued for two sessions to permit the students already enrolled to finish their medical training. Its last class was graduated this year.

NAME AND LOCATION OF COLLEGE	Population of City where College is Located (1920 Census Reports)	Classification by Council on Medical Education	No. of Students Registered 1920-21		Graduates 1921		Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1921-22		Marginal Number
			Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1921	Ends 1922	
WEST VIRGINIA																	
West Virginia University School of Medicine, Morgantown * 2	12,127	A	76	2	286	17	17	15	35	50	90	300	300	John N. Simpson, M.D., Dean	Sept. 19	June 13	84
WISCONSIN																	
University of Wisconsin Medical School, Madison * 2	38,378	A	145	16	141	1	17	59	35	90	300	300	300	Charles R. Bardeen, M.D., Dean	Sept. 19	June 10	85
Marquette University School of Medicine, Milwaukee	457,147	A	143	1	143	1	23	98	34	300	300	300	300	Eben J. Carey, M.D., Dean	Oct. 3	June 17	86
PHILIPPINE ISLANDS																	
University of the Philippines College of Med. and Surg., Manila	266,943	..	143	..	143	..	23	71	..	..	..	..	..	Fernando Calderon, M.D., Dean	July 1	April 4	87
CANADA 10																	
University of Alberta Faculty of Medicine, Edmonton, Alta. 11	60,000	..	3125	150	391	15	39	47	30	100	100	100	100	Cecil E. Race, Registrar	Sept. 26	May 12	88
Dalhousie University Faculty of Medicine, Halifax, N. S.	46,619	..	164	11	152	9	15	48	31	175	175	175	175	John Stewart, Dean	Oct. 5	May 27	89
Queen's University Faculty of Medicine, Kingston, Ont. 12	18,874	..	240	..	240	..	40	50	32	135	144	144	134	J. C. Connell, M.D., Dean	Sept. 28	May 26	90
University of Toronto Faculty of Medicine, Toronto, Ont. 12	376,538	..	1019	87	131	12	14	256	32	161	161	161	181	A. Primrose, M.D., Dean	Sept. 27	May 31	91
Western University Medical School, London, Ont. 12	46,300	..	133	4	133	4	12	53	31	145	153	153	178	Paul S. McKibben, M.D., Dean	Oct. 4	May 26	92
McGill University Faculty of Medicine, Montreal, Que. 12	470,480	..	695	13	351	..	17	145	32	200	200	200	200	John W. Seane, M.D., Registrar	Oct. 1	June 6	93
University of Montreal Faculty of Medicine, Montreal, Que. 12	470,480	..	351	..	351	..	37	68	34	175	175	175	175	L. D. Mignault, M.D., Secretary	Sept. 15	June 20	94
Laval University Faculty of Medicine, Quebec, Que.	78,190	..	125	..	125	..	25	35	36	90	90	90	90	Arthur Vallee, M.D., Secretary	Sept. 15	June 15	95
University of Manitoba Faculty of Medicine, Winnipeg	136,035	..	240	26	240	26	8	111	29	150	160	160	160	S. Willis Prowse, M.D., Dean	Sept. 14	April 24	96

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

10. The Canadian schools count the one or two years devoted to premedical sciences as a part of the medical course. The fees for the

last four years are shown. Enrolments include students of all years.

11. Population of Edmonton is approximate. The University of Alberta gives the first four years of the Canadian six-year course.

12. These medical schools now require a six-year course which includes both premedical and medical subjects as given in medical schools in the United States.

(Continued from page 527)

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1921, was 3,192, an increase of 145 over 1920. The number of graduates from the nonsectarian colleges was 2,969, or 143 more than last year. The number from the homeopathic colleges was 115, or 18 more than last year, and from the eclectic colleges there were 30 graduates, the same last year. The three nondescript colleges had 78 graduates, or 16 less than last year.

TABLE 5.—MEDICAL COLLEGE GRADUATES

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1880.....	2,673	380	188	..	..	3,241
1890.....	3,853	380	221	..	..	4,454
1900.....	4,715	413	86	..	..	5,214
1901.....	4,879	387	148	18	12	5,444
1902.....	4,508	336	138	16	11	5,009
1903.....	5,088	420	149	24	17	5,698
1904.....	5,190	371	146	20	20	5,747
1905.....	5,126	276	153	22	23	5,600
1906.....	4,841	286	186	22	29	5,364
1907.....	4,591	225	121	11	32	4,980
1908.....	4,370	215	116	12	28	4,741
1909.....	4,163	209	84	15	44	4,515
1910.....	4,113	183	114	16	14	4,440
1911.....	4,006	152	110	5	..	4,273
1912.....	4,206	185	92	..	..	4,483
1913.....	3,679	209	93	..	..	3,981
1914.....	3,370	154	70	..	..	3,594
1915.....	3,286	195	55	..	..	3,536
1916.....	3,274	166	78	..	..	3,518
1917.....	3,134	180	65	..	..	3,379
1918.....	2,454	114	42	..	60	2,670
1919.....	2,423	89	28	..	116	2,656
1920.....	2,826	97	30	..	94	3,047
1921.....	2,969	115	30	..	78	3,192

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,192 medical graduates, 1,465 (see Table 11) had also obtained degrees in arts or science. This total includes those taking the combined courses in arts or science and medicine. This year 46.0 per cent. of all graduates held collegiate degrees, as compared with 43.5 per cent. last year and with 15.3 per cent. in 1910.

TABLE 6.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

Year	Nonsectarian			Homeopathic			Eclectic			Totals		
	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.	Graduates	A.B., B.S.	Per Cent.
1910.....	4,113	664	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1911.....	4,006	683	17.0	152	18	11.8	110	4	3.6	4,273	705	16.5
1912.....	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913.....	3,679	732	19.9	209	20	9.6	93	1	1.1	3,981	753	18.9
1914.....	3,370	794	23.5	154	7	4.5	70	6	8.6	3,594	807	22.5
1915.....	3,286	839	25.5	195	16	8.2	55	3	5.5	3,536	858	24.3
1916.....	3,274	928	28.3	166	20	12.0	78	..	..	3,518	948	26.9
1917.....	3,134	1078	34.4	180	19	10.5	65	2	3.1	3,379	1099	32.5
1918.....	2,454	1007	41.0	114	15	13.2	60	..	..	2,670	1024	38.4
1919.....	2,423	1162	48.0	89	16	18.0	28	2	7.1	2,656	1180	44.4
1920.....	2,826	1307	46.2	97	11	11.3	30	3	10.0	3,043	1321	43.5
1921.....	2,969	1447	48.2	115	33	3.0	30	..	..	3,192	1465	46.0

* No graduates of nondescript colleges during the last four years were reported to have collegiate degrees.

This increase is what was expected under the general adoption by medical schools of the entrance requirement of two years of college work. Of the 2,969 nonsectarian school graduates, 1,447, or 48.2 per cent., were reported to have baccalaureate degrees; of the

115 homeopathic graduates, 33, or 3.0 per cent., were so reported, and of the 30 eclectic graduates this year, none was reported as holding such degrees. Of the 78 graduates of the nondescript colleges only one was reported as holding a bachelor's degree in arts or science. As will be noted by referring to Table 11, of the 1,468 graduates holding baccalaureate degrees, 203—the largest number—came from the New York colleges. Illinois, which heretofore has continually reported the highest numbers, this year reported 191, Pennsylvania reported 172 and Ohio reported 114. The percentage of graduates holding collegiate degrees will probably continue to increase, since all the better medical schools are now requiring two years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees.

WOMEN IN MEDICINE

During the past year there were 879 women studying medicine, or 61 more than last year. The percentage of women to all medical students this year is

TABLE 7.—WOMEN IN MEDICINE

Year	Total Women Students	Percentage of All Students, Both Sexes	Total Women Graduates	Percentage of Graduates, Both Sexes	Women's Colleges	Students	Percentage of All Women Students	Graduates	Percentage of All Women Graduates	Co-ed. Schools	Students	Percentage of All Women Students	Graduates	Percentage of All Women Graduates
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	233	4.3	3	189	21.0	33	14.1	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	129	79.7
1910	907	4.2	157	3.5	3	155	17.1	41	26.1	82	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	121	3.4	2	135	21.4	25	20.7	54	496	78.6	96	79.3
1915	592	4.0	130	3.7	2	116	19.6	38	29.2	53	462	80.4	92	70.8
1916	563	4.0	134	3.8	2	102	18.0	28	20.0	51	464	82.0	106	80.0
1917	610	4.5	153	4.5	2	81	13.3	29	18.9	56	529	86.7	124	81.1
1918	581	4.3	106	4.0	2	70	12.0	12	11.3	60	511	87.9	94	88.7
1919	686	5.2	107	4.0	1	66	10.0	7	6.5	59	620	90.4	100	93.4
1920	818	5.8	134	4.4	1	89	10.9	12	9.0	64	727	90.1	122	91.0
1921	879	5.9	151	4.7	1	103	11.5	15	10.0	63	776	88.5	136	90.0

5.9, the largest percentage since the presenting of these statistics was begun. There were 151 women graduates this year, 17 more than last year. Of all the women matriculants, 103 were in attendance at the one medical college for women, while 776 (88.5 per cent.) were matriculated in the 63 coeducational colleges. From the one women's college there were 15 graduates, while 136 (90 per cent.) secured their degrees from coeducational colleges. This increase of women students in coeducational colleges is not surprising, since in recent years most of the medical schools have thrown open their doors to women.

NUMBER OF COLLEGES

Since June 30, 1920, two medical colleges, the Bowdoin Medical College and the Fordham University School of Medicine, have closed, leaving 83 still existing. Of these 74 are nonsectarian (regular), 5 are homeopathic, 1 is eclectic and 3 are nondescript. Two

of these nondescript colleges, the Kansas City University of Physicians and Surgeons and the Middlesex College of Medicine and Surgery, are intimately connected with osteopathy or give liberal advanced standing to students of osteopathic colleges. The third, the Kansas City College of Medicine and Surgery claims to be eclectic, but is reported as not so recognized by the National Eclectic Medical Association. The two nondescript colleges at Kansas City are not recognized by the licensing board of Missouri.

TABLE 8.—MEDICAL COLLEGES

Year	Non-sectarian	Homeopathic	Eclectic	Physio-Med.	Nondescript	Total
1850.....	44	3	4	1	..	52
1860.....	53	6	4	2	..	65
1870.....	60	8	5	2	..	75
1880.....	76	14	8	2	..	100
1890.....	106	16	9	2	..	133
1900.....	126	22	9	2	1	160
1901.....	125	22	10	2	1	160
1902.....	126	20	9	3	2	160
1903.....	126	20	9	3	2	160
1904.....	127	19	9	3	2	160
1905.....	125	19	9	3	2	158
1906.....	130	19	8	3	2	162
1907.....	127	18	9	3	2	159
1908.....	120	18	9	2	2	151
1909.....	115	15	8	1	1	140
1910.....	109	12	8	1	1	131
1911.....	103	12	7	..	..	122
1912.....	101	11	6	..	..	118
1913.....	92	10	5	..	..	107
1914.....	87	10	5	..	..	102
1915.....	83	9	4	..	..	96
1916.....	82	10	3	..	..	95
1917.....	83	9	4	..	..	96
1918.....	79	6	2	..	3	90
1919.....	76	5	1	..	3	85
1920.....	76	5	1	..	3	85
1921.....	74	5	1	..	3	83

LENGTH OF TERMS

During the last twenty years, as shown in Table 9, there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1904 the majority of colleges had sessions of twenty-eight weeks or less. For six

TABLE 9.—COLLEGE TERMS

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.3	37	22.3	13	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.0
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	..	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	..	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	..	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	..	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1916	..	..	..	..	4	4.2	17	17.9	43	45.3	28	29.5	..	..
1917	..	..	..	..	1	1.0	15	15.6	46	47.9	31	32.3	..	..
1918*	..	..	..	..	2	2.2	23	25.6	37	41.1	22	24.4	..	..
1919*	..	..	..	..	1	1.2	11	12.9	44	51.8	23	27.1	1	1.2
1920*	..	..	..	..	1	1.2	10	11.8	38	44.7	29	34.1	..	..
1921*	..	..	..	..	..	..	11	13.1	39	46.4	28	33.3	..	..

* Information not furnished by six Class C colleges during the last four years.

years no colleges have had sessions shorter than twenty-nine weeks, and this year the shortest session reported is 31 weeks. Sessions of from thirty-three to thirty-six weeks were reported by 67, or 79.7 per cent., of all colleges.

(Continued on page 534)

TABLE 2.—DISTRIBUTION OF

Marginal Number	NAME OF COLLEGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Marginal Number
		Alabama.....218	Arizona.....13	Arkansas.....90	California.....520	Colorado.....138	Connecticut.....258	Delaware.....20	Dist. of Col. ....108	Florida.....54	Georgia.....307	Idaho.....41	Illinois.....1,136	Indiana.....428	Iowa.....414	Kansas.....274	Kentucky.....143	Louisiana.....130	Maine.....91	Maryland.....168	Massachusetts.....699	
1	University of Alabama School of Medicine.....	25																				1
2	University of Arkansas Medical Department.....			12																		2
3	College of Medical Evangelists.....		1		100	8			4	1	1	2	3			6					3	3
4	Leland Stanford Junior University School of Medicine.....		1		108	6			1			3		1	1							4
5	University of California Medical School.....				198	2							1	1	2	3						5
6	University of Colorado School of Medicine.....					64							1	1								6
7	Yale University School of Medicine.....						86				1		1	1	2							7
8	Georgetown University School of Medicine.....						11		17	2	2		1	1	1			1	2	3	14	8
9	George Washington University Medical School.....	1			1	1	3		41	5	2						1			4	1	9
10	Howard University School of Medicine.....	5		1			2		26								5	4		4	2	10
11	Emory University School of Medicine.....	41								6	138				2		1					11
12	University of Georgia Medical Department.....										73											12
13	Chicago Medical School*.....												88									13
14	Hahnemann Med. College and Hosp. of Chicago.—H.....			2		1	1						13	7	4	1	1					14
15	Loyola University School of Medicine.....					1				1			164	5	8	3	1					15
16	Northwestern University Medical School.....	5	2	5	10	7				1	3	6	164	14	21	12	2	1			1	16
17	Rush Medical College (University of Chicago).....	2	1	1	10	15			1	2	2	9	297	43	34	27	5		1			17
18	University of Illinois College of Medicine.....		2	1	4	3							237	11	16	1	1					18
19	Indiana University School of Medicine.....												238									19
20	State University of Iowa College of Medicine.....	1										1	2		249							20
21	University of Kansas School of Medicine.....					1				2	2	1	4	34	3	2	62				2	21
22	University of Louisville Medical Department.....	5		4	43																	22
23	Tulane University of Louisiana School of Medicine.....	70	1	24	2	1	2			11	13			1				101				23
24	Bowdoin Medical School.....	6		2	11	5	9	2	6	3	13		8	3	3	2	7	2	4	58	9	24
25	Johns Hopkins University Medical Department.....	1					13	3		2							1			68	2	25
26	Univ. of Maryland Sch. of Med. and Coll. of P. & S.....						5															26
27	Boston University School of Medicine.....	1					5	1		1	4					1						27
28	College of Physicians and Surgeons, Boston†.....																					28
29	Harvard University Medical School.....	3			14	7	17		2	1	7		10	3	2	2	1		23	4	140	29
30	Tufts College Medical School.....	1					17						1						7		121	30
31	Middlesex College of Medicine and Surgery.—N.†.....																					31
32	University of Michigan Medical School.....	1	1	1	2	3	4		1	1	3	1	12	18		1	3			1	2	32
33	University of Michigan Homeopathic Med. School.—H.....				2		1						1									33
34	Detroit College of Medicine and Surgery.....																					34
35	University of Minnesota Medical School.....				3	1			1				1	3	1	4					1	35
36	University of Mississippi School of Medicine.....	3																1				36
37	University of Missouri School of Medicine.....	1											1									37
38	Kansas City College of Medicine and Surgery.—N.†.....															20						38
39	Kansas City Univ. of Physicians and Surgeons.—N.†.....															15						39
40	St. Louis College of Physicians and Surgeons†.....		2										14	7	14	11	1	2				40
41	St. Louis University School of Medicine.....				13	2	1			1			42	3	6	9						41
42	Washington University School of Medicine.....		1	7	5	1							27	1	19	9						42
43	Creighton University College of Medicine.....												2		8	3						43
44	University of Nebraska College of Medicine.....				7	1	1						2	1								44
45	Dartmouth Medical School.....						2						1									45
46	Albany Medical College.....														1							46
47	University of Buffalo Medical Department.....						2					1										47
48	Columbia University College of Phys. and Surgs.....	1	1	1	2	1	14				3			1								48
49	Cornell University Medical College.....	1			2		9				1		2				1	1				49
50	Fordham University School of Medicine.....						4															50
51	Long Island College Hospital.....						6															51
52	New York Homeo. Med. College and Flower Hosp.—H.....				1																	52
53	University and Bellevue Hospital Medical College.....	1			1		9		1		2				1	3					1	53
54	Syracuse University College of Medicine.....						1														2	54
55	University of North Carolina School of Medicine.....										1											55
56	Wake Forest College School of Medicine.....										1											56
57	University of North Dakota School of Medicine.....																					57
58	Eclectic Medical College, Cincinnati.—E.....			1	1		1						3	1		1	9		1	1		58
59	University of Cincinnati College of Medicine.....				2								3	14		1	12					59
60	Western Reserve University School of Medicine.....	2								1			2	3		3						60
61	Ohio State University College of Medicine.....																					61
62	Ohio State University College of Homeo. Med.—H.....																					62
63	University of Oklahoma School of Medicine.....			4										3		1		1				63
64	University of Oregon Medical School.....				4	1							3			1						64
65	Hahnemann Med. Coll. & Hosp. of Philadelphia.—H.....				1		1	3		1	5	3	2	3		4	2		4	4	9	65
66	Jefferson Medical College of Philadelphia.....	2		1	2		12	8	1	1												66
67	Temple University School of Medicine.....	1																				67
68	University of Pennsylvania School of Medicine.....	4			4	2	6	1		3	2		2	2	1	4	3		2	6	2	68
69	Woman's Medical College of Pennsylvania.....	1			1		4	2	1	1	1		1	1	1	1	3					69
70	University of Pittsburgh School of Medicine.....																					70
71	Medical College of the State of South Carolina.....																					71
72	University of South Dakota College of Medicine.....														2							72
73	University of Tennessee College of Medicine.....	2		5								1		1			1					73
74	University of West Tennessee Medical Department†.....																					74
75	Meharry Medical College.....	9		12						1	2	16		8			1	6	10		1	75
76	Vanderbilt University School of Medicine.....	17		6	2						3	5		1	1		10	12				76
77	Baylor University College of Medicine.....	1			1										1		1		2			77
78	University of Texas School of Medicine.....																					78
79	University of Utah School of Medicine.....				2								1			1						79
80	University of Vermont College of Medicine.....						5				1											80
81	Medical College of Virginia.....						1				1										1	81
82	University of Virginia Department of Medicine.....	2					1		4	2	4							2				82
83	West Virginia University School of Medicine.....						1														2	83
84	University of Wisconsin Medical School.....	1											9	3	2							84
85	Marquette University School of Medicine.....	1											5		5							85

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Figures are for 1919-20; distribution approximate.

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	Totals	Marginal Number		
	Michigan.....514	Minnesota.....404	Mississippi.....141	Missouri.....615	Montana.....41	Nebraska.....262	Nevada.....7	New Hampshire.....46	New Jersey.....391	New Mexico.....15	New York.....2,103	North Carolina 318	North Dakota...82	Ohio.....781	Oklahoma.....122	Oregon.....148	Pennsylvania 1,050	Rhode Island....91	South Carolina 165	South Dakota...99	Tennessee.....191	Texas.....462	Utah.....110	Vermont.....68	Virginia.....315	Washington....120	West Virginia...147	Wisconsin.....399	Wyoming.....6	Philippines, etc. 124	Foreign.....285	14,872			
1			1	1		1			1		3	1					1					1										26			
2	8	3		1	2	8	1		1	2	4		1		1	3	1			1	3				13			2				22			
3				1	1						1																					196			
4																																161			
5		1				1					1						1					6	1			13						213			
6		1									1						2		1							1						83			
7		1						1	4		7						2					3										119			
8	3	6			1				27		38						22					1										172			
9	2								6		11						6															114			
10			2	1					4		11						11	2	5			3			9							131			
11				1							1	7			2				3		6				9		2					211			
12											1														1							83			
13											1																						88		
14	1			2							2		1	6			2		2	1					1	1				5	16	68			
15	11	5		2		1					3						3															244			
16	19	8	8	21	2	11			2	1	3		15	11	6	1	4	1		5	2					1				9	8	434			
17	16	14	3	12	8	10	2	2	2	1	5	1	13	14	2	17	1		1	22	6				1	19	20	57	7	9	703				
18	4	6		2	1	2					3	1	2	5			3		3													320			
19		1												1																			251		
20		2																	1														268		
21																																	134		
22		1		5	1				1	1		2		15			3		1						6	1	10	1					179		
23			41	1					2		25	13			4		1		4	2	5	45			3	1	10	1					380		
24											7								1														65		
25	3	1	2	4		2		1	2		27	17	3	25	1	4	28	1	9	1	9	11		1	22	2	7	1					363		
26	3								28		34	3					24	5	2		1				9		15						251		
27								4	4								4	1	6					1	2								122		
28																																	32		
29	5	2		13		12		8	10		32	2		17	4	9	18	18	3		1	6	3	3	6	2		11	1	1	19		442		
30								12	5		27						4	36															398		
31																																	121		
32	227	2		6	1	2		1	4	2	31	1	1	46			31		1	2	2	1				4	3	3		7	16		449		
33	32										5		1	3																			50		
34	151													2			2																158		
35	2	318		1	1				1		5		7	2		1	1									1							384		
36			44							1	1										1												49		
37				73																													81		
38				70																													90		
39				75																													90		
40				90																													120		
41	9	4		101	3	2			2	2	7			32	1		3			3	1				1	1		4			8	3	284		
42			2	92	1	1			1	1	1	1	1	3	3					2		3				1							188		
43		5		1	9	45																				3							116		
44				3	2	150																				6							193		
45				1				3																				1						18	
46																																		92	
47																																		219	
48	1							4	48		203	2		1			10																	364	
49																	4	4																228	
50								2	7		54						6	2	2															66	
51					1				1		259																							276	
52											120													2										130	
53			1	1					55		344	1					1	1			2												428		
54											143						4																	159	
55																																		72	
56																																		49	
57		2			2																													39	
58	2																																	98	
59	2	2				2			2		28						4																	238	
60			1														3																	152	
61									1		1						9		1															180	
62																																		40	
63				3																															103
64		1		1	1																													131	
65		2		1																														152	
66	1	3	1	6		2			19		10	26	3	22		3	107		14		3	12	2		2	3	3	19	3				514		
67																																		74	
68	2	1	5	4		2		2	37		9	26	1	3	1		243	1	1	2	8	7		6	5	4	10						433		
69									6		7						40																	103	
70		1									1						147																	157	
71																																		80	
72		1			1						2																							32	
73			3								1																							55	
74																																			

† Figures and distribution approximate..

† Figures exact; distribution approximate.

TABLE 3.—MEDICAL STUDENTS SHOWN BY CLASSES

Name of College	Enrolled During 1920-21						Name of College	Enrolled During 1920-21					
	1st year	2d year	3d year	4th year	5th year	Total		1st year	2d year	3d year	4th year	5th year	Total
University of Alabama School of Med.*	26	...	...	...	...	26	Albany Medical College.....	42	21	12	17	...	92
University of Arkansas Medical Dept.*	13	9	...	...	...	22	University of Buffalo Medical Dept.....	76	60	23	60	...	219
College of Medical Evangelists.....	73	43	43	38	...	197	Columbia Univ. Coll. of Phys. & Surgs..	94	84	69	117	...	364
Leland Stanford Junior University School of Medicine	56	36	23	30	16	161	Cornell University Medical College.....	72	67	43	46	...	228
University of California Medical School..	52	47	47	40	27	213	Fordham University School of Medicine..	...	...	1	65	...	66
University of Colorado School of Med....	30	23	16	14	...	83	Long Island College Hospital.....	50	97	47	82	...	276
Yale University School of Medicine.....	56	30	16	17	...	119	New York Homeopathic Medical College and Flower Hospital.—H.....	45	27	18	40	...	130
Georgetown University School of Med....	72	53	26	21	...	172	University and Bellevue Hospital Medical College	152	94	78	104	...	428
George Washington Univ. Med. School...	53	16	15	30	...	114	Syracuse University College of Medicine..	54	36	35	34	...	159
Howard University School of Medicine...	43	36	17	35	...	131	University of No. Carolina Sch. of Med.*	42	30	...	...	...	72
Emory University School of Medicine.....	60	60	47	44	...	211	Wake Forest College School of Medicine*	24	25	...	...	...	49
University of Georgia Medical Dept.....	36	14	13	20	...	83	University of No. Dakota Sch. of Med.*	22	17	...	...	...	39
Chicago Medical School†.....	16	20	25	27	...	88	Eclectic Medical College, Cincinnati.—E...	17	18	33	30	...	98
Hahnemann Medical College and Hospital of Chicago.—H.....	32	14	10	12	...	68	University of Cincinnati College of Med.	67	64	45	62	...	238
Loyola University School of Medicine....	51	14	16	92	71	244	Western Reserve University Sch. of Med.	59	30	27	36	...	152
Northwestern University Medical School..	115	81	85	75	78	434	Ohio State University College of Med....	61	51	32	36	...	180
Rush Medical College (Univ. of Chicago).	143	142	143	143	132	703	Ohio St. Univ. Coll. of Homeo. Med.—H.	12	7	11	10	...	40
University of Illinois College of Med....	113	84	51	72	...	320	University of Oklahoma School of Med...	38	32	16	17	...	103
Indiana University School of Medicine....	87	60	35	61	8	251	University of Oregon Medical School.....	55	44	16	16	...	131
State University of Iowa College of Med.	110	66	47	45	...	268	Hahnemann Medical College and Hospital of Philadelphia.—H.....	55	25	20	52	...	152
University of Kansas School of Medicine	51	30	21	32	...	134	Jefferson Medical College of Philadelphia	164	141	94	115	...	514
University of Louisville Medical Dept....	69	39	20	51	...	179	Temple University School of Medicine....	...	21	24	29	...	74
Tulane Univ. of Louisiana School of Med.	101	81	77	121	...	380	University of Pennsylvania Sch. of Med.	99	95	119	120	...	433
Bowdoin Medical School.....	29	20	8	8	...	65	Woman's Medical College of Pennsylvania	32	24	32	15	...	103
Johns Hopkins University Med. Dept....	88	97	88	90	...	363	University of Pittsburgh School of Med.	59	39	24	35	...	157
University of Maryland School of Medicine and College of Phys. and Surgs...	79	44	55	73	...	251	Med. College of the State of So. Carolina	32	23	15	10	...	80
Boston University School of Medicine....	62	23	22	15	...	122	University of So. Dakota Coll. of Med.*	20	12	...	...	...	32
College of Phys. and Surgs., Boston†....	8	9	8	7	...	32	University of Tennessee College of Med...	10	12	7	26	...	55
Harvard University Medical School.....	127	107	103	105	...	442	University of West Tennessee Med. Dept.	2	2	3	5	...	12
Tufts College Medical School.....	160	72	78	88	...	398	Meharry Medical College.....	53	67	35	45	...	200
Middlesex College of Med. and Surg.—N.	21	25	25	50	...	121	Vanderbilt University School of Med....	54	36	14	40	...	144
University of Michigan Medical School...	170	126	78	75	...	449	Baylor University College of Medicine...	35	30	25	40	...	130
Univ. of Michigan Homeo. Med. Sch.—H.	16	20	7	7	...	50	University of Texas School of Medicine...	99	47	45	26	...	217
Detroit College of Medicine and Surgery..	56	24	22	56	...	158	University of Utah School of Medicine*	32	23	...	...	...	55
University of Minnesota Medical School..	95	74	75	81	59	384	University of Vermont College of Med...	29	21	17	36	...	103
University of Mississippi School of Med.*	26	23	...	...	...	49	Medical College of Virginia.....	68	44	26	20	...	168
University of Missouri School of Med.*...	39	42	...	...	...	81	University of Virginia Dept. of Med.....	58	30	22	20	...	130
Kansas City College of Med. & Surg.—N.†	30	26	20	14	...	90	West Virginia University School of Med.*	46	32	...	...	...	78
Kansas City Univ. of Phys. & Surgs.—N.	12	8	45	25	...	90	University of Wisconsin Medical School*	93	68	...	...	...	161
St. Louis College of Physicians and Surgeons	13	14	28	65	...	120	Marquette University School of Medicine	50	29	21	27	15	142
St. Louis University School of Medicine..	97	69	41	77	...	284	Totals for 1921.....	4825	3588	2637	3416	406	14872
Washington University School of Med....	60	36	47	45	...	188	Totals for 1920.....	4234	2837	3464	3263	290	14088
Creighton University College of Medicine	41	32	21	22	...	116	Totals for 1919.....	3104	3587	3272	2967	122	13052
University of Nebraska College of Med...	54	68	24	50	...	196							
Dartmouth Medical School*.....	12	6	...	...	...	18							

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

† Figures given are for 1919-20.

‡ Figures and distribution are approximate.

(Continued from page 531)

TUITION AND OTHER FEES

Attention is called in Table 1, on pages 528-530, to the amount charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In Table 10, the eighty-three colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education and Hospitals. Fourteen colleges charge fees of \$125 or less per year; forty-six between \$125 and \$225; nineteen between \$225 and \$325 and four charge above \$325. Of the fourteen colleges charging \$125 or less eleven (78.6 per cent.) are listed among Class A (acceptable) colleges² by the Council on Medical Education, while two are in Class B. The eleven Class A colleges having these low fees include the schools of medicine of the state universities of Iowa, Missouri, Oklahoma, North Dakota, South Dakota, Texas and West Virginia—for residents of those states. On the other hand, three colleges listed by the Council in Class C charge fees of \$175 to \$225 per year. Diplomas from Class C colleges are reported as not recognized by from 42 to 44 state licensing boards.³ No intelligent student

would knowingly spend his time and money in a low-grade college, the diplomas of which are not recognized by many states, when in the same time, and for even less money, he could attend one of the best-equipped colleges, the diplomas of which are recognized everywhere. Although 42 colleges listed in Class A charge fees ranging from \$175 to \$350 per year for each stu-

TABLE 10.—COLLEGE FEES

Total Fees	Number of Colleges			
	Class A	Class B	Class C	Total
\$ 75 or less.....	4	1	..	5
75 to \$125.....	7	1	1	9
125 to 175.....	15	3	3	21
175 to 225.....	21	1	3	25
225 to 275.....	10	2	..	12
275 to 325.....	7	..	..	7
Above 325.....	4	..	..	4
Totals.....	68	8	7	83

dent, the actual expense for teaching that student for the year in these colleges is much more than the fee charged. This larger expenditure is possible because the colleges receive either state aid or private endowment. This shows that no medical college can properly teach medicine on the income received from fees alone. Although during the last two years fees have been increased, this in no way compares with the greatly

2. See classification on page 544.

3. See THE JOURNAL A. M. A., April 30, 1921, p. 1240, Table D.

increased cost of furnishing a medical education. Although fees have been moderately advanced, at the same time, greater provision has been made for scholarships and loan funds (see page 537) for benefit of deserving students who are financially poor.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois formerly had the largest number of medical colleges (Table 11), but for the last four years the first place has been held by New York, where there are still

TABLE 11.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

State	Colleges		Students		Graduates		Graduates with B.S. or A.B.
	Total	Class C	Men	Women	Men	Women	
Alabama.....	1	....	26	....	....	....	....
Arkansas.....	1	....	20	2	....	....	....
California.....	3	....	496	78	82	2	64
Colorado.....	1	....	74	9	13	2	4
Connecticut.....	1	....	112	7	15	1	12
Dist. of Columbia..	3	....	405	12	78	1	49
Georgia.....	2	....	294	....	59	....	23
Illinois.....	6	1	1,736	119	303	16	191
Indiana.....	1	....	241	10	57	3	55
Iowa.....	1	....	259	9	46	....	24
Kansas.....	1	....	128	6	27	2	17
Kentucky.....	1	....	172	6	48	1	12
Louisiana.....	1	....	365	15	115	3	47
Maine.....	....	....	65	....	8	....	3
Maryland.....	2	....	552	62	147	16	103
Massachusetts.....	5	2	1,072	43	232	12	96
Michigan.....	3	....	622	35	122	7	41
Minnesota.....	1	....	359	25	51	2	53
Mississippi.....	1	....	46	3	....	....	....
Missouri.....	6	3	832	21	208	6	61
Nebraska.....	2	....	302	10	71	1	27
New Hampshire.....	1	....	18	....	....	....	....
New York.....	8	....	1,824	138	551	23	203
North Carolina.....	2	....	121	....	....	....	....
North Dakota.....	1	....	38	1	....	....	....
Ohio.....	5	....	670	38	162	14	114
Oklahoma.....	1	....	98	5	15	2	13
Oregon.....	7	....	198	13	13	3	6
Pennsylvania.....	6	....	1,288	145	329	26	172
South Carolina.....	1	....	76	4	10	....	6
South Dakota.....	1	....	32	....	....	....	....
Tennessee.....	4	1	407	4	112	....	18
Texas.....	2	....	328	19	64	2	28
Utah.....	1	....	54	1	....	....	....
Vermont.....	1	....	101	2	36	....	5
Virginia.....	2	....	280	18	50	....	18
West Virginia.....	1	....	76	2	....	....	....
Wisconsin.....	2	....	286	17	17	....	....
Totals.....	83	7	13,993	879	3,041	151	1,465

eight colleges. Illinois, Missouri and Pennsylvania have six colleges each; Massachusetts and Ohio have five each, and Tennessee has four. Of Class C colleges, however, Missouri has three, Massachusetts has two, and there is one each in Illinois and Tennessee. In Missouri the Class C colleges are not recognized by the local state licensing board and exist because that board does not have or does not exert the power to have their charters revoked.

For the last four years New York has had the largest number of students enrolled, this year having 1,962, followed by Illinois with 1,855 and Pennsylvania with 1,433. New York leads also in the number of graduates, having reported 574, followed by Pennsylvania with 355, Illinois with 319, Massachusetts with 244 and Missouri with 214.

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 12 shows the students and graduates of the last six years grouped according to their classification by the Council on Medical Education and Hospitals. Note that during the nine years the percentage of students enrolled in Class A colleges has increased from

65.4 to 90.5, and that since 1917 the total number of students in attendance at these schools has increased from 11,317 to 13,482. Note, on the other hand that both the numbers and the percentages of students enrolled in Class B and Class C colleges have been reduced. The percentage of students in Class B colleges has been reduced from 24.4 to 5.6 and in Class C colleges from 10.2 to 3.9. Of graduates, also, the percentage in Class A colleges shows an increase, while in Class B and Class C colleges there has been a decrease. Such reductions as there have been in the total number of students and graduates, therefore, have been largely at the expense of the lower grade colleges, while the numbers of students and graduates in the better colleges have been increased.

HINTS TO PROSPECTIVE MEDICAL STUDENTS

The student who is contemplating the study of medicine should read with care the instructions entitled "Choice of a Medical School" beginning on page 540. The selection of the school in which he is to obtain his medical training is a matter of extreme importance and should be considered by the student with special care. He should note the standards of premedical education which are given on page 541, he should note the subjects required by the individual medical schools which, if different from those outlined by the Council on Medical Education and Hospitals, will be found in the descriptive statements of those colleges appearing on pages 547 to 556. A careful review of the material published this week will be of great service to such students.

GRADUATE MEDICAL EDUCATION

The facilities for graduate medical instruction in the United States are set forth on the next few pages. Not only are the separate graduate medical schools given, but also the opportunities available in undergraduate medical schools. In the latter, the courses vary somewhat from year to year, but the outlines given indicate

TABLE 12.—STUDENTS AND GRADUATES ACCORDING TO CLASSIFICATION

Year	Students						Graduates					
	Colleges Rated in Class						Colleges Rated in Class					
	A	%	B	%	C	%	A	%	B	%	C	%
1913	11,122	65.4	4,158	24.4	1,735	10.2	2,539	63.8	1,050	26.4	392	9.8
1914	12,336	74.7	2,838	17.2	1,328	8.1	2,626	73.1	686	19.1	282	7.8
1915	11,314	76.0	2,668	17.9	909	6.1	2,629	74.4	688	19.4	219	6.2
1916	11,162	79.6	2,087	14.9	778	5.5	2,630	74.7	695	19.8	193	5.5
1917	11,317	82.2	1,761	12.8	686	5.0	2,577	76.3	648	19.2	154	4.5
1918	11,522	84.5	1,488	10.9	620	4.5	2,024	75.8	399	14.9	247	9.2
1919	11,466	87.9	1,086	8.3	500	3.8	2,220	83.6	268	10.1	168	6.3
1920	12,610	89.6	680	4.8	798	5.6	2,690	88.4	152	5.0	205	6.6
1921	13,487	90.5	832	5.6	553	3.9	2,812	88.1	200	6.3	180	5.3

the variety and extent of such work. It is hoped that by the publication each year of these data opportunities in undergraduate schools may be enlarged and a greater use be made of the abundance of clinical material in this country. The majority of undergraduate medical schools are now on a par with those in other leading countries; their future development need not be hindered by providing also for the giving of graduate courses.

will be used by the departments of physiology, pharmacology and experimental surgery.

Tennessee.—The state appropriation for maintenance of the University of Tennessee College of Medicine has been increased \$10,000 over previous amounts. During the last year a new laboratory building to accommodate the departments of pathology, bacteriology and public health has been erected at a cost of \$75,000. The four floors of the old buildings from which the departments mentioned have been removed will be used by the outpatient department.

Texas.—Baylor University College of Medicine received recently a gift of \$30,000 from the General Education Board to be used for maintenance, equipment and salaries. A five story addition to the Baylor Hospital is now under construction which will house necropsy room, lecture rooms, laboratories and operating rooms. A building for women and children is also being built adjoining the main hospital. The two buildings will increase the capacity of the Baylor Hospital to about 400 beds.

Virginia.—For the first time in its history women were admitted to the University of Virginia Department of Medicine in the session of 1920-1921. During the year an emergency fund of \$14,000 was subscribed by alumni and friends of the department of medicine to finance for two years the increased cost occasioned by increasing the number of men admitted to the freshman class from thirty-six to sixty-five.

Canada.—A new building for the University of Alberta Faculty of Medicine has been completed and equipped. It is said to be one of the finest of its kind in Canada.

During the year 1919-1920 the University of Manitoba received \$500,000 from the Rockefeller Foundation as an endowment for the Faculty of Medicine, the amount to be available when certain conditions were complied with by the university authorities. These conditions, including the erection of additional medical buildings at a minimum cost of \$400,000, have been met.

During the session of 1920-1921 the Rockefeller Foundation and the Carnegie corporation each contributed \$500,000 to Dalhousie University Faculty of Medicine for the furtherance of medical education. Of these sums \$400,000 is to be devoted to buildings and \$600,000 to additional endowment. A maternity hospital has been erected on the university campus by the Salvation Army at a cost of \$125,000. The free beds are to be used for clinical purposes by the Faculty of Medicine.

Scholarships in Medical Schools

As evidence that provision is being made for worthy students, regardless of their financial status, 469 scholarships are reported this year in the following forty-five medical schools:

University of Alabama School of Medicine, Tuscaloosa.....	67
Leland Stanford Junior University Medical School,* San Francisco..	2
University of California Medical School,* San Francisco.....	6
University of Colorado School of Medicine,* Denver.....	1
Yale University School of Medicine,* New Haven.....	2
Georgetown University School of Medicine, Washington.....	2
Emory University Medical School,* Atlanta.....	11
Northwestern University School of Medicine,* Chicago.....	1
Rush Medical College, Chicago.....	7
University of Illinois College of Medicine, Chicago.....	84
Indiana University School of Medicine,* Bloomington and Indianapolis	12
State University of Iowa College of Medicine, Iowa City.....	1
University of Kansas School of Medicine,* Kansas City.....	1
Johns Hopkins University Medical Department, Baltimore.....	6
University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	8
Boston University School of Medicine,* Boston.....	16
Medical School of Harvard University,* Boston	50
Detroit College of Medicine and Surgery, Detroit.....	8
University of Missouri School of Medicine,* Columbia.....	10
Washington University School of Medicine, St. Louis.....	2
University of Nebraska College of Medicine,* Omaha.....	6
Dartmouth Medical School,* Hanover, N. H.....	2
University of Buffalo Department of Medicine,* Buffalo.....	1
Columbia University College of Physicians and Surgeons, New York..	36
Cornell University Medical College,* New York.....	3
Syracuse University College of Medicine, Syracuse.....	1
University and Bellevue Hospital Medical College,* New York....	1
University of North Carolina School of Medicine, Chapel Hill.....	1
University of Cincinnati College of Medicine,* Cincinnati.....	12
University of Oregon Department of Medicine,* Portland.....	5
Hahnemann Medical College and Hospital of Philadelphia*.....	12
Jefferson Medical College, Philadelphia.....	3
Temple University Department of Medicine, Philadelphia.....	3
University of Pennsylvania School of Medicine,* Philadelphia....	4
University of Pittsburgh School of Medicine, Pittsburgh.....	3
Woman's Medical College of Pennsylvania,* Philadelphia.....	30

Medical College of the State of South Carolina, Charleston.....	8
University of Tennessee College of Medicine, Memphis.....	15
Vanderbilt University Medical Department, Nashville, Tenn.....	4
University of Texas Department of Medicine,* Galveston.....	2
University of Vermont Medical School*.....	1
Medical College of Virginia, Richmond	10
University of Virginia Department of Medicine,* Charlottesville..	2
West Virginia University School of Medicine,* Morgantown.....	1
University of Wisconsin Medical School, Madison.....	6
Total in 45 medical schools	469

Loan Funds

Besides the twenty-four colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

- College of Medical Evangelists, Loma Linda, Calif.
- Tulane University of Louisiana School of Medicine, New Orleans.
- University of Michigan Medical School, Ann Arbor.
- Wake Forest College School of Medicine, Wake Forest, N. C.
- University of North Dakota School of Medicine, University.

Since the World War a large number of scholarships have been established in various medical schools for those who have been in military service. Such provision is made, also, in a number of medical schools for those preparing themselves as medical missionaries. Abundant facilities are available, also, particularly in the larger schools, for students to secure employment to pay at least a portion of their expenses.

State Requirements of Preliminary Education

There are now forty-one states (counting Alaska Ter.) which have adopted requirements of preliminary education in addition to a standard four-year high school education. These states, the number of college years required and the time the higher requirements became or become effective, are as follows:

State Examining Board of	One Year of College Work		Two Years of College Work	
	Affects Students Matriculating	Affects All Graduates	Affects Students Matriculating	Affects All Graduates
Alabama.....	.....	.....	1915-16	1919
Alaska.....	1914-15	1918	1918-19	1922
Arizona.....	1914-15	1918	1918-19	1922
Arkansas.....	1915-16	1919	1918-19	1922
California.....	1915-16	1919	1918-19	1922
Colorado.....	1908-09	1912	.....	.....
Connecticut.....	1911-12	1915	1910-11	1914
Delaware*.....	.....	.....	.....	.....
Distrlct of Columbia†.	.....	.....	.....	.....
Florida.....	1914-15	1918	1918-19	1922
Georgia.....	.....	.....	1918-19	1922
Idaho*.....	.....	.....	.....	.....
Illinois.....	1915-16	1919	1918-19	1922
Indiana.....	1910-11	1914	1911-12	1915
Iowa.....	.....	.....	1911-12	1915
Kansas.....	1910-11	1914	1918-19	1922
Kentucky.....	1914-15	1918	1918-19	1922
Louisiana.....	1915-16	1919	1918-19	1922
Maine.....	1915-16	1919	1918-19	1922
Maryland.....	1914-15	1918	1916-17	1920
Massachusetts†.....	.....	.....	1918-19	1922
Michigan.....	1914-15	1918	1918-19	1922
Minnesota.....	.....	.....	1908-09	1912
Mississippi.....	1915-16	1919	1919-20	1923
Missouri*.....	.....	.....	.....	.....
Montana.....	1914-15	1918	1918-19	1922
Nebraska*.....	.....	.....	.....	.....
Nevada*.....	.....	.....	.....	.....
New Hampshire.....	1914-15	1918	1915-16	1919
New Jersey.....	1915-16	1919	1917-18	1921
New Mexico.....	1914-15	1918	1918-19	1922
New York.....	1917-18	1921	1918-19	1922
North Carolina.....	1914-15	1918	1918-19	1922
North Dakota.....	.....	.....	1908-09	1912
Ohio*.....	.....	.....	.....	.....
Oklahoma.....	1914-15	1918	1917-18	1921
Oregon.....	.....	.....	1920-21	1924
Pennsylvania.....	1914-15	1918	.....	.....
Rhode Island.....	1914-15	1918	1918-19	1922
South Carolina.....	.....	.....	1918-19	1922
South Dakota.....	1908-09	1912	1911-12	1915
Tennessee.....	1916-17	1920	1918-19	1922
Texas.....	1914-15	1918	.....	.....
Utah.....	1913-14	1917	1922-23	1926
Vermont.....	1913-14	1917	1918-19	1922
Virginia.....	1914-15	1918	1917-18	1921
Washington.....	1914-15	1918	1918-19	1922
West Virginia.....	1917-18	1921	1920-21	1924
Wisconsin.....	.....	.....	1915-16	1919
Wyoming†.....	.....	.....	.....	.....

* Require a four-year high school education or its equivalent.
† No fixed standard.

GRADUATE COURSES IN PUBLIC HEALTH

Graduate courses in public health have been established in connection with eleven medical schools, the first of which was at the University of Pennsylvania in 1909; the latest is that in connection with the medical department of the Johns Hopkins University, which began its course in 1918. Yale University established its course in public health in 1917. Two institutions, the University of Colorado and Tulane University, suspended their course in 1918. Six of the schools have courses leading to the degree of Doctor of Public Health (Dr.P.H.) after a two-year course. The University of California offers instead the degree of Graduate in Public Health (Gr.P.H.) after a two-year course. After a one-year course the degree of Certified Sanitarian (C.S.) is offered by the University of Pennsylvania to graduates of colleges of arts and sciences. Yale University grants a certificate in public health (C.P.H.) after a one-year course. The degree of Master of Public Health (M.P.H.) is offered after a one-year course by the Detroit College of Medicine and Surgery and the University of Wisconsin Medical School. The Master in Arts in Public Health [M.A. (P.H.)] is offered by the University of California Medical School, and the Master in Science in Public Health [M.S. (P.H.)] by the University of Michigan. The courses offered by the eight schools of public health are as follows:

THE UNIVERSITY OF CALIFORNIA: Courses began in 1915; number of instructors, 20; three courses leading to degree of Gr.P.H.: (a) a four year course covering three years in the college of letters and science and one year in the medical school; (b) a two year course covering one year in the college of letters and science and one year in the medical school for graduates of the college of civil engineering who have completed the work in sanitary engineering, and (c) a course of one and a half years, including one year in the college of letters and science, and a half year in the medical school for students who have completed three and a half years of the medical course. Completion of this third course gives the degrees of M.D. and Gr.P.H. The University of California also offers a one year course to graduates in arts or sciences for the degree of Master in Arts in Public Health [M.A. (P.H.)]. Fees are \$150 each year. A thesis is required for the degree. The course extends from August to May.

YALE UNIVERSITY GRADUATE COURSE IN PUBLIC HEALTH.—The graduate course in public health at Yale University School of Medicine was first established in 1917, and during 1920-1921 there were thirteen instructors. A one-year course leads to the certificate in public health (C.P.H.), a two-year course leads to the degree of doctor of philosophy (Ph.D.), and to medical graduates only, a two-year course leads to the degree of doctor of public health (Dr.P.H.). Theses are required in all cases. The fees are \$200 per year. The course extends from October to June. During 1920-1921, 19 students were enrolled, and in June, 1921, 1 certificate and 1 degree were granted.

JOHNS HOPKINS UNIVERSITY SCHOOL OF HYGIENE AND PUBLIC HEALTH was opened in October, 1918. There are 12 professors and 33 lecturers, associates and instructors, a total of 45. Four courses are offered: (a) A two year course leading to the degree of Dr.P.H., requiring for admission a bachelor's degree and a degree in medicine. The degree of M.D. and the degree of Dr.P.H. may be obtained in a combined course of five years. A thesis is required for graduation. (b) A three year course leading to the degree of Doctor of Science in Hygiene requiring for admission a bachelor's degree and adequate training in physics, chemistry, biology and the medical sciences, anatomy, physiology and pathology. A written and oral examination and a dissertation embodying the results of an independent investigation are required for graduation. (c) A two year course leading to the degree of Bachelor of Science in Hygiene, the course consisting of combined work in the medical school and the School of Hygiene and Public Health. For admission the applicant must have completed at least two years of work in an approved college and have studied courses in physics, biology, inorganic and organic chemistry. (d) A one year course leading to a certificate in public health is also offered to graduates of approved medical schools or graduates in arts or sciences who present evidence of satisfactory training in the physical and medical sciences. The fees charged are \$250 per year. Courses for special students are \$50 per trimester. Altogether 122 students were enrolled during 1920-1921, including 52 who were candidates for degrees and 4 for the certificate in public health. The course extends from October 4 to June 20.

MEDICAL SCHOOL OF HARVARD UNIVERSITY: The School of Public Health was opened in 1910; there are 42 instructors. A one year course is offered leading to a certificate in public health. For admission the applicant must have completed two years of work in a recognized medical school, or have received a bachelor's degree from an approved college or technical school, or have had special experience in public health work. In any instance he must show evidence of having completed satisfactory courses in physics, chemistry and biology and modern languages and the fundamental medical sciences. Although not a prerequisite, all candidates are advised to obtain a medical degree before specializing in public health work. Fees are \$250 per year. Students enrolled in 1920-1921, 39; certificates in public health awarded, 12. Course extends from October to June.

DETROIT COLLEGE OF MEDICINE AND SURGERY: The course began in 1913 with ten instructors. A one year course leading to the degree of Master of Public Health (M.P.H.) is offered to graduates of approved medical schools. The work is conducted at the college, the Detroit City Board of Health, and the Municipal Contagious Hospital. It includes sanitary engineering, laboratory, clinical and field work. Fees are \$100 per year. No thesis required. No students enrolled during the past session. The course extends from September to June.

THE UNIVERSITY OF MICHIGAN GRADUATE SCHOOL: The graduate courses in public health were established in the University of Michigan in 1913. The number of instructors is approximately 10. Two courses are offered—one to graduates in arts and sciences or medicine extending from one to two years, leading to the degree of Master of Science in Public Health; the other a course of from two to three years in length for graduates in arts or sciences and medicine, leading to the degree of Doctor of Public Health. For residents of Michigan the fees consist of \$10 matriculation and \$82 for men students and \$77 for women; for nonresidents of Michigan, matriculation \$25 and an annual fee of \$107 for men and \$102 for women. A thesis is required for the degree of Dr.P.H. There is a summer session but the regular session extends from September 27 to June 19. In 1920-1921 2 students were enrolled.

ALBANY MEDICAL COLLEGE: The graduate course in public health was begun in 1920. At the end of the year (in 1921), certificates were granted to 19 students, who had completed the course.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE: The graduate course in public health began in 1916. Two courses are offered—a two years course leading to the degree of Doctor of Public Health for graduates of approved medical schools, and a correspondence course of indefinite length, especially adapted for health officers. The tuition for Dr.P.H. course is \$200 for the first year and \$25 for the second. The fee for either the correspondence or the week's resident course is \$30, including the matriculation fee. For the correspondence course the last week must be spent in residence. The courses run from October to June. There were 87 health officers who took the correspondence course last year.

THE UNIVERSITY OF PENNSYLVANIA: The graduate courses in public hygiene began in 1906; there are 19 instructors; two courses are offered,—a two years' course for graduates in medicine, leading to the degree of Dr.P.H. and a one year course for graduates of arts or science leading to the degree of Certified Sanitarian. A thesis is required for graduation. The fees are \$250 per year. There were 5 students during 1920-1921; 1 graduate. The course extends from October to June.

THE UNIVERSITY OF WISCONSIN: Graduate courses in public health began in 1910. There are eight teachers. Two courses are offered—a one year course for graduates in medicine, leading to the degree of Master of Public Health (M.P.H.); the other a two year course for physicians, leading to the degree of Doctor of Public Health. Fees are \$50 per year for residents of Wisconsin and \$170 for nonresidents. A thesis is required for graduation. No students were registered during 1920-1921. Address inquiries to Miss Irene Brewster, Secretary, Medical School.

Uniform Requirements Since 1920-21

At a conference of representatives from a number of universities in the country held at New Haven, Conn., on Feb. 28, 1919, the following regulations were adopted to take effect with the Session 1920-1921:

1. That the degree of Doctor of Public Hygiene (for which the abbreviation shall be Dr.P.H.) for graduates in medicine shall be awarded after two years of work done under academic direction, of which one year at least shall be in residence, and that the requirements for the degree shall include class work, practical field work, and an essay based on individual study of a particular problem.

2. That the degree Doctor of Philosophy or Doctor of Science in Public Hygiene shall be conferred on students who hold the bachelor's degree from a college or technical school of recognized standing, and have satisfactorily completed not less than three years of graduate study. It is understood that this degree is based on a knowledge of physics, chemistry, biology, anatomy, physiology, physiologic chemistry, pathology and bacteriology.

GRADUATE COURSES IN MEDICAL SCHOOLS

Special correspondence with medical schools shows that there are many opportunities for graduate study which physicians have not been able to take advantage of through the lack of knowledge in regard to them. The following list has been prepared to correct this deficiency. More complete information can be obtained by correspondence with the medical school concerned.

CALIFORNIA

LELAND STANFORD JUNIOR UNIVERSITY SCHOOL OF MEDICINE, San Francisco.—Graduate courses are open to physicians: (a) Mid-day clinics, 11:30 to 12:30 daily, covering medicine, medical specialties

surgical specialties, obstetrics, gynecology and pathologic conferences free of charge. (b) Clinical demonstrations at the San Francisco Hospital. On Thursdays beginning at 9 a. m., the work is in surgery and the surgical specialties; on Fridays, beginning 9 a. m., medicine and the medical specialties. These courses are free of charge. (c) Assistantships in clinics and laboratories. A physician may be assigned to some research problem or receive regular instruction from a member of the staff. For the latter an appropriate fee is charged and a nominal fee also for material used. During the last five years an average of 28 physicians each year has occupied these assistantships.

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL.—Resident positions are open to properly qualified medical graduates as follows: In the University Hospital: A resident position in general medicine and four assistant residencies, one each in general medicine and dermatology; in neuro-psychiatry and infirmary; in out-patient department; in medical research. Besides a residency in surgery, there are five assistant residencies, one each in general surgery, urology, orthopedic surgery, ophthalmology, otorhinolaryngology, outpatient department and surgical pathology. There are a residency and two assistant residencies each in pediatrics and in obstetrics and gynecology. There is one residency each in pathology and in biochemistry and clinical laboratories. In the San Francisco Hospital as house officers there are two positions in medicine and tuberculosis; two in surgery; one in pediatrics and isolation and one in obstetrics and gynecology. Special courses to physicians and advanced students are open in the departments of anatomy (at Berkeley) neuro-surgery, pathology, and research medicine. An announcement regarding public health work appears in another column.

COLORADO

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, Boulder-Denver.—During the present summer, courses for physicians were given in bacteriology, biochemistry, blood chemistry, anatomy, histology, embryology, clinical laboratory technic, advanced pathology and ophthalmology. The session extended from June 13 to August 27, divided in two terms. Physicians may register for either term or for the entire quarter.

ILLINOIS

RUSH MEDICAL COLLEGE, Chicago.—The following courses are offered for physicians: (a) A course on tuberculosis. (b) Special course for three or four physicians who are willing to spend a full year in diseases of the ear, nose and throat. (c) Attendance at arena clinics for which a visitor's ticket for a week is issued—registration not limited. (d) Opportunities for a few physicians for investigative work in the sciences fundamental to medicine, including pathology. Fees: \$25 for each major's work, or \$75 for a full quarter.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Chicago.—The summer quarter is devoted to graduate work and courses for physicians, and during the balance of the year a large number of fellowships are available in courses leading to the degrees of Master of Science and Doctor of Philosophy. Special opportunities for individual research work in anatomy, pharmacology, and pathology and bacteriology were offered during the present summer quarter.

INDIANA

INDIANA UNIVERSITY SCHOOL OF MEDICINE, Indianapolis.—At any time during the year special arrangements will be made for the physicians of Indiana who make application to receive instruction with the medical students or alone. During the summer a well arranged six weeks' course is offered to the physicians of Indiana in medicine, surgery, pathology (including immunology and bacteriology) and biochemistry.

IOWA

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, Iowa City.—During the present summer a four weeks' general clinical course limited to 12 physicians was offered. There are opportunities for physicians to act as clinical assistants, research workers, hospital chemists, etc., in the various departments of the medical school. Special opportunities are always open for physicians with research ability.

MARYLAND

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Baltimore.—During the present summer a six weeks' course in medical diagnosis was offered, limited to twenty physicians. The course consisted in ward rounds, lectures, clinics group courses, physical diagnosis, laboratory work in clinical microscopy, and group clinics in the special study of syphilis. Provision can be made for similar classes in the other main departments of the medical college. Opportunities for advanced work open to a certain number of qualified men. The work is arranged for personal communication between the applicants and the heads of the various departments. Special opportunities for long time service in the hospital.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE, Baltimore.—Courses are open for physicians in anatomy, pathology, bacteriology, clinical laboratory, operative surgery, obstetrics, genito-urinary diseases, gynecology, roentgenology and pediatrics. Arrangements made by personal communication.

MICHIGAN

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL, Ann Arbor.—The regular laboratory and clinical courses in the school are open to qualified physicians. In addition special work is arranged along all clinical and laboratory branches to meet the special needs of the applicant. Such courses may lead to the degrees of Master of Science or Doctor of Philosophy.

MISSOURI

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, St. Louis.—Washington University School of Medicine has established a series of post-

graduate medical courses in all the various clinical branches. These courses make use of the laboratory, clinical and library facilities of the school and its allied hospitals. The courses are planned so as to run approximately six weeks, at stated intervals, and to consist of subjects so grouped as to furnish the student a comprehensive training in the work he selects. This is accomplished by combining with the major subjects numerous fundamentally related subjects of lesser, though vital, importance. In addition to these combined courses, detached courses are offered, thus affording students a wide range of selection. A descriptive pamphlet is available for all applicants who request it by addressing the Dean.

NEBRASKA

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Omaha.—A special two weeks' course for practitioners is offered each June. Subjects include bedside clinics, physical diagnosis, clinical diagnosis, new developments in medicine and surgery. University Hospital and out-patient departments utilized.

NEW YORK

LONG ISLAND COLLEGE HOSPITAL, Brooklyn.—Positions comparable to fellowships open for physicians who have completed internships. These are in several clinical departments of the hospital. Courses open in fundamental branches; courses also open in embryology, neuro-anatomy, histology, bacteriology, biochemistry, physiology, preventive medicine and hygiene. Also opportunities for research work in biochemistry and physiology. Special courses on animal locomotion, heart and circulation, and functional diseases. Opportunities also for physicians to advanced work. Post-graduate courses in anatomy, physiology, genito-urinary, surgery, medicine, bacteriology, biochemistry, obstetrics and gynecology, oto-laryngology, pediatrics and pathology are offered annually for six weeks from May 15. Arrangements made by personal communication.

UNIVERSITY AND BELLEVUE HOSPITAL COLLEGE OF MEDICINE.—Various graduate courses are open for physicians as follows: Research courses in anatomy, embryology, chemistry, physiology, pharmacology and therapeutics as well as special courses in pathology, bacteriology and surgery. Clinical courses occupying about six weeks each are also offered in medicine and physical diagnosis, clinical and operative gynecology, genito-urinary diseases, laryngology, ophthalmology, pediatrics and dermatology.

OHIO

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, Cleveland.—Special review courses for physicians in medicine and surgery, including some of the specialties, during May and June of each year. Courses limited to 20 men. An effort is made to occupy the physician's entire time from 8 a. m. to 5 p. m. During the remainder of the year arrangements may be made with individual instructors for advanced research work in clinical and laboratory subjects. For information address the registrar.

VIRGINIA

MEDICAL COLLEGE OF VIRGINIA, Richmond.—Opportunities open for a few physicians to take courses in the combined laboratories of the college, of the State Board of Health and of the Richmond City Board of Health.

ONTARIO

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Graduate courses in clinical and laboratory work are available to physicians on application. During the last session, two short courses were given for physicians, covering intensively one of the subjects of medicine, surgery, obstetrics and gynecology, ophthalmology and oto-laryngology. The summer course in pediatrics was repeated. Several series of lectures were delivered before medical societies throughout Ontario in addition to a large number of single lectures.

GRADUATE MEDICAL SCHOOLS

There are now eighteen graduate medical schools in the United States. These are commonly referred to as post-graduate medical schools. Of these institutions, seven are connected with universities in which the graduate teaching is, or will be, as thoroughly and scientifically given as are the courses of the undergraduate medical school. The universities having graduate schools are the Universities of Alabama, California, Tulane, Harvard, Minnesota, Columbia and Pennsylvania. The University of Chicago has received a generous endowment preparatory to the establishing of a large graduate school. Active steps toward this end will be taken in the near future. Following is the complete list of graduate medical schools:

ALABAMA

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF ALABAMA, Ave. F and 20th St., Birmingham. Organized 1915. Formerly the Birmingham Medical College. Suspended in 1918; reopens in fall of 1921. The dean is Dr. Lewis C. Morris, Empire Bldg.

CALIFORNIA

SAN FRANCISCO POLYCLINIC AND POST-GRADUATE SCHOOL, 1535 Jackson St., San Francisco. The dean is Dr. H. D'Arcy Power.

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF CALIFORNIA, Buena Vista and Alpine St., Los Angeles. Organized 1914. Formerly the University of Southern California College of Medicine. The dean is Dr. George H. Kress.

ILLINOIS

CHICAGO POLYCLINIC, 219-221 W. Chicago Ave., Chicago. The secretary is Dr. Malcolm L. Harris, 32 N. State St.

ILLINOIS POST-GRADUATE MEDICAL SCHOOL, 1844 W. Harrison St., Chicago. The secretary is Dr. James A. Clark.

POST-GRADUATE MEDICAL SCHOOL, 2400 Dearborn St., Chicago. The secretary is Dr. Emil Ries, 77 E. Washington St.

CHICAGO EYE, EAR, NOSE AND THROAT COLLEGE, 235 W. Washington St., Chicago. The secretary is Dr. John R. Hoffman, 31 N. State St.

PROVIDENT HOSPITAL POST-GRADUATE SCHOOL, 16 W. 36th St., Chicago. For colored physicians. The dean is Dr. George C. Hall.

LOUISIANA

NEW ORLEANS POLYCLINIC. Post-Graduate School of Medicine of the Tulane University of Louisiana, Tulane Ave. and Liberty St., New Orleans. The dean is Dr. Charles L. Chassaignac.

NEW ORLEANS POST-GRADUATE SCHOOL OF MEDICINE, 135 S. Rampart St., New Orleans. The secretary is Dr. Joseph A. Danna.

MASSACHUSETTS

HARVARD MEDICAL SCHOOL, COURSES FOR GRADUATES, 240 Longwood Ave., Boston. Organized as a separate division of the Medical School, 1912; all instructions under the charge of the Faculty of Medicine. Instruction is given throughout the year. The officer in charge is the assistant dean.

MINNESOTA

UNIVERSITY OF MINNESOTA GRADUATE SCHOOL OF MEDICINE, Minneapolis. Organized 1914. In 1915, the resources and facilities of the Mayo Foundation were added, with the staff, clinics, laboratories, library and records at Rochester, Minn. A nine months' course of advanced work is offered in the science departments giving the fundamental training essential in ophthalmology and oto-laryngology, will begin Sept. 28, 1921. It will include anatomy, embryology and histology of the sense organs and of the head region; physiologic optics; physiology of the special senses and of speech; pathology and bacteriology as applied to the eye, ear, nose and throat. The course will include lectures, demonstrations, quizzes and clinical work in the outpatient department. The course is limited to ten students. There are also two teaching fellowships, each available in internal medicine, surgery, obstetrics, ophthalmology and oto-laryngology, pediatrics, and mental and nervous diseases. Five others are available in the laboratory sciences, and eighty-six others are available under the Mayo Foundation. Courses in various specialties leading to higher degrees in medicine (M.A., M.S., Ph.D.). Instruction throughout the year. The dean is Guy Stanton Ford, Ph.D., Minneapolis.

NEW YORK

The New York Association for Medical Education is organized to collect information regarding available graduate medical instruction; to work for the improvement of existing courses and the establishment and development of new opportunities for advanced study; to bring about an affiliation between medical schools and hospitals whose facilities have not before been utilized for teaching purposes; and to serve as a bureau of information and assistance to prospective students. The executive offices are at the Academy of Medicine Bldg., 17 W. 43d St., New York. The graduate schools are as follows:

NEW YORK POST-GRADUATE MEDICAL SCHOOL, 2d Ave. and 20th St., New York City. The secretary is Dr. J. Bentley Squier.

NEW YORK POLYCLINIC MEDICAL SCHOOL, 341-51 W. 50th St., New York City. Is to be taken over and the work developed by Columbia University. The president is Dr. John A. Wyeth, 341 W. 50th St.

MANHATTAN EYE, EAR AND THROAT HOSPITAL AND MEDICAL SCHOOL, 210 E. 64th St., New York City. The secretary is Dr. Samuel J. Kopetzky.

SCHOOL OF OPHTHALMOLOGY AND OTOTOLOGY, 13th St. and 2d Ave., New York City. The secretary is Dr. George S. Rixon, 40 E. 41st St.

COLLEGE OF THE NEW YORK OPHTHALMIC HOSPITAL, 23d St. and Third Ave., New York City. The secretary is Dr. W. C. McKnight, 13 Central Park West.

PENNSYLVANIA

GRADUATE SCHOOL OF MEDICINE OF THE UNIVERSITY OF PENNSYLVANIA, Philadelphia. Organized 1916 by a merger with the University of the Medico-Chirurgical College of Philadelphia. The Philadelphia Polyclinic was merged in 1918. The faculty includes about 230 teachers. Courses extending over from four to twelve months in medicine, pediatrics, neurology, dermatology, syphilology, roentgenology, surgery, gynecology, obstetrics, orthopedics, urology, proctology, ophthalmology, oto-laryngology and the medical sciences. Fees: Four month courses, \$200; eight month, \$400; twelve month, \$600. Special schedules (few only), special fees. The dean is Dr. George H. Meeker.

CHOICE OF A MEDICAL SCHOOL

For the student who has decided to study medicine the first and most important step is the selection of a medical school; a false step here may handicap him for life.

Before choosing a medical school the student should obtain information in regard to its requirements of preliminary education; the character of its teaching; its classification; the

tuition fees charged and—most important—whether or not its diplomas are recognized by all state medical boards.

ADEQUATE ENTRANCE QUALIFICATIONS

The student should make sure that his preliminary education is sufficient to meet the requirements of the state licensing boards of the country. He should know that at the present time thirty-six¹ state licensing boards (73 per cent.) require that before beginning the study of medicine the student must have completed *two years* of work in an approved college of liberal arts, in addition to a four-year high school education.² Although he may not at first seek a license in one of these thirty-five states, he may later miss a great opportunity by being thus debarred. He should know also that all the better medical colleges now require this higher preliminary education, since—most important of all—the student needs it to understand and master the difficult and complex subjects of the modern medical college course. Lower entrance requirements by any medical college, therefore, should be regarded as an indication that the medical training furnished will be correspondingly low.

BETTER MEDICAL TRAINING ESSENTIAL

Medicine is now based on scientific knowledge, without which any physician will be seriously handicapped. Adequate instruction in the recognition, treatment and prevention of diseases can be given only in acceptable (Class A) medical schools, which have expert teachers, well-equipped laboratories, and dispensaries and hospitals where the student at the bedside can study patients having all varieties of sickness and injuries.

IS THE MEDICAL COLLEGE RECOGNIZED?

Formerly a course in almost any medical college furnished an adequate qualification for the license to practice medicine in all states. At present, however, state licensing boards are refusing to recognize medical colleges which are deemed not properly equipped to furnish a training in modern medicine. The student should know that the diplomas granted by some medical schools are not recognized in as high as from 40 to 46 states.³ A diploma from one of these medical colleges, therefore, would not qualify him to practice medicine in any of those states. The student must make sure, not only that he has adequate preliminary education, but also that he has secured his medical training in a college recognized in all states.

CONSIDER CAREFULLY THE COST

The student, of course, is bound to consider the expense of his medical training, and herein lies the bait by which some inferior colleges which profess deep interest in "the poor boy" endeavor to attract students. If the training is not thorough and up to date, the student should know that the training furnished will be a mighty poor investment at any price. As a matter of fact, and as may be noted in Table 1, (opp. p. 25), the total fees charged by some of the best (Class A) medical colleges, particularly the medical departments of some state universities, are lower than those charged by some of the poorly equipped (Class C) institutions which are not recognized by the majority of state licensing boards.

In the same length of time, therefore, and often for even lower fees than he would pay in a poorly equipped institution, the student may acquire his education in one of the best medical colleges of the land. Although some of the better schools do charge higher fees, they spend on each student per year several times the amount of money that the student pays for tuition. This they are able to do because of their larger incomes from endowments or state aid. It would be poor economy, therefore, for a student to enter a low-grade college whose diplomas are not recognized in the majority of states, when for a few additional dollars each year he can enter a thoroughly equipped institution, receive a far better medical training and obtain a diploma recognized everywhere. Even if one should be required to work one's way through, in whole or in part, the opportunities for doing so are usually more abundant in the better than in the lower standard colleges.

1. These states are listed on page 537.

2. The courses required and recommended in the high school and two-year premedical college courses are set forth on pages 541-542.

3. See Table D in THE JOURNAL A. M. A., April 30, 1921, page 1240.

As a rule, however, the student who works his way through college appreciates not only the value of money, but also the value of the medical course he is getting, and many such students are found in the high-grade medical colleges. There are now over 300 free scholarships, as well as generous loan funds, available for deserving students in the better medical colleges.⁴

GET RELIABLE INFORMATION

How may the student secure reliable information on these matters? Some medical colleges advertise extensively in newspapers and popular magazines and through announcements and circulars containing exaggerated, if not misleading, statements. *Of course, such advertisements do not show the more important fact that their diplomas are reported as not recognized in from 40 to 46 states.* It is essential, therefore, that the student should secure information from impartial and reliable sources, so as to make sure he is not enticed into a low-grade institution. To inform himself thoroughly, therefore, he should not depend alone on the announcements of the medical schools. After extensive and repeated investigations the medical schools of the country have been rated by the Council in three classes, namely, A, B and C, according to their degree of excellence.⁵ If the student is otherwise in doubt, he will not make a mistake by choosing one of the colleges in Class A. By so doing he will not only obtain a better training in medicine but also, after graduation, will be eligible to secure a license in any state he may choose.

A STRONG AND SURE FOUNDATION

In his preliminary and medical education the student should bear in mind that he is *laying the foundation for the rest of his life.* If he finds that additional preliminary education is needed to enter one of the better medical colleges, he should consider the time well spent, since he is all the more sure of having laid a solid foundation. Although all professions in this country are crowded, there is always room for the thoroughly competent. On the other hand, the student will be disappointed if, because of lower entrance requirements or other allurements, he is induced to get his training in a poorly equipped college and finds after graduation that his diploma is not recognized in many states, and that otherwise he is handicapped for life.

AVOID CULTS AND FADS

Among the worst pitfalls confronting the present day student is the number of institutions representing various unscientific, or pseudo-scientific cults, such as osteopathy, chiropractic, etc., which profess to train those who desire to treat human ailments.⁶ Medical knowledge is now based on scientific facts and there is no longer room for the differences of opinion which in earlier days were justifiable. Our medical schools are now the medical departments of universities of long established reputation—the best evidence that medicine as taught in medical schools is recognized as reliable. The theories advanced by osteopaths, chiropractors and other unscientific fads, however, have received no such endorsements and there is no acceptable proof of their having a reliable foundation. No one can afford to confine his training to the narrow theories held by any cult but should obtain a thorough, all-around scientific training by which he will be prepared to care intelligently for any form of human ailment or disorder which presents itself and to apply skillfully any form of treatment which each particular patient may require. One must have a thorough training in *all the fundamentals of medicine* before he can intelligently employ any particular method of treatment, even as the member of an orchestra must have a thorough training in all the fundamentals of music before he can play any particular instrument in that orchestra. One must first become a good general practitioner of medicine; then if he wishes to specialize along any particular line he will naturally secure further training for such specialty.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

SCHEDULE FOR GRADING MEDICAL SCHOOLS

After careful inspection, medical schools are rated on a civil service basis on a scale of 100 points. Data relating to each school will be grouped under four general heads in such manner that the groups will have as nearly equal importance as possible, each group being allowed a possible 25 points. The revised schedule under the four general heads is as follows:

1. **FACULTY.**—Number; qualifications (standing in profession, evidences of special training, teaching experience, etc.); research ability; efficiency; proportion of time to teaching; proportion to student enrollment; organization of departments; completeness of department staffs, including dieners, employees, etc.; esprit de corps.

2. **PRODUCT.**—Qualifications of students admitted; student organizations; esprit de corps; records of graduates before state and national boards; research; articles written; excellence as teachers; membership in medical organizations; reputation in profession; other evidences of character of training; reputation of college.

3. **ADMINISTRATION AND SUPERVISION.**—Curriculum: grade of course; sequence of subjects; arrangement of subjects in class roster and by departments in annual announcements; completeness of curriculum. Division of students in sections, ward classes, etc. Efficiency of routine. Faculty meetings. Supervision of entrance requirements, of teaching in college and in dispensary and hospital. Records: entrance requirements; class grades; promotion of students; dispensary and hospital records; attendance of teachers and students; conditions, etc.; completeness. Budget: use made of funds; proportion to salaries, etc.

4. **BUILDINGS AND EQUIPMENT.**—College building, including class rooms, laboratories, library, museum, storage rooms, animal houses and their contents. Dispensary: rooms used for; accessibility; number and regularity of staff; quantity and use of clinical material; character of histories and records. Hospital: accessibility; ownership or control; quantity, variety and use of clinical material. Other equipment. Apparatus. Funds: in addition to students' fees; endowed chairs, fellowships, etc.

Medical schools containing 70 per cent. or above are rated in Class A, those obtaining from 50 to 70 per cent. in Class B, and those obtaining 50 per cent. or less in Class C.

MEANING OF CLASSES A, B AND C

Class A Colleges are those which are acceptable; Class B, those which, under their present organization, give promise of being made acceptable by general improvements, and Class C those

(a) Which require a complete reorganization to make them acceptable.

(b) Which do not keep satisfactory records of their students in regard to entrance requirements, attendance, grades in courses, division into classes and reasons for promotion.

(c) Which do not enforce their requirements in regard to admission (including those admitted to advanced standing), promotion and graduation.

(d) Which give the major portion of their instruction after 4 o'clock in the afternoon.

(e) Which are privately owned and conducted for profit.

(f) Which for other specific reasons are not eligible for inclusion in Class B.

ESSENTIALS OF AN ACCEPTABLE MEDICAL COLLEGE

Revised to July 1, 1921

1. The minimum requirement for admission to an acceptable medical college is a four-year high school education or its full equivalent and two years of work in a college of arts and sciences approved by the Council on Medical Education and Hospitals, as follows:

I. HIGH SCHOOL REQUIREMENTS

(a) For admission to the two-year premedical college course, students shall have completed a four-year course of at least fifteen units in a standard accredited high school or other institution of standard secondary school grade, or have the equivalent as demonstrated by examinations conducted by the College Entrance Examination Board, or by the authorized examiner of a standard college or university approved by

4. A list of colleges which provide scholarships and loan funds will be found on page 537.

5. See classification on page 544.

6. Special pamphlets, bearing on the various pseudo-medical or so-called "drugless" cults, will be furnished on application.

the Council on Medical Education and Hospitals. A detailed statement of attendance at the secondary school, and a transcript of the student's work, should be kept on file by the college authorities. This evidence of actual attendance at the secondary schools should be obtained, no matter whether the student is admitted to the freshman or to higher classes.

(b) Credits for admission to the premedical college course may be granted for the subjects shown in the following list and for any other subject counted by a standard accredited high school as a part of the requirements for its diploma, provided that at least eleven units must be offered in Groups I-V:

SCHEDULE OF SUBJECTS REQUIRED OR ACCEPTED
FOR ENTRANCE TO THE PREMEDICAL
COLLEGE COURSE

Subjects	Units *	Required
GROUP I, ENGLISH—		
Literature and composition.....	3-4	3
GROUP II, FOREIGN LANGUAGES—		
Latin	1-4	2†
Greek	1-3	
French or German.....	1-4	
Other foreign languages.....	1-4	
GROUP III, MATHEMATICS—		
Elementary algebra	1	1
Advanced algebra	½-1	..
Plane geometry	1	1
Solid geometry	½	..
Trigonometry	½	..
GROUP IV, HISTORY—		
Ancient history	½-1	1
Medieval and modern history.....	½-1	
English history	½-1	
American history	½-1	
Civil government	½-1	
GROUP V, SCIENCE—		
Botany	½-1	..
Zoology	½-1	..
Chemistry	1	..
Physics	1	..
Physiography	½-1	..
Physiology	½-1	..
Astronomy	½	..
Geology	½-1	..
GROUP VI, MISCELLANEOUS—		
Agriculture	1-2	..
Bookkeeping	½-1	..
Business law	½	..
Commercial geography	½-1	..
Domestic science	1-2	..
Drawing, freehand and mechanical.....	½-2	..
Economics and economic history.....	½-1	..
Manual training	1-2	..
Music: Appreciation or harmony.....	1-2	..

* A unit is the credit value of at least thirty-six weeks' work of four or five recitation periods per week, each recitation period to be not less than forty minutes. In other words a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

† Both of the required units of foreign language must be of the same language, but the two units may be presented in any one of the languages specified.

Of the fifteen units of high school work, eight units are required, as indicated in the foregoing schedule; the balance may be made up from any of the other subjects in the schedule.

II. PREMEDICAL COLLEGE COURSE

(c) The minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, will be sixty semester hours of collegiate work, extending through two years, of thirty-two weeks each, exclusive of holidays, in a college approved by the Council on Medical Education and Hospitals. The subjects included in the two years of college work should be in accordance with the following schedule:

SCHEDULE OF SUBJECTS OF THE TWO-YEAR PREMEDICAL
COLLEGE COURSE

Required Subjects:	Sixty Semester Hours* Required	Semester Hours
Chemistry (a)		12
Physics (b)		8
Biology (c)		8
English composition and literature (d).....		6
Other nonscience subjects (e).....		12

Subjects Strongly Urged:

A modern foreign language (f).....	6-12
Advanced botany or advanced zoology.....	3-6
Psychology	3-6
Advanced mathematics, including algebra and trigonometry	3-6
Additional courses in chemistry.....	3-6

Other Suggested Electives:

English (additional), economics, history, sociology, political science, logic, mathematics, Latin, Greek, drawing.

* A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be not less than fifty minutes net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period.

SUGGESTIONS REGARDING INDIVIDUAL SUBJECTS

(a) *Chemistry*.—Twelve semester hours required of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work. In the interpretation of this rule work in qualitative analysis may be counted as general inorganic chemistry. The remaining four semester hours may consist of additional work in general chemistry or of work in analytic or organic chemistry. After Jan. 1, 1922, organic chemistry will be required.

(b) *Physics*.—Eight semester hours required, of which at least two must be laboratory work. It is urged that this course be preceded by a course in trigonometry.

(c) *Biology*.—Eight semester hours required, of which four must consist of laboratory work. This requirement may be satisfied by a course of eight semester hours in either general biology or zoology, or by courses of four semester hours each in zoology and botany, but not by botany alone.

(d) *English Composition and Literature*.—The usual introductory college course of six semester hours, or its equivalent, is required.

(e) *Nonscience Subjects*.—Of the sixty semester hours required as the measurement of two years of college work, at least eighteen, including the six semester hours of English, should be in subjects other than the physical, chemical or biologic sciences.

(f) *Foreign Language*.—A reading knowledge of a modern foreign language is strongly urged. French and German have the closest bearing on modern medical literature. If the reading knowledge in one of these languages is obtained on the basis of high school work, the student is urged to take the other language in his college course. It is not considered advisable, however, to spend more than twelve of the required sixty semester hours on foreign languages.

Recognition.—This two-year premedical course in both quantity and quality must be such as to make it acceptable as the equivalent of the first two years of the course in reputable, approved colleges of arts and sciences leading to the degree of Bachelor of Science.

APPROVED COLLEGES OF ARTS AND SCIENCES

A tentative list of colleges of arts and sciences approved by the Council on Medical Education and Hospitals has been prepared, and will be occasionally revised. By an approved college (of arts and sciences) is meant one whose standing has been vouched for by some standardizing agency in whose methods the Council has confidence.

PREMEDICAL COURSES IN MEDICAL COLLEGES—
JUNIOR COLLEGES

Premedical college courses given in or by medical schools, by normal schools, or advance years taken in high schools, will not be considered as acceptable unless they have been investigated and approved by some association of colleges and secondary schools or other approved agency having to do with the standardizing of liberal arts colleges, and unless they are found to be a full equivalent of the first two years of the course leading to the Bachelor of Science degree.

III. THE MEDICAL SCHOOL

ADMINISTRATION OF ENTRANCE REQUIREMENTS

2. The admission of students to the medical school must be in the hands of a responsible committee or examiner whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the medical school is an integral part of the university, this work usually devolves on

the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file documentary evidence of each student's preliminary education, including both high school and collegiate work. The records should show especially that the required amount of work in the premedical sciences, including laboratory experiments, has been completed.

OTHER MEDICAL SCHOOL REQUIREMENTS

3. The college should require that students be in actual attendance in the college *within the first week* of each annual session and thereafter.

4. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and no credit should be given for any course where the attendance has been less than 80 per cent. of the full time.

5. (a) Full advanced standing may be granted to students only for work done in other acceptable medical schools, and in granting advanced standing there should be no discrimination against the college's full-course students. Official verification of the student's previous medical work should be obtained by direct correspondence with the college previously attended, and his preliminary qualifications should also be verified and recorded the same as for freshman students.

(b) In *exceptional cases* students who possess the required premedical qualifications and who have completed three or more years of work in Class B medical schools may be given advanced standing but not higher than *entrance* to the third year (junior) class, and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (c) In *exceptional cases* also students who possess the required premedical qualifications and who have completed three or more years of work in Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class, and then only after thorough examinations in all first year subjects have been passed.

SUPERVISION, EQUIPMENT, TEACHERS

6. There should be careful and intelligent supervision of the entire school by the dean or other executive officer who holds, and has sufficient authority to carry out fair ideals of medical education as determined by the present day knowledge of medicine.

7. There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students, and the postmortem cases used in teaching.

8. The college curriculum should be fully graded and should cover four sessions of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work. The courses offered in the various subjects should be set forth by departments (anatomy, physiology, etc.) in the annual announcement, showing for each course its number, subject, content, character (lecture, recitation, laboratory or clinic), length of time, when, where, and by whom given, and the amount of credit allowed. The courses for each class should also be clearly set forth in a printed class schedule, for the guidance of the students.

(a) The college should give two years of work consisting largely of laboratory work in well equipped laboratories of anatomy, histology, embryology, physiology, physiologic chemistry, bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

(b) Two years of clinical work, largely in hospitals and dispensaries, with courses in medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery

(including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence. With the higher entrance requirements time is now available in the latter part of the second year for beginning courses in physical diagnosis and the principles of surgery.

(c) As soon as conditions warrant, relations should be established with a number of approved hospitals so that a fifth undergraduate year may be required to be spent by the student as an intern under the continued supervision of the medical school.

FACULTY

9. (a) The college should provide at least *eight expert thoroughly trained professors in the laboratory branches*, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects.⁷ For colleges having *sixty students or less* in each class, there should be at least one full-time salaried assistant each in the departments of (1) anatomy, (2) physiology, (3) pathology and bacteriology, and (4) physiologic chemistry and pharmacology. There should be also one additional assistant provided in each of these departments for *each additional thirty students enrolled*. This represents a low average of the full-time assistants already employed by the acceptable medical colleges.

(b) The faculty should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Nonmedical men should be selected as teachers in medical schools only under exceptional circumstances and only when medical men of equal special capacity are not available. The faculty should be organized, each department having its head professor, its associate professor, assistant professor, instructor, etc., each having his particular subjects for the teaching of which he is responsible to the head of the department.

CLINICAL FACILITIES AND INSTRUCTION

10. (a) The college should own or entirely control a hospital in order that students may come into close and extended contract with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students or less) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material *bed-side and ward clinics* should be developed for sections of from five to ten students, and for the seniors, a certain number of patients in medicine, surgery and the specialties should be assigned to each student under a well supervised clinical clerk system. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.

(b) The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

(c) The college should own or control a dispensary, or outpatient department, the attendance to be a daily average of 100 patients (visits) (for senior classes of 100 students or less), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be prompt and regular in attendance.

7. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is suggested that four of these professors be placed at the head of the departments of (a) anatomy, (b) physiology and physiologic chemistry, (c) pathology and bacteriology, and (d) pharmacology and therapeutics. The other four might with advantage be assigned, one each, to (e) histology and embryology, under the department of anatomy, and to the department of (f) pathology and bacteriology, and (g) physiology and pharmacology, and to the departments of (h) either internal medicine or surgery.

(d) At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

(e) Facilities should be provided for at least thirty necropsies (for senior classes of 100 students or less) during each college session which are attended and participated in by senior students. These, as a rule, should be in the teaching hospital controlled by the medical school and performed by the professor of pathology. The so-called clinical-pathologic conferences should be more widely developed in connection with the postmortems.

OTHER TEACHING FACILITIES AND FINANCES

11. The college should have a working medical library, to include the more modern text and reference books with the *Index Medicus*, the Surgeon-General's Index and other serviceable indexes. The library should receive regularly thirty or more leading medical periodicals, the current numbers of which should be in racks or on tables easily accessible to the students. At the end of each year these periodicals should be bound and added to the files of bound periodicals. The library room should be properly lighted and heated, and open during all or the greater part of the day; it should be equipped with suitable card indexes as well as with tables and chairs, and have a competent librarian in charge.

12. There should be a working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from postmortems there also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

13. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver, to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

14. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent needless suffering, and work by students should be carefully supervised.

15. Each college should have a supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins; dummies for use in bandaging, a roentgen-ray and other apparatus now so generally used in medical teaching.

16. The college should show evidences of thorough organization and of reasonably modern methods in all departments, and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

17. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

18. Statistics show⁸ that modern medicine cannot be acceptably taught by a medical school depending solely on the income from students' fees. No medical school should expect to secure admission to, or be retained in Class A, therefore, which does not have an annual income of at least \$25,000 in addition to the amount obtained from students' fees.

CLASSIFICATION OF MEDICAL COLLEGES

Revised to July 1, 1921

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ARKANSAS

University of Arkansas Medical Department*¹...Little Rock

CALIFORNIA

Leland Stanford Junior Univ. School of Med...San Francisco
University of California Medical School.....San Francisco

COLORADO

University of Colorado School of Med.....Boulder-Denver

CONNECTICUT

Yale University School of Medicine.....New Haven

DISTRICT OF COLUMBIA

Georgetown University School of Medicine.....Washington
George Washington University Medical School...Washington
Howard University School of Medicine².....Washington

GEORGIA

Emory University School of Medicine³.....Atlanta
University of Georgia Medical Department⁴.....Augusta

ILLINOIS

Loyola University School of Medicine⁵.....Chicago
Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois College of Medicine.....Chicago

INDIANA

Indiana Univ. School of Med.....Bloomington-Indianapolis

IOWA

State University of Iowa College of Medicine....Iowa City

KANSAS

University of Kansas School of Med.....Lawrence-Rosedale

KENTUCKY

University of Louisville Medical Department⁶....Louisville

LOUISIANA

Tulane Univ. of Louisiana School of Med.....New Orleans

MARYLAND

Johns Hopkins University Medical Department...Baltimore
University of Maryland School of Medicine and
the College of Physicians and Surgeons.....Baltimore

MASSACHUSETTS

Boston University School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

MICHIGAN

Detroit College of Medicine and Surgery⁷.....Detroit
University of Michigan Medical School.....Ann Arbor
University of Mich. Homeopathic Med. School....Ann Arbor

MINNESOTA

University of Minnesota Medical School.....Minneapolis

MISSISSIPPI

University of Mississippi School of Medicine*.....Oxford

MISSOURI

St. Louis University School of Medicine.....St. Louis
University of Missouri School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

NEBRASKA

John A. Creighton Medical College⁸.....Omaha
University of Nebraska College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

* Gives only the first two years of the medical course.

1. Raised to Class A, June 9, 1919.

2. Rating raised to Class A June 6, 1910.

3. Rating raised to Class A Feb. 24, 1914; formerly the Atlanta Medical College.

4. Class A rating restored Feb. 24, 1913.

5. Rating raised to Class A March 1, 1920.

6. Rating raised to Class A June 6, 1910.

7. Class A rating restored June 21, 1914.

8. Class A rating restored Feb. 4, 1917.

8. See "Medical College Finances," J. A. M. A., April 8, 1916, p. 1115.

NEW YORK

Albany Medical College.....Albany
Columbia Univ. Coll. of Phys. and Surgs....New York City
Cornell University Medical College.....New York City
Long Island College Hospital⁹.....Brooklyn
Syracuse University College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo Department of Medicine.....Buffalo

NORTH CAROLINA

University of North Carolina School of Med.*...Chapel Hill
Wake Forest College School of Medicine*....Wake Forest

NORTH DAKOTA

University of North Dakota School of Medicine*..University

OHIO

Ohio State University College of Medicine.....Columbus
University of Cincinnati College of Medicine.....Cincinnati
Western Reserve University School of Medicine....Cleveland

OKLAHOMA

Univ. of Oklahoma School of Med.¹⁰..Norman-Oklahoma City

OREGON

University of Oregon Medical School.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
University of Pennsylvania School of Med.....Philadelphia
University of Pittsburgh School of Medicine¹¹....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina¹²..Charleston

SOUTH DAKOTA

University of South Dakota College of Medicine*..Vermilion

TENNESSEE

University of Tennessee College of Medicine¹³.....Memphis
Vanderbilt University Medical Department.....Nashville

TEXAS

Baylor University College of Medicine¹⁴.....Dallas
University of Texas Department of Medicine.....Galveston

UTAH

University of Utah School of Medicine*.....Salt Lake City

VERMONT

University of Vermont College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia Department of Med...Charlottesville

WEST VIRGINIA

West Virginia Univ. School of Medicine*¹⁵.....Morgantown

WISCONSIN

Marquette University School of Medicine¹⁶.....Milwaukee
University of Wisconsin Medical School*.....Madison
Total, 68.

CLASS B—COLLEGES NEEDING GENERAL
IMPROVEMENTS TO BE MADE
ACCEPTABLE

CALIFORNIA

College of Medical Evangelists¹⁷...Loma Linda-Los Angeles

ILLINOIS

Hahnemann Medical College and Hospital¹⁸.....Chicago

NEW YORK

New York Homeopathic Medical College and
Flower Hospital¹⁹.....New York City

OHIO

Eclectic Medical College.....Cincinnati
Ohio State Univ. Coll. of Homeopathic Med²⁰.....Columbus

PENNSYLVANIA

Temple University Department of Medicine²¹...Philadelphia

TENNESSEE

Meharry Medical College²².....Nashville
Total, 7.

CLASS C—COLLEGES REQUIRING A COMPLETE
REORGANIZATION TO MAKE THEM
ACCEPTABLE

ILLINOIS

Chicago Medical School²³.....Chicago

MASSACHUSETTS

College of Physicians and Surgeons²⁴.....Boston
Middlesex College of Medicine and Surgery²⁵....Cambridge

MISSOURI

Kansas City University of Phys. and Surgs.²⁶...Kansas City
St. Louis College of Physicians and Surgeons²⁷....St. Louis

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis

UNCLASSIFIED

University of Alabama School of Medicine.....Tuscaloosa

In 1920 this medical school was moved from Mobile to the campus of the University in Tuscaloosa where it is being reorganized as a two-year medical school. For the season of 1920-21 it enrolled only first year medical students for whom ample teachers, laboratories and equipment were provided. In the session for 1921-22 it is announced that both first-year and second-year students will be enrolled. The rating of the school is withheld until an inspection shall show that full provision for these two classes has been made.

Kansas City College of Medicine and Surgery...Kansas City

This college is an offshoot of another Class C institution, the Eclectic Medical University, which has since ceased to exist. The new college has refused to have inspections made, but an abundance of information on file indicates that no rating higher than Class C could be given it. It is reported as not recognized by the licensing boards of forty states, including its home state—Missouri.

Entrance Requirements of Medical Colleges

Seventy-seven medical schools are now requiring, as a minimum for entrance, *two years* or more of work in a college of liberal arts in addition to a four-year high-school education, and voluntarily submit reports to the Council by which the enforcement of their published requirements may be verified. The years when each college puts into effect, respectively, the one-year and the two-year requirements, and the rating of each college, are as follows:

College	ALABAMA		One Year	Two Years	College Rating
University of Alabama School of Medicine.....	1914	1915			
ARKANSAS					
University of Arkansas Medical Department.....	1915	1918			A
CALIFORNIA					
College of Medical Evangelists.....	1914	1915			B
Leland Stanford Junior School of Medicine.....	....	1909			A
University of California Medical School.....	....	1905			A

19. Rating dropped to Class B Feb. 15, 1915.

20. Rating raised to Class B Feb. 4, 1917.

21. Rating raised to Class B June 6, 1910.

22. Rating dropped to Class B Feb. 24, 1914.

23. Formerly the Chicago Hospital College of Medicine. Last inspected April 23, 1918.

24. Rated in Class C since 1907. Last inspected Jan. 7, 1918.

25. This is the medical department of the so-called "University of Massachusetts." It was rated in Class C Feb. 4, 1918.

26. Formerly the Central College of Osteopathy; in 1917 under an amended charter took the name of Central College Medical Department; assumed present title in 1918. Rated in Class C March 15, 1918.

27. Rating dropped to Class C July 1, 1909. In 1915 it merged with the Medical Department of the National University of Arts and Sciences, but in 1917 it was reestablished. In 1918 reported not recognized by the Missouri State Board of Health.

* Gives only the first two years of the medical course.

9. Class A rating restored June 21, 1914.

10. Rating raised to Class A March 1, 1920.

11. Rating raised to Class A June 6, 1910.

12. Class A rating restored Feb. 6, 1916.

13. Rating raised to Class A June 21, 1914.

14. Rating raised to Class A June 12, 1916.

15. Class A rating restored Feb. 4, 1917.

16. Rating raised to Class A Feb. 15, 1915.

17. Rating raised to Class B Feb. 3, 1918.

18. Rating dropped to Class B June 3, 1912.

COLORADO				
University of Colorado School of Medicine.....	....	1910	A	

CONNECTICUT				
Yale University School of Medicine.....	....	1909	A	

DISTRICT OF COLUMBIA				
Georgetown University School of Medicine.....	....	1912	A	
George Washington University Medical School....	1914	1918	A	
Howard University School of Medicine.....	1910	1914	A	

GEORGIA				
Emory University School of Medicine, Atlanta....	1914	1918	A	
University of Georgia Medical Department.....	1914	1918	A	

ILLINOIS				
Loyola University School of Medicine.....	1915	1918	A	
Hahnemann Medical College and Hospital.....	1914	1916	B	
Northwestern University Medical School.....	1908	1911	A	
Rush Medical College (University of Chicago)....	....	1904	A	
University of Illinois College of Medicine.....	1913	1914	A	

INDIANA				
Indiana University School of Medicine.....	1909	1910	A	

IOWA				
State University of Iowa College of Medicine....	1909	1910	A	

KANSAS				
University of Kansas School of Medicine.....	....	1909	A	

KENTUCKY				
University of Louisville Medical Department.....	1914	1918	A	

LOUISIANA				
Tulane University of Louisiana School of Medicine	1910	1918	A	

MARYLAND				
Johns Hopkins University Medical Department....	....	1893	A	
University of Maryland School of Medicine and College of Physicians and Surgeons.....	1914	1918	A	

MASSACHUSETTS				
Boston University School of Medicine.....	1914	1916	A	
Medical School of Harvard University.....	....	1900	A	
Tufts College Medical School.....	1914	1918	A	

MICHIGAN				
Detroit College of Medicine and Surgery.....	1914	1918	A	
University of Michigan Medical School.....	....	1909	A	
University of Michigan Homeopathic Medical School	1912	1916	A	

MINNESOTA				
University of Minnesota Medical School.....	....	1907	A	

MISSISSIPPI				
University of Mississippi School of Medicine.....	1914	1918	A	

MISSOURI				
St. Louis University School of Medicine.....	1910	1918	A	
University of Missouri School of Medicine.....	1906	1910	A	
Washington University Medical School.....	1910	1912	A	

NEBRASKA				
John A. Creighton Medical College.....	1914	1918	A	
University of Nebraska College of Medicine.....	1908	1909	A	

NEW HAMPSHIRE				
Dartmouth Medical School.....	....	1910	A	

NEW YORK				
Albany Medical College.....	1914	1918	A	
Columbia University College of Phys. and Surg....	....	1910	A	
Cornell University Medical College.....	....	1908	A	
Long Island College Hospital.....	1914	1918	A	
New York Homeo. Med. Coll. and Flower Hospital.	1915	1919	B	
Syracuse University College of Medicine.....	1909	1910	A	
University and Bellevue Hospital Medical College..	1912	1918	A	
University of Buffalo Department of Medicine.....	1914	1918	A	

NORTH CAROLINA				
Wake Forest College School of Medicine.....	....	1908	A	
University of North Carolina School of Medicine..	1910	1917	A	

NORTH DAKOTA				
University of North Dakota School of Medicine...	....	1907	A	

OHIO				
Eclectic Medical College.....	1915	1918	B	
Ohio State University College of Medicine.....	1914	1915	A	
Ohio State Univ. Coll. of Homeopathic Medicine..	1915	1916	B	
University of Cincinnati College of Medicine.....	1910	1913	A	
Western Reserve University School of Medicine...	....	1901	A	

OKLAHOMA				
University of Oklahoma School of Medicine.....	1914	1917	A	

OREGON				
University of Oregon Department of Medicine.....	1910	1915	A	

PENNSYLVANIA				
Hahnemann Medical College and Hospital.....	1914	1917	A	
Jefferson Medical College.....	1914	1917	A	
Temple University Medical Department.....			B	

University of Pennsylvania School of Medicine...	1909	1910	A
University of Pittsburgh School of Medicine.....	1911	1913	A
Woman's Medical College of Pennsylvania.....	1914	1915	A

SOUTH CAROLINA				
Medical College of the State of South Carolina...	1914	1916	A	

SOUTH DAKOTA				
University of South Dakota College of Medicine..	1908	1909	A	

TENNESSEE				
Meharry Medical College.....	1914	1918	B	
Vanderbilt University Medical Department.....	1914	1918	A	
University of Tennessee College of Medicine.....	1914	1918	A	

TEXAS				
Baylor University College of Medicine.....	1913	1918	A	
University of Texas Department of Medicine.....	1910	1917	A	

UTAH				
University of Utah School of Medicine.....	1909	1910	A	

VERMONT				
University of Vermont College of Medicine.....	1912	1918	A	

VIRGINIA				
Medical College of Virginia.....	1914	1915	A	
University of Virginia Department of Medicine...	1910	1917	A	

WEST VIRGINIA				
West Virginia University School of Medicine.....	1911	1917	A	

WISCONSIN				
Marquette University School of Medicine.....	1913	1915	A	
University of Wisconsin Medical School.....	....	1907	A	
Total, 76.				

The eight following medical colleges either have not announced the higher entrance requirements or such evidence as has been received does not show they have been enforced for all students enrolled:

	Rating
Chicago Medical School.....	C
College of Physicians and Surgeons, Boston.....	C
Middlesex College of Medicine and Surgery, Cambridge, Mass...	C
Kansas City College of Medicine and Surgery.....	*
Kansas City University of Physicians and Surgeons.....	C†
St. Louis College of Physicians and Surgeons.....	C
Temple University Department of Medicine.....	C
University of West Tenn. Coll. of Med. and Surg., Memphis....	C

* This college is an offshoot of the Eclectic Medical University; has refused to have an inspection made. It is reported not recognized by the Missouri State Board of Health and by licensing boards of 39 other states.

† This college was formerly the Central College of Osteopathy; in 1916 it assumed the title Central College Medical Department, and took its present name in 1918.

Hospital Intern Year

Ten medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School.....	1910-11	1915
Leland Stanford Junior Univ. School of Med....	1914-15	1919
Rush Medical College (University of Chicago)....	1914-15	1919
University of California Medical School.....	1914-15	1919
Northwestern University Medical School.....	1915-16	1920
Marquette University School of Medicine.....	1915-16	1920
University of Illinois College of Medicine.....	1917-18	1922
Loyola University School of Medicine	1917-18	1922
Coll. of Phys. and Surgs., Los Angeles.....	1918-19	1923
Detroit College of Medicine and Surgery.....	1919-20	1924

The hospital intern year has been adopted as an essential qualification for the license to practice in ten states, becoming effective in different years, as follows:

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1917
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1917-18	1922
Michigan	1917-18	1922
Iowa	1918-19	1923
Texas	1919-20	1924

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1920. Extract of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's report for 1920. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Ten states, Alaska (Ter.), Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, Texas and Washington, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Alabama, population 2,347,295, has one medical college, the School of Medicine of the University of Alabama, located in Tuscaloosa, a city with a population of 11,996.

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, University Campus, Tuscaloosa.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. The course of study covers two years of thirty-two weeks each. The Dean is Dr. Clyde Brooks. Total registration for 1920-1921 was 26. The fifty-sixth session begins Sept. 7, 1921, and ends May 20, 1922.

ARKANSAS

Arkansas, population 1,750,995, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 65,030. It gives the courses of only the first two years of the medical course.

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work, including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1919. The faculty consists of 13 professors and 7 lecturers and assistants, total 20. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The course of study covers two years of thirty-two weeks each. The fees are \$50 each year. The Dean is Dr. Morgan Smith. Total registration 1920-1921 was 22. The forty-third session begins Sept. 19, 1921, and ends June 7, 1922.

CALIFORNIA

California, population 3,426,536, has three medical colleges. Two are located in San Francisco, a city of 506,775 inhabitants. They are Leland Stanford Junior University School of Medicine and the College of Medicine of the University of California. The College of Medical Evangelists is located at Loma Linda and Los Angeles, the latter city having a population of 576,673.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students must complete at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1864. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided. Three years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 49 professors and 159 associates and assistants, a total of 208. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are \$290, \$235, \$210 and \$200; nonresidents are charged \$175 additional each year. Total registration for 1920-1921 was 213; graduates, 30. The forty-ninth session begins Aug. 15, 1921, and ends May 10, 1922.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The faculty numbers 109. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. The faculty is composed of 55 professors and 54 associates and assistants, a total of 109. The course extends over four years of nine months each. Two years of college work are required for admission. The total fees for the four years, respectively, are \$236, \$231, \$211 and \$211. The Dean is Dr. P. T. Magan, Los Angeles. The total registration for 1920-1921 was 169; graduates, 20. This college taught also 28 students of the College of Physicians and Surgeons of Los Angeles, 14 of whom obtained degrees from the latter college, and 6 students of the College of Physicians and Surgeons of San Francisco, 5 of whom were granted degrees from the last named institution. The thirteenth session begins Aug. 28, 1921, and ends May 9, 1922.

San Francisco-Palo Alto

LELAND STANFORD JUNIOR UNIVERSITY SCHOOL OF MEDICINE, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. The faculty consists of 53 professors and 61 lecturers, assistants, etc., a total of 114. Three years of collegiate work are required for admission. The school has the quarter system and the completion of any three quarters constitutes a college year. The course covers five years of nine months each, including a year of practical or intern work. The total fees for each of the first four years is \$261. The Dean is Dr. W. Ophüls, San Francisco. The total registration for 1920-1921 was 161; graduates, 17. The twelfth session begins Oct. 1, 1921, and ends June 17, 1922.

COLORADO

Colorado, with a population of 939,376, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 256,491.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or nongraduate, to try the board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, or indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least two years' study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. The faculty embraces 37 professors and 27 lecturers, instructors and assistants, a total of 64. The work embraces a graded course of four years of nine months each. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The fees for residents of Colorado, for each of the four years, are, respectively, \$106, \$106, \$98 and \$93, and \$30 more each year for nonresidents. The Dean is Dr. Charles N. Meader. The total registration for 1920-1921 was 83; graduates, 15. The fortieth session begins Sept. 26, 1921, and ends June 12, 1922.

CONNECTICUT

Connecticut, with a population of 1,380,585, has one medical college, Yale University School of Medicine, located in New Haven, population 162,519.

Students who desire to practice medicine in Connecticut will not be eligible unless, prior to entering the study of medicine, they complete, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 23 professors and 84 lecturers and assistants, a total of 107. The requirements for admission are two years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have two years of French or German. The course covers four years of nine months each. The fees for the four years, respectively, are \$305, \$300, \$300 and \$310. The Dean is Dr. Milton C. Winternitz. The total registration for 1920-1921 was 119, graduates, 16. The one hundred and ninth session begins Sept. 29, 1921, and ends June 21, 1922.

DISTRICT OF COLUMBIA

The District of Columbia, population 437,571, has three medical colleges; George Washington University Medical School, Georgetown University School of Medicine and Howard University School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1335 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 48 professors and 46 instructors, demonstrators and assistants, a total of 94. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The total fees are \$200 each year. The Dean is Dr. William C. Borden. The total registration for 1920-1921 was 114, graduates, 28. The one hundredth session begins Sept. 28, 1921, and ends June 7, 1922.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 54 professors, 45 instructors and assistants; total, 99. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one half months each. The fees for each of the four sessions, respectively, are \$215, \$200, \$200 and \$210. The Dean is Dr. George M. Kober. The registration for 1920-1921 was 172; graduates, 21. The seventy-first session begins Sept. 25, 1921, and ends June 14, 1922.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 15 professors and 24 lecturers and assistants, 39 in all. The admission requirements are two years of collegiate work, including physics, chemistry, botany and zoology, English and two years of French or German. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are \$165, \$155, \$155 and \$162. The Dean is Dr. Edward A. Balloch. Registration for 1920-1921 was 131; graduates, 30. The fifty-fourth session begins Oct. 1, 1921, and ends June 9, 1922.

GEORGIA

Georgia, population 2,894,683 has two medical colleges, University of Georgia Medical Department, located in Augusta, population 52,548, and the Emory University School of Medicine in Atlanta, a city of 200,616.

In order to secure a license to practice medicine in Georgia, students must complete two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine.

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 94 N. Butler Street.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College

(organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for admission. The faculty has 64 professors and 48 associates and assistants, a total of 112. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are \$212, \$195, \$190 and \$215. The Dean is Dr. W. S. Elkin. Total registration for 1920-1921 was 211; graduates, 39. The next session begins Sept. 28, 1921, and ends June 6, 1922.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 16 professors and 29 assistants, 45 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. Fees are \$5 for matriculation and \$60 each year for residents of Georgia and \$150 each year for non-residents. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1920-1921 was 83; graduates, 20. The ninetieth session begins Sept. 14, 1921, and ends May 29, 1922.

ILLINOIS

Illinois, population 6,485,098, has six medical colleges, one of which gives instruction at night, all located in Chicago, a city of 2,701,705 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine, Hahnemann Medical College and Hospital and the Chicago Medical School.

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. Graduates of 1923 and thereafter must complete also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE.—Founded in 1837; organized in 1843; was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 118 professors, 186 associates, instructors, etc., a total of 304. The requirements for admission are two years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison streets. The tuition fees for each of the four years, respectively, are \$230, \$225, \$235 and \$235. The Deans are Dr. Frank Billings and Dr. John M. Dodson. Total registration for 1920-1921 was 703; graduates, 132. The seventy-eighth session begins Oct. 1, 1921, and ends June 14, 1922.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2421 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 67 professors and 105 lecturers and assistants, a total of 172. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are \$225, \$220, \$216 and \$210. The Dean is Dr. Arthur I. Kendall. The total registration for 1920-1921 was 434; graduates, 78. The sixty-second session begins Oct. 4, 1921, and ends June 10, 1922.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 508 S. Honore Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-four weeks each, and a year's internship in an approved hospital. The faculty is composed of 62 professors, 94 assistants and instructors, a total of 156. The total fees for the four years, respectively, are \$165, \$160, \$150 and \$170. The Dean is Dr. Albert C. Eycleshymer. The total registration for 1920-1921 was 320; graduates, 3. The fortieth session begins Sept. 26, 1921, and ends June 14, 1922.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 S. Lincoln St., Chicago. —Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Two years of college work are required for admission. The faculty is composed of 61 professors, 65 assistants and instructors, a total of 126. The total fees for the four years are, respectively, \$165, \$165, \$165 and \$185. The Dean is Dr. Louis D. Moorhead. The total enrolment for 1920-1921 was 244; graduates, 70. The next session begins Oct. 1, 1921, and ends June 15, 1922.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue. —Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 60 professors and 30 lecturers, assistants, etc., a total of 90. Two years of collegiate work are required for admission. The course extends over four years of thirty-four weeks each. The tuition fees for the four years, respectively, are \$166, \$161.50, 176.50 and \$191.50. The Dean is Dr. John C. Blake. The total registration for 1921-1922 was 68; graduates, 11. The sixty-second session begins Sept. 20, 1921, and ends June 15, 1922.

CHICAGO MEDICAL SCHOOL, an afternoon and night school, located at 3832 Rhodes Avenue. —Organized in 1911 as the Chicago Hospital College of Medicine; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Total registration for 1919-1920 was 88; graduates, 25. *Official reports state that the diplomas from this college are not recognized by the licensing boards of forty-two states.*

INDIANA

Indiana, population 2,930,544, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 314,194 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE. —Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. The faculty consists of 63 professors and 87 lecturers, associates and assistants, a total of 150. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are \$125, \$125, \$150 and \$150. Matriculation fee, \$5; microscope fee, \$5 to \$7.50 per semester. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Assistant Dean at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1920-1921 was 251; graduates, 60. The next session begins Sept. 12, 1921, and ends June 7, 1922.

IOWA

Iowa, population 2,403,630, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 11,267.

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus. —Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 35 professors, 27 lecturers, demonstrators and assistants, a total of 62. Two years of collegiate work, including courses in physics, chemistry, biology, French or German and English, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is \$150 per year and for nonresidents \$175, plus a matriculation fee of \$10 and a graduation fee of \$10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1920-1921 was 268; graduates, 46. The fifty-second session begins Sept. 26, 1921, and ends June 6, 1922.

KANSAS

Kansas, population 1,769,257, has one medical college. The School of Medicine of the University of Kansas gives its first

two years in Lawrence, population 12,456, and the last two years in Rosedale, a suburb of Kansas City, which with Kansas City, Mo., have a combined population of 433,261.

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE. —Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 62. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively, \$131, \$131, \$133 and 133. For nonresidents the fees of the first two years are \$141 each year. The Associate Dean is Dr. M. D. Sudler. The total registration for 1920-1921 was 134; graduates, 29. The forty-second session begins Sept. 12, 1921, and ends June 7, 1922.

KENTUCKY

Kentucky, population 2,416,013 has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 234,891 inhabitants.

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, First and Chestnut Streets. —Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. Two years of collegiate work are required for admission. It has a faculty of 32 professors and 85 lecturers and assistants, a total of 117. The course covers four years of thirty-two weeks each. The fees for the four years, respectively, are \$215, \$170, \$175 and \$180. The Dean is Dr. Henry Enos Tuley. The total registration for 1920-1921 was 179; graduates, 49. The next session begins Sept. 20, 1921, and ends June 8, 1922.

LOUISIANA

Louisiana, having a population of 1,797,798, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 387,408.

Students who desire to practice medicine in Louisiana must complete, at an approved college or university, two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street. —Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 35 professors and 128 assistant professors, instructors, demonstrators, etc., a total of 163. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are \$220, \$225, \$215 and \$245. The President is Dr. A. B. Dinwiddie. The total registration for 1920-1921 was 380; graduates, 118. The eighty-seventh session begins Sept. 26, 1921, and ends June 7, 1922.

MARYLAND

Maryland, with a population of 1,449,610, contains two medical colleges, located in Baltimore, a city with 733,826 inhabitants. They are as follows: Johns Hopkins University Medical Department, and the University of Maryland School of Medicine and College of Physicians and Surgeons, the last two having been merged.

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education, must complete at least two years of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 52 professors and 133 clinical professors, etc., a total of 185. The requirements for admission demand that the applicant either has (a) completed the chemical-biologic course which leads to the A.B. degree in the university, or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The total fees are \$267 each year. The Dean is Dr. J. Whitridge Williams. Total registration for 1920-1921 was 363; graduates, 92. The twenty-ninth session begins Oct. 1, 1921, and ends June 13, 1922.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Green Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The faculty consists of 91 professors and 70 instructors and assistants, a total of 161. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees are \$215 each year. The Dean is Dr. J. M. H. Rowland. Total registration for 1920-1921 was 251; graduates, 71. The fifteenth session begins Oct. 1, 1921, and ends June 1, 1922.

MASSACHUSETTS

Massachusetts, population 3,852,356, has five medical colleges: Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 748,060, except the last named, which is in Cambridge, a city of 109,694.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 68 professors and 154 instructors and assistants, a total of 222. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fees for each of the four years are \$330, \$300, \$300 and \$300. The Dean is Dr. David L. Edsall. The total registration for 1920-1921 was 442; graduates, 105. The one hundred and fortieth session begins Sept. 26, 1921, and ends June 22, 1922.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Two years of collegiate work are required for admission. The faculty includes 24 professors, 57 associates, etc., making a total of 81. The course covers four years of thirty-two weeks each. Total fees for each of the four years, respectively, are \$200, \$200, \$200 and \$230. The Dean is Dr. John P. Sutherland. Total registration for 1920-1921 was 122; graduates, 13. The forty-ninth session begins Oct. 6, 1921, and ends June 19, 1922.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 47 professors and 88 assistants, lecturers, etc., a total of 135. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$236, \$221, \$211 and \$216. The Dean is Dr. Charles F. Painter. Total registration for 1920-1921 was 398; graduates, 80. The twenty-sixth session begins Sept. 19, 1921, and ends June 14, 1922.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students during 1920-1921 was about 32. There were 7 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty-two states.*

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in that and other osteopathic colleges. During 1920-1921 it had a total enrollment of 121; graduates, 39. *This college has been reported as not recognized by the licensing boards of forty-three states.*

MICHIGAN

Michigan, population 3,133,678, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 19,516 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 993,739 inhabitants.

Students who desire to practice medicine in Michigan, in addition to an accredited four-year high school education, must complete two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of 38 professors and 62 associates, instructors, etc., a total of 100. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students are \$140 each year and \$200 for nonresidents. The matriculation fee for residents is \$10; for nonresidents, \$25. The Assistant Dean is Dr. C. W. Edmunds. The total registration for 1920-1921 was 449; graduates, 71. The seventy-second session begins Sept. 22, 1921, and ends June 19, 1922.

UNIVERSITY OF MICHIGAN HOMEOPATHIC MEDICAL SCHOOL.—Organized in 1875. The first class graduated in 1877. The work of the first two years is taken under the same teachers and in the same classes with the Medical School of the University of Michigan, and the fees charged are the same. The faculty for the last two years composes 6 professors and 11 associates, instructors, etc. The entrance requirements are two years of collegiate work. The Dean is Dr. W. B. Hinsdale. The total registration for 1920-1921 was 50; graduates, 5. The next session begins Sept. 27, 1921, and ends June 19, 1922.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Entrance requirements are two years of collegiate work. The faculty embraces 32 professors, 174 lecturers, etc., a total of 206. The course covers five years of eight months each (including the hospital intern year). The total fees each year are \$150—if residents of Detroit the fees are \$25. The Dean is Dr. W. H. MacCracken. The total registration for 1920-1921 was 158; graduates, 53. The thirty-seventh session begins Sept. 26, 1921, and ends June 17, 1922.

MINNESOTA

Minnesota, population 2,386,371, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 380,582 inhabitants.

Students intending to practice medicine in Minnesota, in addition to an accredited four-year high school education, must complete two years of college work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 91 professors and 114 instructors and assistants, a total of 205. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are two years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; twelve credits of general chemistry, qualitative analysis and organic chemistry; eight credits of zoology, and a reading knowledge of French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four-year course. The M.D. is conferred after a year of intern work or of advanced laboratory work has been completed. Total fees are \$198 for residents and \$228 for nonresidents, each year for three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1920-1921 was 384; graduates, 53. The thirty-third session begins Sept. 28, 1921, and ends June 14, 1922. The summer quarter begins June 21.

MISSISSIPPI

Mississippi, population 1,789,384, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 1,948 inhabitants.

Students desiring to practice medicine in Mississippi, in addition to a standard four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year are \$133. The faculty numbers 17. The Dean is Dr. W. S. Leathers. The total registration for 1920-1921 was 49. The nineteenth session begins Sept. 14, 1921, and ends May 29, 1922.

MISSOURI

Missouri, population 3,403,547, has six medical colleges. St. Louis, population 773,000, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, which, with Kansas City, Kansas, has a population of 433,261, has two colleges, the Kansas City College of Medicine and Surgery and the Kansas City University of Physicians and Surgeons, neither of which is approved as reputable by the Missouri State Board of Health. The School of Medicine of the University of Missouri is at Columbia, a town of 10,681 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 14 professors and 14 assistant professors, lecturers, etc., a total of 28. The course covers two years of thirty-two weeks each. The entrance requirements are two years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours; organic chemistry, 5 hours, and general bacteriology, 3 hours. Total fees are \$100 for each year. Nonresidents of the state pay \$10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1920-1921 was 81. The next session begins Aug. 29, 1921, and ends April 26, 1922.

Kansas City

KANSAS CITY COLLEGE OF MEDICINE AND SURGERY, Twenty-Third and Holmes Streets.—Organized in 1915 as an offshoot of the Eclectic Medical University, a Class C medical school, now extinct. It claims to be an eclectic college, but is reported not recognized as such by the National Eclectic Medical Association. Total registration for 1920-1921 was about 90; graduates, 14. Since this school is an offshoot of a Class C medical college and is *reported not recognized by the Missouri State Board of Health and by the licensing boards of thirty-nine other states*, no higher rating can be granted to it, pending an inspection, which it has refused.

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS, 729 Troost Street.—Originally chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges, and it still has osteopathic classes. Total enrolment in 1920-1921 was 90; graduates, 25. Rated in Class C by the Council on Medical Education. *Reported not recognized by the licensing boards of Missouri and of forty-five other states.*

St. Louis

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 33 professors and 113 lecturers, instructors, etc., a total of 146. Two years of college work are required for admission, including courses in English, physics, chemistry and biology, and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, \$221, \$216, \$216 and \$221. The Dean is Dr. Nathaniel Allison. The total registration for 1920-1921 was 188; graduates, 45. The next session begins Sept. 22, 1921, and ends June 18, 1922.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 54 professors and 84 lecturers and assistants, a total of 138. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. The summer session is optional. The total fees are \$250 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1920-1921 was 284; graduates, 65. The next session begins Oct. 1, 1921, and ends June 1, 1922.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS, Jefferson and Gamble Streets.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915, when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. Registration during 1920-1921 was 120; graduates, 65. *This college is reported as not recognized by the licensing boards of Missouri and forty-three other states.*

NEBRASKA

Nebraska, population 1,295,502, has two medical colleges, the University of Nebraska College of Medicine and the Creighton University College of Medicine, both in Omaha, population 191,601.

Omaha

CREIGHTON UNIVERSITY COLLEGE OF MEDICINE, Fourteenth and Davenport Streets.—Organized in 1892 as the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. It has a faculty of 40 professors and 16 associates, lecturers and assistants, a total of 56. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. Continuous session adopted for seniors only. The total fees each year for the four years are, respectively, \$175, \$165, \$165 and \$170. The Dean is Dr. Hermann von Schulte. Total registration for 1920-21 was 116, graduates 22. The fortieth session begins Sept. 21, 1921, and ends June 3, 1922.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. The faculty is composed of 21 professors and 67 lecturers and instructors, total 88. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years, respectively, are \$140, \$120, \$110 and \$110. The Dean is Dr. Irving S. Cutter. Total registration for 1920-1921 was 196, graduates 50. The next session begins Sept. 14, 1921, and ends June 4, 1922.

NEW HAMPSHIRE

New Hampshire, population 443,083, has one medical college, located at Hanover, population 1,551.

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 10 professors and 2 instructors, a total of 12. Three years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. or B.S. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for each year are \$250. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The total registration for 1920-1921 was 18. The next session opens Sept. 22, 1921, and ends June 20, 1922.

NEW YORK

New York State, population 10,384,144, has eight medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Cornell University Medical College, the University and Bellevue Hospital Medical College, Long Island College Hospital and the New York Homeopathic Medical College and Flower Hospital are located in New York City, population 5,620,048. Albany Medical College is located in Albany, a city of 113,344 people. The University of Buffalo Medical Department is situated in Buffalo, population 506,775. The College of Medicine, Syracuse University, is in Syracuse, a city of 171,647 inhabitants.

Students who desire to practice in New York must complete two years of college work before entering on the study of medicine.

Albany

ALBANY MEDICAL COLLEGE, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. The faculty is composed of 25 professors and 39 instructors, assistants, etc., a total of 64. Two years of collegiate work, including college courses in physics, chemistry (including organic), biology, English, and a modern foreign language, are required for admission. The curriculum covers four years of eight months each. The total fees for the four years, respectively, are \$245, \$240, \$210 and \$205. The Dean is Dr. Thomas Ordway. The total registration for 1920-1921 was 92; graduates, 17. The ninety-first session begins Sept. 19, 1921, and ends June 12, 1922.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 37 professors and 81 lecturers, assistants, etc., a total of 118. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German are

required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$292, matriculation fee, \$5. The Dean is Dr. C. Sumner Jones. Total registration for 1920-1921 was 219; graduates, 60. The seventy-sixth session begins Sept. 26, 1921, and ends June 9, 1922.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 91 professors and 269 instructors, demonstrators, etc., a total of 360. Two years of collegiate work, including courses in physics, chemistry, biology, English and either French or German are required for admission. The work covers four years of eight months each. The Dean is Dr. William Darrach. The total fees for the four years, respectively, are \$332, \$332, \$332 and \$352. Total registration for 1920-1921 was 364; graduates, 117. The one hundred and fourteenth session begins Sept. 28, 1921, and ends June 7, 1922.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 56 professors and 124 assistants, lecturers, instructors, etc., a total of 180. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, \$355, \$345, \$345 and \$335. The Dean is Dr. Walter L. Niles. Total registration for 1920-1921 was 228; graduates, 46. The twenty-fourth session begins Sept. 26, 1921, and ends June 8, 1922.

LONG ISLAND COLLEGE HOSPITAL, 350 Henry Street, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 44 professors and 88 assistants, instructors, etc., a total of 132. Two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. The fees for the four years, respectively, are \$356, \$350, \$350 and \$380. The Dean is Mr. Adam M. Miller. Total registration for 1920-1921 was 276; graduates, 81. The sixty-fourth session begins Sept. 26, 1921, and ends May 29, 1922.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The course covers four years of eight months each. It has a faculty of 24 professors and 37 lecturers, and assistants, a total of 61. The total fees each year are \$270. Total registration for 1920-1921 was 130; graduates, 41. The sixty-second session begins Sept. 15, 1921, and ends June 10, 1922.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 65 professors and 106 instructors, etc., in all 171. The course covers four years of eight months each. Entrance requirements are two years of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. The fees for each of the four years are, respectively, \$320, \$320, \$320 and \$345. The Dean is Dr. Samuel A. Brown. Total registration for 1920-1921 was 428; graduates, 114. The next session begins Sept. 14, 1921, and ends June 6, 1922.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-five weeks each. The fees are \$10 annually; graduation fee, \$10. The faculty is composed of 35 professors and 78 associate and assistant professors, lecturers and instructors, a total of 113. The Dean is Dr. John L. Heffron. The total enrolment for 1920-1921 was 159; graduates, 33. The fifty-first session begins Sept. 13, 1921, and ends June 12, 1922.

NORTH CAROLINA

North Carolina, population 2,556,486, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,483. Wake Forest College School of Medicine is at Wake Forest, population 1,425.

Students intending to practice medicine in North Carolina must complete two years of college work including courses in

physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Two years of collegiate work are required for admission. The faculty is composed of 14 professors and 11 lecturers, assistants, etc., a total of 25. The fees for each year are \$195. The Dean is Dr. I. H. Manning. The total registration for 1920-1921 was 72. The thirty-sixth session begins Sept. 29, 1921, and ends June 4, 1922.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 15. Only the first two years of the medical course are offered after the completion of freshman and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate \$200. The Secretary is Dr. Thurman D. Kitchen. The total registration for 1920-1921 was 49. The twentieth session begins Sept. 6, 1921, and ends May 26, 1922.

NORTH DAKOTA

North Dakota, population 645,730, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,010 people. It gives only the first two years of the medical course.

Students intending to practice medicine in North Dakota, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are about \$85 each year. The faculty consists of 8 professors and 7 instructors, a total of 15. The Dean is Dr. Harley E. French. The total registration for 1920-1921 was 39. The sixteenth session begins Sept. 23, 1921, and ends June 13, 1922.

OHIO

Ohio, population 5,759,368, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 401,247 inhabitants. Cleveland, population 796,836, contains one medical school, Western Reserve University School of Medicine. Columbus, population 237,031, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden Avenue, Cincinnati General Hospital.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Two years of college work are required for admission. The faculty consists of 76 professors, 101 associates, assistants, etc., a total of 177. The course covers four years of eight months each. The fees for each of the four years, respectively, are \$300, \$260, \$210 and \$215. The Dean is Dr. Henry Page. The total registration for 1920-1921 was 238; graduates, 59. The next session begins Oct. 3, 1921, and ends June 17, 1922.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 30 professors and 11 lecturers and assistants, a total of 41. Two years of college work are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are \$160, \$150, \$150 and \$150. The Secretary is Dr. John K. Scudder. Total registration for 1920-1921 was 98; graduates, 30. The next session begins Sept. 15, 1921, and ends May 15, 1922.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. The faculty includes 18 professors and 111 lecturers, assistants, etc., a total of 129. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission. The total fees for each of the four years are, respectively, \$285, \$260, \$254 and \$255. The Dean is Dr. C. A. Hamann. The total registration for 1920-1921 was 152; graduates, 45. The seventy-ninth session begins Sept. 29, 1921, and ends June 15, 1922.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, 710 North Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 41 professors and 55 lecturers, demonstrators, etc., a total of 96. Two years of collegiate work are required for admission. The course covers four years of eight months each. Tuition fees are \$152 each year for residents of Ohio; for nonresidents, the fees are \$202. The Dean is Dr. Eugene F. McCampbell. The total registration for 1920-1921 was 180; graduates, 31. The next session begins Sept. 20, 1921, and ends June 13, 1922.

OHIO STATE UNIVERSITY COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1914, when the property of the Cleveland-Pulte Medical College of Cleveland was transferred to the Ohio State University. The faculty numbers 21. Two years of college work are required for admission. The students are taught largely in the same classes and by the same teachers as students of the College of Medicine during the first two years and the tuition fees are the same. The Dean is Dr. Claude A. Burrett. The total registration for 1920-1921 was 40; graduates, 9. The seventh session begins Sept. 20, 1921, and ends June 13, 1922.

OKLAHOMA

Oklahoma, population 2,027,564, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given on the academic campus at Norman, a city about 4,000 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 91,258 and which is eighteen miles north of Norman.

Students intending to practice medicine in Oklahoma, in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 36 professors and 34 instructors, a total of 70. Two years of collegiate work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degree of B.S. and M.D. The total fees for the four years are, respectively, \$60, \$60, \$25 and \$25. The Dean is Dr. Leroy Long, 325 East Fourth Street, Oklahoma City. The total registration for 1920-1921 was 103; graduates, 17. The session begins Sept. 19, 1921, and ends June 6, 1922.

OREGON

Oregon, population 783,389, has one medical college, the University of Oregon Medical School, located in Portland, a city of 258,288 population.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty of 46 professors and 35 lecturers, assistants, etc., a total of 81. Entrance requirements are two years of college work or its equivalent. The course is four years of eight months each. The total fees for the four years are, respectively, \$165, \$160, \$160 and \$160. The Dean is Dr. Richard B. Dillehunt. The total registration for 1920-1921 was 131; graduates, 16. The thirty-fifth session begins Oct. 3, 1921, and ends June 1, 1922.

PENNSYLVANIA

Pennsylvania, population 8,720,159, has six medical colleges. Of these, Philadelphia, having a population of 1,823,779, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of

the University of Pittsburgh, is situated in Pittsburgh, a city of 588,193.

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty consists of 57 professors, associate, adjunct and assistant professors, and 156 lecturers, associates, instructors, etc., a total of 213. The requirements for admission are a standard four-year high school course or its equivalent, plus two years of work in an approved college of arts and science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The first and second year classes are limited to 100 students; third and fourth to 125 each. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, \$348, \$320, \$320 and \$324. The Dean is Dr. William Pepper. Total registration for 1920-1921 was 433; graduates, 118. The one hundred and fifty-sixth session begins Sept. 30, 1921, and ends June 21, 1922.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 45 professors, associate and assistant professors, and 45 associates, lecturers, demonstrators and instructors, a total of 175. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, general and organic chemistry and biology, with laboratory work in each subject. The course of study covers four years of eight and a half months each. The fees are about \$325 each year, with a matriculation fee of \$5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1920-1921 was 514; graduates, 114. The ninety-seventh session begins Sept. 21, 1921, and ends June 2, 1922.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 14 professors and 46 assistants, lecturers, etc., in all 60. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, \$198, \$202, \$200 and \$182. The Dean is Dr. Martha Tracy. The total registration for 1920-1921 was 103; graduates, 15. The eighty-second session begins Sept. 28, 1921, and ends June 14, 1922.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 220-24 North Broad Street.—Organized in 1848 as the Homoeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 34 professors and 63 lecturers, instructors, etc., in all 97. The work covers four years of eight and a half months each. Total fees are \$245 each year. The Dean is Dr. William A. Pearson. The total registration for the college year 1920-1921 was 152; graduates, 49. The seventy-fourth session begins Sept. 26, 1921, and ends June 1, 1922.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 103. Two years of college work are required for admission. The fees for each of the four years, respectively, are \$175, \$170, \$160 and \$170. The Dean is Dr. Frank C. Hammond. The total registration for 1920-1921 was 74; graduates, 25. The twenty-first session begins Sept. 19, 1921, and ends June 15, 1922.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 15 professors and 104 associates, assistants, etc., 119 in all. Entrance requirements are two years of college work, including English, chemistry (inorganic and organic), physics, biology and a reading knowledge of French or German, Italian or Spanish. The course of study is four years of eight and a half months each. The total fees for the four years, respectively, are \$325, \$310, \$310 and \$310. The Dean is Dr. Raleigh R. Huggins. The total registration for 1920-1921 was 157; graduates, 34. The thirty-sixth session begins Sept. 26, 1921, and ends June 14, 1922.

SOUTH CAROLINA

South Carolina, population 1,683,662, has one medical college, situated in Charleston, a city of 65,957 people.

Students intending to practice medicine in South Carolina must complete, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 34 professors and 27 lecturers, instructors, etc., a total of 61. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are \$150 annually. The Dean is Dr. Robert Wilson, Jr. Total enrollment for 1920-1921 was 80; graduates, 10. The ninety-third session begins Sept. 22, 1921, and ends June 1, 1922.

SOUTH DAKOTA

South Dakota, population 635,839, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,590 people.

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are \$60 each year. The faculty numbers 11. The Dean is Christian P. Lommen, B.S. The total registration for 1920-1921 was 32. The fifteenth session begins Sept. 19, 1921, and ends June 17, 1922.

TENNESSEE

Tennessee, population 2,337,459, has four medical colleges. Of these, Vanderbilt University School of Medicine and Meharry Medical College are situated in Nashville, a city with a population of 118,342. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 162,351.

Students intending to practice medicine in Tennessee must complete two years of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. The faculty includes 42 professors and 44 assistants, instructors, etc., a total of 42. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are \$117, \$102, \$102 and \$127 for bona fide residents of the state, and \$50 more each year for nonresidents. The Acting Dean is Dr. James B. McElroy. Total registration for 1920-1921 was 55; graduates, 26. The next session begins Sept. 30, 1921, and ends June 12, 1922.

UNIVERSITY OF WEST TENNESSEE MEDICAL DEPARTMENT, Colored. 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. Total registration for 1920-1921 was 12; graduates, 5. *Official reports indicate that the diplomas of this college are not recognized by the licensing boards of Tennessee and forty-three other states.*

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 42 professors and 46 lecturers, a total of 88. One year of

collegiate work is required for admission. The course covers four years of nearly eight and a half months each. The total fees for the four years, respectively, are \$182, \$168, 165 and \$190. The Acting Dean is Dr. Lucius E. Burch. The total registration for 1920-1921 was 144; graduates, 40. The forty-eighth session begins Sept. 28, 1921, and ends June 14, 1922.

MEHARRY MEDICAL COLLEGE, Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. The faculty is made up of 13 professors and 14 instructors, demonstrators, etc., 27 in all. The work embraces four years of thirty-two weeks each. The total fees for each of the first three years are \$112 and for the fourth year \$127. The President is Dr. John J. Mullowney. Total registration for 1920-1921 was 200; graduates, 41. The forty-sixth session begins Oct. 3, 1921, and ends May 25, 1922.

TEXAS

Texas, population 4,661,027, has two medical colleges. The University of Texas School of Medicine is located at Galveston, a city of 44,255 inhabitants. The Baylor University College of Medicine is located in Dallas, population 158,976.

Students intending to practice medicine in Texas must complete at least a year of collegiate work, including courses in physics, chemistry, biology and modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty consists of 36 professors and 56 instructors and assistants, a total of 92. Entrance requirement are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years, respectively, are \$195, \$190, \$190 and \$190. The Dean is Dr. McIver Woody. Total registration for 1920-1921 was 130; graduates, 40. The twenty-second session begins Sept. 26, 1921, and ends May 30, 1922.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 21 professors and 18 lecturers and instructors, a total of 39. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four year high school education. The total fees for the four years, respectively, are \$88, \$58, \$40 and \$27 for residents of the state; \$150 each year additional for nonresidents. The Dean is Dr. William S. Carter. Total registration for 1920-1921 was 217; graduates, 26. The thirty-first session begins Oct. 1, 1921, and ends May 31, 1922.

UTAH

Utah, population 449,446, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 118,110 people.

Students intending to practice medicine in Utah, in addition to a four-year high school education, must complete at least one year of collegiate work, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. Two years of collegiate work are required for admission. The medical faculty consists of 11 professors and 15 lecturers and assistants, a total of 26. The fees are \$130 each year. The Dean is Dr. Perry G. Snow. Total registration for 1920-1921 was 55. The fifteenth session begins Sept. 22, 1921, and ends June 6, 1922.

VERMONT

Vermont, population 352,421, has one medical school, located at Burlington, a town of 22,779 people.

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 41. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. The total fees for each of the first three years are \$200 and \$225 for the fourth

year. The Dean is Dr. H. C. Tinkham. The total registration for 1920-1921 was 103; graduates, 36. The next session begins Sept. 21, 1921, and ends June 19, 1922.

VIRGINIA

Virginia, population 2,306,361, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 10,688, and the Medical College of Virginia at Richmond, population 171,667.

Students desiring to practice in Virginia must be graduates of medical colleges which require that all students admitted shall have completed two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 19 professors and 26 lecturers, instructors, assistants, etc., a total of 45. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology, and French or German. Total fees for the four years, respectively, are \$205, \$207.50, \$165 and \$150. The Dean is Dr. Theodore Hough. The total registration for 1920-1921 was 130; graduates, 20. The ninety-third session begins Sept. 15, 1921, and ends June 13, 1922.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 43 professors and 56 lecturers, instructors, etc., a total of 99. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. Total fees for the four years, respectively, are \$220, \$220, \$220 and \$250. The Dean is Dr. E. C. L. Miller. The total registration for 1920-1921 was 168; graduates, 30. The ninety-third session begins Sept. 14, 1921, and ends May 30, 1922.

WEST VIRGINIA

West Virginia, population 1,463,610, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,117 population.

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 15. Fees: For residents of the state, \$50 each year; for nonresidents, \$200. Cadets pay laboratory fees only. The Dean is Dr. John N. Simpson. The total registration for 1920-1921 was 78. The next session begins Sept. 19, 1921, and ends June 13, 1922.

WISCONSIN

Wisconsin, population 2,631,839, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 38,378 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 457,147 people.

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Gives only the first two years of the medical course. The teaching of the third will be given in the fall of 1923, and of the fourth year in 1924. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 17 professors and 42 lecturers, instructors, etc., a total of 59. Tuition fees: for residents of the state, \$90 each year; for nonresidents, \$214. The Dean is Dr. Charles R. Bardeen. The registration for 1920-1921 was 161. The fourteenth session begins Sept. 19, 1921, and ends June 10, 1922.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 98. The entrance requirements are two years of college work, including courses in physics, chemistry, biology and a modern language. The curriculum covers four years of eight and a half months each. The total fees for each year are \$300. The Dean is Dr. Louis F. Jermain; the Dean of students is Dr. Eben J. Carey. The registration for 1920-1921 was 142; graduates, 17. The tenth session begins Oct. 3, 1921, and ends June 1, 1922.

PHILIPPINE ISLANDS

The Philippine Archipelago, having a population (estimated 1918) of 9,009,802, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1914 had a population of 266,943.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 35 professors and 36 lecturers, assistants, etc., a total of 71. A two-year collegiate course leading to the degree of bachelor of arts is required for admission, including courses in English, physics, chemistry, biology and either French or German. The course extends over five years. In the fifth year the students are assigned as clinical clerks in the Philippine General Hospital. The Dean is Dr. Fernando Calderon. The total registration for 1920-1921 was 139; graduates, 23. The fifteenth session began July 1, 1921, and ends April 4, 1922.

CANADA

The Dominion of Canada has nine medical colleges, five of which require a six-year course, including courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Offers the first four years of the six-year medical course, including the two preliminary science years. The faculty numbers 47. Fees for the first year are \$75; for the second, third and fourth years, each \$100. The registrar is Cecil E. Race, B.A. The registration for 1920-1921 was 175. The ninth session begins Sept. 26, 1921, and ends May 12, 1922.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, WINNIPEG.—Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. The faculty numbers 111. The total fees for the five years, respectively, are \$155, \$150, \$160, \$160 and \$160. Matriculation requirements include one year of college work in the Faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The first undergraduate year includes courses in advanced chemistry and zoology. The courses in physics and botany are completed in the premedical college year. The Dean is Dr. S. Willis Prowse. Total registration for 1920-1921 was 266; graduates, 34. The next session begins Sept. 14, 1921, and ends April 24, 1922.

Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 48 professors, lecturers and demonstrators. Requires matriculation, examination and a graded course of five years, including premedical courses in physics, chemistry and biology. The fees are \$175 each year. The total registration for 1920-1921 was 161; graduates, 16. The Dean is Dr. John Stewart. The next session begins Oct. 5, 1921, and ends May 27, 1922.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers six years of eight months each, the first two being devoted largely to physics, chemistry, biology and cultural courses in history, science and English. It has a faculty of 61 professors and 195 lecturers, associates, etc., a total of 256. The fees are \$161 each year; graduation fee, \$20. The Dean is Dr. A. Primrose. The total registration for 1920-1921 was 1,106; graduates, 143. The next session begins Sept. 27, 1921, and ends May 31, 1922.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 26 professors and 24 assistants, instructors, etc., a total of 50. The fees for the six years are, respectively, \$130, \$135, \$135, \$144, \$144 and \$134; fee for M.D., C.M. degrees, \$30. The course covers six years of thirty teaching weeks each, the first year including courses in physics, chemistry, biology, English and French or German. The total registration in 1920-1921 was 240; graduates, 40. The Dean is Dr. J. C. Connell. The next session begins Sept. 28, 1921, and ends May 26, 1922.

WESTERN UNIVERSITY, FACULTY OF MEDICINE, London.—Organized in 1881, first class graduated in 1883, and a class graduated each subsequent year. The medical school has been under the control of the Board of Governors of the Western University since 1913. The faculty numbers 53. The course is six years, of eight months each, the first year including premedical courses in physics, chemistry and biology. Beginning with the session of 1923-1924 two years of premedical college work will be required followed by a four year medical course. The total fees for the six years, respectively, are \$150, \$145, \$145, \$153, \$153 and \$178. The Acting Dean is Dr. Paul S. McKibben. Total registration for 1920-1921 was 137; graduates, 12. The next session begins Oct. 4, 1921, and ends May 26, 1922.

Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over six years of eight months each, including the two preliminary years. The faculty numbers 145. The total fees each year are \$200. The total registration for 1920-1921 was 708; graduates, 99. The Assistant Dean is Dr. John W. Scane. The next session begins Oct. 1, 1921, and ends June 6, 1922.

UNIVERSITY OF MONTREAL MEDICAL FACULTY, Montreal.—Organized in 1843, incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name assumed in 1920. A class was graduated in 1843 and in each subsequent year. The faculty numbers 80. The course extends over six years, including premedical courses in physics, chemistry and biology. The total fees each year are \$175. The Dean is Dr. E. P. Lachapelle. The total registration for 1920-1921 was 354; graduates, 34. The next session begins Sept. 15, 1921, and ends June 15, 1922.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 35. The fees are \$90 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Secretary is Dr. Arthur Vallée, Quebec. Total registration for 1920-1921 was 125; graduates, 25.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work.

CURRICULUM: The entire course of four years shall consist of not less than 3,600 hours, and shall be grouped in divisions and subdivided into subjects, each division and each subject to be allotted approximately the number of hours and percentages of the whole shown in the following schedule:

DIVISION I.

ANATOMY, 684 Hours (19%). Minimum % of 3,600 Hours.

- | | |
|--------------------------------------------------------------|-------|
| 1. Gross anatomy, including clinical or applied anatomy..... | } 19% |
| 2. Microscopic anatomy | |
| 3. Embryology | |

DIVISION II.

PHYSIOLOGY AND CHEMISTRY, 468 Hours (13%).

- | | |
|-----------------------|----|
| 1. Physiology | 8% |
| 2. Biochemistry | 5% |

DIVISION III.

PATHOLOGY AND BACTERIOLOGY, 468 Hours (13%).

- | | |
|----------------------------------------------------------|-----|
| 1. Pathology, including necropsies | 8 % |
| 2. Bacteriology, including serology and immunology | 3½% |
| 3. Preventive medicine and public health | 1½% |

DIVISION IV.

PHARMACOLOGY, 216 Hours (6%).

- | | |
|--------------------------------------|------|
| 1. Materia medica and pharmacy | } 6% |
| 2. Pharmacology | |

DIVISION V.

MEDICINE AND MEDICAL SPECIALTIES, 900 Hours (25%).

- | | |
|-----------------------------------------------------------|------|
| 1. General medicine, including laboratory diagnosis | 15 % |
| 2. Pediatrics | 4 % |
| 3. Nervous and mental diseases | 3½% |
| 4. Dermatology and syphilis | 2 % |
| 5. Medical jurisprudence | 1½% |

DIVISION VI.

SURGERY AND SURGICAL SPECIALTIES, 648 Hours (18%).

- | | |
|---------------------------------------|------|
| 1. Surgery | 11 % |
| 2. Orthopedic surgery | 2 % |
| 3. Urology | 1 % |
| 4. Ophthalmology | 1½% |
| 5. Otolaryngology and rhinology | 1½% |
| 6. Roentgenology | 1 % |

DIVISION VII.

OBSTETRICS AND GYNECOLOGY, 216 Hours (6%).

- | | |
|--------------------------------------------------|-----|
| 1. Obstetrics, including obstetric surgery | 4 % |
| 2. Gynecology | 2 % |

When teaching conditions demand it, a subject may be transferred from one division to another.

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University of Colorado School of Medicine.
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Army Medical School.
Navy Medical School.
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Rush Medical College.
University of Illinois College of Medicine.
Loyola University School of Medicine.
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The secretary-treasurer of the Association is Dr. Fred C. Zappfe, 3431 Lexington Street, Chicago.

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*Contributors, subscribers and readers will find important information
on the second advertising page following the reading matter*

SATURDAY, AUGUST 13, 1921

MEDICAL EDUCATION—PROGRESS OF
TWENTY-ONE YEARS

We publish this week for the twenty-first consecutive year complete statistics regarding medical education in the United States. During these years, medical education in this country has been completely reorganized and extensive improvements have been made in educational standards. A review of the measures which have brought this about will be of interest.

BEGINNING OF THE CAMPAIGN

In 1900, THE JOURNAL began collecting statistics in regard to medical colleges, students and graduates. The returns of that year were unsatisfactory, however, and the data were not published. In the next year—in 1901—better reports were obtained, and the first Educational Number of THE JOURNAL was published. It was a matter of common knowledge that, of the 159 medical colleges shown in the statistics, many were joint stock corporations conducted largely for the profit of their owners. It was also well known that the majority of colleges paid little or no attention to entrance requirements. Very little was known at that time in regard to the number and qualifications of teachers, the number and equipment of laboratories, the amount and use made of clinical material, or the methods of teaching employed. At that time also, sectarian medicine had reached its zenith, there being twenty-two homeopathic and ten eclectic colleges. The total enrolments in all colleges was 26,417 students, and of these 5,444 were graduated.

With the collection and publication of such data in 1901, the campaign for the improvement of medical education was begun. The information published showed the need of improvement, and furnished the impetus which led to the creation of a permanent committee of the American Medical Association—the Council on Medical Education—to centralize its efforts in this particular work. The statistics were collected and published by THE JOURNAL annually for five years, however, before the Council began active work.

PROGRESS FROM 1906 TO 1910

As one of its functions, the Council on Medical Education naturally took over the work begun by THE

JOURNAL of collecting, tabulating and publishing statistics relating to medical education. With a permanent secretary in charge, the Council established files for the information and began a careful and extensive study of medical education. A study of medical education abroad revealed the fact that in all the rest of the world there were 154 medical schools,¹ as compared with 160—a vast oversupply—in the United States, and that, except in a few medical schools, educational standards were much lower than those abroad.² This showed the wisdom of the Council's early action in suggesting two educational standards,³ one for immediate adoption by the medical schools and another, termed "the ideal standard," for later adoption. Mergers of medical schools also were urged in cities or states where two or more existed by which, in each instance, one stronger and better institution might result. An annual conference was held to which all organizations interested in medical education were invited to send delegates. Thus an open floor was established where educational problems were presented for general discussion.

To secure first-hand information in regard to the work of the medical schools, in 1906 a complete tour of inspection was made and the first classification was prepared. This was read at the annual conference and at the meeting of the House of Delegates in 1907, and each college was notified of its position in the classification. Another tour of inspection was made in 1909, and in 1910 the second classification was published.⁴ Before this second inspection was made, the number of medical colleges had already been reduced, largely by mergers, from 162 to 131; the number of graduates was reduced from 5,747 to 4,440, and the number of students from 28,142 to 21,526. By this time, also, many of the medical schools had undergone extensive internal development. Entrance standards had been raised; better teachers employed; better buildings erected; new laboratories established, and better clinical facilities secured. Where formerly only four medical schools were requiring any college work for admission, by 1910 thirty-five colleges had adopted that requirement and eight state licensing boards had adopted a similar standard as a minimum requirement of preliminary education. Through these inspections and other means of obtaining data at first hand, the information published each year in the Educational Number was verified and made more reliable.

Following the first inspection of the medical schools, at the suggestion of the Council, the Carnegie Foundation for the Advancement of Teaching consented to make a survey of the medical schools. As a consequence, the second tour of inspection was made jointly by representatives of the Council and the Foundation. In its report, the Carnegie Foundation made no classi-

1. List in J. A. M. A. 49: 596 (Aug. 17) 1907.
2. See chart in J. A. M. A. 55: 680 (Aug. 10) 1910.
3. J. A. M. A. 45: 270 (July 22) 1905.
4. J. A. M. A. 54: 2061 (June 1) 1910.

fication and suggested no standards; nevertheless, the wide publicity given to the report was of great service in the subsequent campaign.

PROGRESS FROM 1910 TO 1915

By the beginning of the second five-year period, the information regarding all medical colleges, existing and extinct, collected by the Council, was sufficiently complete to permit the publication of a reliable chart⁵ by which, for the first time, the number of medical colleges existing in the United States in any year was definitely known from the time the Department of Medicine of the College of Philadelphia—now the University of Pennsylvania—was organized in 1765. Also in 1910, a medical students' register was established in order to secure better records of the histories and educational qualifications of medical students and facts regarding their promotion from class to class. In this work, particularly, the Council received a most hearty and gratifying cooperation from the majority of medical schools. During this period, also, two other

new laboratories, scholarships, endowed chairs and teaching hospitals became of frequent occurrence.

The fall of 1914 marked an epoch in the progress of medical education in the United States in that forty-three medical colleges for the first time began the enforcement for admission of a year of college work including courses in physics, chemistry and biology, which was essential for the Council's Class A rating. Thus the standard which in 1905 had been termed "ideal" became the essential standard in 1914.

PROGRESS OF THE LAST SIX YEARS

In 1916, preliminary education was further extended from one to two years of college work in addition to a high school education. In June of that year the Council was instructed by the House of Delegates to retain in Class A after Jan. 1, 1918, only those medical schools which required for admission this higher standard of preliminary education. This ruling was in no way drastic, since already forty-six medical colleges had put that standard into effect and seventeen

	Medical Colleges				Students				Graduates			
	1904		1921		1904		1921		1904		1921	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Entrance Requirements												
Two years of college work.....	4	2.5	76	91.6	1,761	6.2	14,319	96.1	369	6.4	3,112	94.4
Four year high school or less *.....	158	97.5	7	8.4	26,391	93.8	553	3.9	5,378	93.6	180	5.6
Totals.....	162	....	83	....	28,142	....	14,872	....	5,747	....	3,192	....

* It is probable that in 1904 not more than about thirty medical colleges (18.5 per cent.) were actually requiring a four-year high school education for admission.

complete inspections of medical colleges were made and two new classifications published.

During this second period also twenty medical colleges were merged with others and sixteen became extinct, which further reduced the total number from 131 to ninety-five. The number of medical students was reduced from 21,526 to 14,891, and the total number of graduates from 4,440 to 3,536. The number of medical colleges requiring one or two years of college work for admission was increased from thirty-five (27 per cent.) to eighty-three (88 per cent.), and the number of licensing boards holding to these higher requirements was increased from eight to eighteen. Not only had the majority of medical colleges adopted the higher entrance requirements, but also, through the reliable data collected by the Council, the methods employed by each college in admitting students and the strictness with which the entrance requirements were administered were known with fair accuracy. The Council, therefore, was in position to recognize at once any faulty methods or "paper standards," which were not uncommon before the campaign for improvement began. The continuous agitation for better conditions, aided materially by the report of the Carnegie Foundation, appealed to philanthropists to such an extent that endowments for medical education were greatly increased, and large gifts for medical buildings,

licensing boards had adopted it as a minimum requirement of preliminary education for those who were to receive licenses to practice medicine.

By 1917, when the United States entered the World War, although the total number of medical schools had been reduced to ninety-six, the number of better and higher grade schools had been largely increased. For several years the majority of graduates had received a much better training as a result of the higher entrance standards and the greatly improved conditions in other respects. It was these recent graduates, meanwhile, who in large proportions entered the government medical services and who became responsible for the medical welfare of America's soldiers and sailors. That the campaign for improvements had made such rapid headway, therefore, was of great benefit to the nation during the war.

The medical students' register was also of special benefit, since it contained the home addresses of the majority of medical students. This made it possible to secure promptly from the students information showing that, unless exempted from the draft, between 60 and 80 per cent. would be called into the army, and many of the medical schools forced to close. The publication of this information led to the creation of the Medical Enlisted Reserve Corps, by which students were to be kept in the medical schools until graduation.

5. J. A. M. A. 61: 578 (Aug. 23) 1913.

SUMMARY OF PROGRESS MADE

As a result of this campaign, medical education has been greatly improved. In place of the vast oversupply of medical schools, there are now eighty-three, seventy-six of which are requiring for admission two or more years of collegiate work. Besides the advances in requirements for admission, many other improvements have been made. Endowments have been increased from a few thousands until in recent years gifts of millions have become commonplace. New and larger medical buildings have been erected or entire teaching plants constructed, and more and better equipped laboratories established. Where formerly full-time laboratory teachers were very few, now in the great majority of schools all laboratory staffs are largely made up of full-time teachers. Where formerly many schools were without close hospital affiliations, now every medical school has an affiliated hospital and in most of them the hospital is owned or controlled by the medical school, so far as the teaching material is concerned. The number of students since 1904 was reduced from 28,142 to 14,872;⁶ at the same time, the proportion of medical students in well equipped medical colleges has been increased from 3.9 per cent. to 96.1 per cent. Of medical graduates, likewise, although the total has been reduced by 40 per cent., the number coming from high grade, well equipped medical colleges has been increased from 5.6 per cent. to 94.4 per cent.

The progress made in the campaign for the improvement of medical education has been more rapid, and fewer difficulties have been experienced, than were anticipated at the beginning of the campaign. This was due largely to the cordial and ready cooperation by the officers of medical colleges and state licensing boards; both individually and in their national organizations. The publicity secured by the report of the Carnegie Foundation for the Advancement of Teaching aided generally in the campaign and particularly in calling the attention of philanthropists to the financial needs of medical schools. The object sought has been attained and medical education in the United States is now equal to, if it does not surpass, that in any other country.

MEDICAL SUPPORT FOR THE ANTI-VIVISECTIONISTS

Concerning the attitude of well-informed persons toward animal experimentation and its benefits to mankind there is no question whatever. Local, national and international medical organizations and both special and general scientific societies have passed strong resolutions, pointing out its beneficent results and urging the danger of limiting its scope and methods. Occasionally, however, there appears the possessor of a medical degree who declares that animal experimenta-

tion is only systematic cruelty and who denies that any benefit has ever been derived from it. Such a person is Dr. Walter R. Hadwen of Gloucester, England, who has recently addressed antivivisection societies in New York, Boston, Philadelphia, Washington, Baltimore, Los Angeles and San Francisco. The enthusiasm of these societies over Dr. Hadwen's visit is a measure of the rarity of securing a medical champion of the antivivisection cause.

Reports of Dr. Hadwen's addresses reveal that everywhere he has made the same "points." Animal experimentation is immoral, he declares, because man takes advantage of weaker animals for his own supposed benefit. It is cruel, because there is no assurance that anesthetics are used in such a way as to abolish pain during operations. It is misleading, because anatomically and physiologically there is no analogy between lower animals and man. Thus diseases are not analogous, drug actions are not analogous, and consequently "nothing whatever has been gained by experimentation upon living animals that has ever been of the slightest benefit in the amelioration or cure of any human disease." "The germ theory of disease has not a scientific leg to rest upon." The safety of modern surgery is due solely to "cleanliness." Anti-typhoid inoculation, he alleges, has ruined men for life by producing kidney disease, heart disease and cerebrospinal meningitis—a result which is costing the annually. Restricting the freedom of "germ carriers" British government in heart disease alone £4,000,000 is "one of the greatest scandals on the face of the earth." Quite logically Dr. Hadwen demands total abolition of experiments on animals.

This is the sort of information and argument on which the antivivisection societies are thriving and building up their morale. Dr. Hadwen's ethical ideas involve no milk to drink and no meat to eat. In this he is at least consistent, for he is an ardent vegetarian. He offers no evidence of ever having been in laboratories and learned there the precautions taken against infliction of pain. He is blind to the facts of comparative anatomy and physiology, that prove the close structural and functional relationship of man and the lower animals. He, a man of 67 years, is unacquainted with the sciences of bacteriology, parasitology and pharmacology—sciences which have developed since he was a young man and which by animal experimentation have revealed both the nature of disease processes and effective modes of dealing with them. He has ridiculed and denounced the well-established facts and the well-tried methods which enlightened states employ for the treatment of their sick (e. g., diphtheria antitoxin), which permitted the building of the Panama Canal, which have reclaimed vast areas of the earth for human habitation, and which are universally employed in civilized societies for the protection of public health. All this is of no significance to the antivivisectionists, however, for Hadwen is *Doctor* Hadwen, and, as such, speaks with authority.

6. The lowest number was 13,052 in 1919; enrolments are again on the increase.

It would be foolish to pay any attention whatever to the remarks of our English visitor if they did not have the effect of misleading people, men and women, who have votes. There is no doubt that if antivivisection propaganda continues unchallenged, the experimental method in medicine will be seriously endangered. There is no doubt, also, that the experimental method is as fundamentally important to medicine as it is to physics or chemistry. Its limitation or abolition would be a grave calamity for man and for lower animals as well. No group can be more influential in protecting it than physicians who are in daily contact with patients. Every physician should know and teach the facts on which Osler's dictum is based, that in the half century between 1850 and 1900 the "experimental study of physiology and pathology did more to emancipate medicine from the routine and thralldom of authority than all the work of all the physicians from the days of Hippocrates to Jenner."¹

THE PELLAGRA PROBLEM

Famine and pestilence have long been known to follow in the wake of war, and history records many instances of disease as a consequence of the failure of certain highly essential crops in regions where the variety of foods is considerably limited. Without potatoes, for example, the people of Labrador do not thrive on a diet preponderating in wheat flour. It cannot come as a complete surprise, therefore, that the menace of ill health may arise as the result of acute economic conditions in any part of this country. Outbreaks of scurvy have not been unknown. During recent years the medical profession has had repeated warning of the insidious possibilities of pellagra in the United States.

The statistics in preparation relative to the actual evidence of pellagra will doubtless bring clarity and help to allay the deep resentment which has been awakened in regard to the widespread publication of what is regarded by many residents of the South as an unjustifiable report. In any event, fortunately, the scientific investigations, for the success of which American experts have been so largely responsible, have pointed the way to avert or relieve pellagra through appropriate dietary measures which have repeatedly been discussed in *THE JOURNAL*.² It is

recognized that the incidence of the disease in our Southern states usually reaches its maximum in the early summer and then subsides as fresh vegetables and other food products become more abundant and less expensive. Whatever the accepted hypothesis of causation may be, there is no lack of evidence to indicate that the inclusion of a more liberal supply of good protein and sources of certain vitamins in the diet is likely to be beneficial in the case of pellagrins whose regimen almost invariably is deficient in the factors just emphasized. If pellagra should ever become a real menace to the extent of involving large numbers of persons, regional pride will surely not stand in the way of any worthy movement for the cause of better national health.

The present situation should not be allowed to pass without bringing the medical profession to a better realization that scientific opinion is not yet united with respect to the etiology of pellagra. The zeistic theory has practically been abandoned, so that moldy corn is no longer charged with chief responsibility for the malady. On the other hand, there are investigators of recognized standing who are still unwilling to accept the current "deficiency disease" hypothesis as an adequate explanation of the genesis of pellagra. They look upon the latter as in all probability a specific infectious disease communicable from person to person by means at present unknown. To the supporters of this conclusion, betterment of sanitation, which is admittedly crude in many of the localities affected, appeals more strongly than the dietary considerations already cited. In view of this it becomes imperative to ascertain beyond question, if possible, what the real cause of pellagra is, and whether it can surely be arrested by diet alone or by sanitary reform or both.

Elsewhere in this issue³ appears an abstract of the resolutions adopted by the pellagra conference just held in Washington. The resolution reveals a desire to cooperate in stamping out the pellagra menace and a wholesome conservative attitude on the part of health officers who are not to be stampeded by any unwarranted phobia. The medical profession is prepared to do its best and asks only for public cooperation and support of its efforts. Investigation requires support, and this should be offered promptly in no stinted measure. A nation whose chewing gum bill mounts into millions of dollars can surely afford more than the meager sums voted by Congress for pellagra research and relief.

1. Pamphlets published by the American Medical Association, showing the relations of animal experimentation to practical medicine and surgery, may be had at the headquarters of the Association.

2. Goldberger, Joseph: Pellagra: Causation and a Method of Prevention, *J. A. M. A.* **66**: 471 (Feb. 12) 1916. Nesbitt, C. T.: Sanitation and the Control of Pellagra, *ibid.* **66**: 647 (Feb. 26) 1916. Observations on the Chemical Symptoms of Pellagra, editorial, *ibid.* **66**: 1311 (April 22) 1916. Wood, E. J.: Vitamin Solution of the Pellagra Problem, *ibid.* **66**: 1447 (May 6) 1916. Pellagra in Nashville, editorial, *ibid.* **66**: 1704 (May 27) 1916; Is Pellagra Transmissible? *ibid.* **68**: 39 (Jan. 6) 1917; Experimental Pellagra, *ibid.* **69**: 1082 (Sept. 29) 1917. Jobling, J. W., and Maxwell, E. S.: The Alkali Reserve in the Blood of Pellagrins, *ibid.* **69**: 2026 (Dec. 15) 1917. Petersen, W. F.: The Mortality from Pellagra in the United States, *ibid.* **69**: 2096 (Dec. 22) 1917. Goldberger, Joseph; Wheeler, G. A., and Sydenstricker, Edgar: A Study of the Diet of Nonpellagrous and of Pellagrous Households in Textile Mill Communities in South Carolina in 1916, *ibid.* **71**: 944 (Sept. 21) 1918. Pellagra, editorial, *ibid.* **74**: 1520 (May 29) 1920; Pellagra in Egypt, *ibid.* **75**: 321 (July 31) 1920.

3. General News, this issue, p. 564.

Practical Knowledge of Tuberculosis Treatment.—How many medical students, on qualifying as practitioners, are really competent to advise from practical acquaintance on one of the many special forms of treatment specially indicated for any particular subject of tuberculous disease at a particular phase of the infections? Yet such knowledge is often a matter of life or death to the patient, and what opportunities will he have for acquiring such knowledge?—H. Ganvain. *Brit J. Tuberc.* **15**:3, 1921.

Current Comment

REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOLS

In the last twenty years the requirements for admission to medical schools have been raised from a high school education or less—and mostly less—to two years of college work as a minimum. This advance places the entrance requirements of medical schools in the United States on a par with the requirements in other countries. It is generally recognized that secondary school courses in Europe are equal to the four-year high school course plus between one and two years of collegiate work in the United States. In this country, courses with laboratory work in physics, chemistry and biology are required to be included in the two years of college work. In most foreign countries, courses in these subjects are counted as a part of the regular medical school curriculum, although the subjects are usually taught in the science schools of the universities. In most countries abroad the medical course extends over six or seven years beyond the secondary school. In this country the two years of college work, plus the four years in medical school, likewise constitute a six-year course beyond the high school, or seven years if the intern year is counted. There are special advantages in requiring that the two years of college work be completed before the student enters the medical school: (a) The physics, chemistry and biology are taught in the college of science without reference to their special bearing on medicine. This is considered advisable, since it is not known at present what particular facts obtained in the study of these sciences will be most useful in medical research in later years. (b) The majority of students now enter medical schools by way of the colleges of arts and sciences; they have had the benefit of two years in the influence, the atmosphere and the social life of the college and in contact with students preparing for other professions and callings, the benefit of which is incalculable. (c) The student is left free to make a final choice of medicine as his life work until the end of these two years of college preparation, and contact with students in other callings enables him to choose intelligently that for which he is best fitted. The only criticism now voiced against present requirements for admission to medical schools is the time element involved. The time will subsequently be further shortened, however, by the increasing tendency in grammar schools to permit students of more than average ability to complete such work in six instead of eight years. With the more general adoption of this practice, students will enter college and will graduate in medicine two years earlier, or at 23 or 24 years of age rather than at 26, as at the present time—or 27, counting the intern year. Meanwhile, the higher entrance requirements now generally enforced by medical schools were one of the most essential factors in developing medical education in the United States so that it now equals, if it does not surpass, that of any other country.

VITAMINS: THEIR DISTRIBUTION

Our knowledge of the accessory food factors, commonly spoken of as vitamins, is so recent, comparatively speaking, and the exact nature of these factors still so enveloped in mystery, that it was inevitable that the public's lack of knowledge on the subject should be capitalized. It is not surprising that there are on the market a number of preparations of the "patent medicine" type that are being sold under the claim that they are rich in vitamins—although the exploiters of these fail to explain which, if any, of the three accessory food factors their products contain. The renaissance of yeast as a therapeutic agent has given an opportunity to the manufacturers of this product of unduly stressing the fact that yeast is particularly rich in the antineuritic vitamin (water-soluble B). Because milk and certain milk products are rich in the fat-soluble A factor, the dairy interests would apparently have the public believe that this particular vitamin is to be obtained only from their products. Thus, a journal¹ devoted to the dairy interests recently claimed that those who want vitamins must get them in their milk, butter, cheese and other milk products. The truth is, the accessory food factors are so well distributed throughout the dietary of modern man that, generally speaking, the individual who uses ordinary judgment in selecting his food is in no danger of suffering from a deficiency of any of these three factors. It would be well if every physician might read the excellent monograph on the present state of knowledge concerning accessory food factors written by a committee appointed jointly by the Lister Institute and Medical Research Committee. In this report the distribution of the vitamins in our common foodstuffs is thus briefly summarized: ". . . broadly speaking it is safe to say that the individual always finds a sufficient supply of vitamins in his food so long as that food is reasonably varied and has received no artificial or accidental separation into parts, and so long as no destructive influence has been applied to it." At the end of the committee's report is a table showing the distribution of the three accessory factors in the commoner foodstuffs. This table is reproduced on page 571 of this issue. It is well worth studying.

INFORMATION FOR PROSPECTIVE MEDICAL STUDENTS

One of the functions assumed by the Council on Medical Education has been the publishing of reliable information to guide prospective medical students in their selection of a medical school. One needs but to recall the amazing variety of medical schools twenty or more years ago to realize the many pitfalls in the path of the unwary student. Formerly there was no way by which the student could easily ascertain the character and standing of a medical school. He could not discover whether or not it was properly equipped to furnish a satisfactory training or whether its diploma was recognized by state licensing boards. Instances are not lacking of students who attended

1. Pacific Dairy Review, May 19, 1921.

medical schools throughout the four years, graduated and applied for their licenses before they found out that the institutions were "not recognized" by the boards in the states where they wished to practice. Of course, the medical schools not recognized did not mention the fact in their announcements. The only information for the student was that furnished by the medical colleges themselves; and, as a rule, the lower the grade of the school, the more pretentious were its announcements. For this reason, the average student was more likely to select the poorer than the better school. Since 1904, however, the situation has been decidedly changed. Much information has been published in *THE JOURNAL* relating to medical education and medical licensure, but unfortunately prospective medical students seldom read medical journals. In 1910, therefore, the Council began to issue leaflets prepared especially for prospective medical students, and in 1914 a more elaborate pamphlet entitled "Choice of a Medical School"¹ was published containing special instructions for the student and showing the essential entrance requirements, the tuition fees charged, the classification of all medical schools, and whether or not they were recognized by state licensing boards. For a series of years these pamphlets were sent to the principals of high schools, to the presidents of universities, to superintendents of public instruction and, on request, to many individuals, in the effort to have the information called to the attention of prospective students. Many thousands of these pamphlets also were circulated by the deans of state university medical schools. Altogether, more than 50,000 have been distributed. At the present time, therefore, the student who enters a medical college without knowing its classification and its standing before state boards is a rare exception.

REST PERIODS AND PHYSICAL EFFICIENCY

The needs of mankind which arose in every field of activity as an immediate outcome of the World War served to promote the gospel of efficiency at a time when many persons were revolting against the current tendency of measuring human welfare so largely in terms of maximal production. Hence much attention has been devoted of late to the investigation of varied aspects of this subject, notably in the direction of industrial efficiency. Aside from its economic or social relations, however, it has also a purely scientific interest of a sort that attaches to problems of the function of the muscular and nervous systems. Physical efficiency in man is concerned with the physiologic problem of fatigue. Rest is a recognized essential not only for ultimate recuperation but also for satisfactory performance. Hence the important question arises as to how much rest is required and when it should be instituted. The heart carries on its large burden of work successfully by a rapid alternation of contraction and relaxation. Other muscular activities in the body usually lack this rhythmic character and find their cessation at longer intervals. It has been stated

recently that when physical labor is very severe in character, an increase in efficiency can be brought about by interrupting the work at rather short intervals with spells of rest. If this is done, many of our procedures in the industrial world might advantageously be modified. Wallrich and Dawson¹ of the University of Wisconsin have come to the conclusion, in a study of the relation of the severity of exertion to the effect of spells of rest on production, that the nature of the work done is the decisive factor. When the exercise is severe, efficiency is increased by periods of rest; with light work, no such gain results. Practice and physical condition or training seem to alter the "neutral" point at which frequent rest periods just begin to show an advantage; hence the obvious desirability of adjusting tasks not only to the proper individual but also to his physical condition or stage of fitness. The same truth presumably applies to patients for whom exercise is to be planned in periods of convalescence.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Hospital for Colored Patients.—Fifteen licensed, graduate physicians of Los Angeles have purchased a site and propose to erect a hospital where colored patients, colored physicians and colored pupil nurses will be welcome.

Appointments for Leland Stanford Medical School.—The following appointments have been made at the Leland Stanford Junior University Medical School, San Francisco: Dr. Paul John Hanzlik, professor of pharmacology, formerly associate professor of pharmacology at Western Reserve University Medical School, Cleveland; Floyd de Eds, instructor in pharmacology; Dr. Robert Reid Newell, instructor in medicine (radiology), formerly assistant in medicine at the University of California Medical School, and Dr. Adelaide Brown, lecturer on child hygiene.

Food Research Institute.—The organization of a food research institute, made possible by the appropriation of a large sum of money by the Carnegie Corporation, is announced as a new department in graduate education at Leland Stanford Junior University. In addition to the research work, lecture courses will be given to the graduate students. Actual work will start in September. Dr. Alonzo E. Taylor, who recently resigned from the faculty of the University of Pennsylvania, will have supervision over the department of consumption. Dr. Carl L. Alsberg, who resigned, July 15, from the U. S. Bureau of Chemistry, will have charge of the production and distribution department, and Dr. John S. Davis, professor of economics, Harvard University, the banking and transportation problems. Food budgets and nutrition diets will be issued and distributed throughout the country, and every effort will be made to teach the American people to live economically.

COLORADO

Personal.—Dr. Philip Work, Pueblo, found a burglar in his office, August 5. Dr. Work captured the burglar and took him in his automobile to the office of the sheriff, where the prisoner confessed that his partner was at work in Dr. Work's home; a deputy captured the second burglar. Dr. Work is the son of Dr. Hubert Work.

1. The material for the latest issue of this pamphlet is contained in this issue of *THE JOURNAL* on pages 540-546.

1. Wallrich, Lucy A., and Dawson, P. M.: The Effect of Short Spells of Rest on Physical Efficiency as Measured by a Bicycle Ergometer, *Am. J. Physiol.* 56: 460 (July) 1921.

DISTRICT OF COLUMBIA

Personal.—Dr. Michael E. Gardner, recently appointed chief of the contagious disease service of the health department of the District of Columbia, has submitted his resignation to the district commissioners. It was accepted. Dr. Gardner served only for a few weeks.

Legislation to Sell Old Naval Hospital.—Representative Butler of Pennsylvania has introduced a bill in Congress authorizing the Secretary of War to dispose of the old Naval Hospital located in the District of Columbia either by sale or other means. The buildings and grounds are situated at Ninth and Pennsylvania Avenue. They have not been used for a number of years by the Navy Department. Efforts have been made for some time to have the property converted into a public library.

GEORGIA

Personal.—Surgeon George A. Wheeler, U. S. Public Health Service, has been ordered to Royston, for the purpose of investigating a reported outbreak of pellagra.

ILLINOIS

Chicago

Hospital News.—Surgeon Leon M. Wilbor, reserve, U. S. Public Health Service, has been placed in supervisory charge of both the Marine Hospital and the Jackson Park Hospital, Chicago, until such time as the transfer of patients in these institutions has been effected.

Health Exhibits at Pageant of Progress.—At the Pageant of Progress held in Chicago, August 1 to 14, exhibits of health activities were conducted by the Chicago Health Department, Illinois State Health Department, American Social Hygiene Association and the United States Public Health Service. There were also exhibits of methods of educating the blind and the deaf.

INDIANA

Physician's License Revoked.—It is reported that the Indiana State Board of Medical Registration and Examination, July 14, revoked the license of Dr. Albert A. Hill of Indianapolis. Dr. Hill had been found guilty of causing the death of a patient by performing an illegal operation.

MARYLAND

Personal.—Dr. Wade H. Frost, former surgeon in the U. S. Public Health Service, has been appointed head of the department of epidemiology and public health administration in the School of Hygiene and Public Health of the Johns Hopkins University.

Report of Health Board.—The state department of health has completed a report regarding the reorganization of the state government as it relates to the state board of health. This report will be used by the medical committee appointed by the governor to study the department. There are 100 employees in the department, which operates under an appropriation of \$240,000.

MASSACHUSETTS

Physician Stabbed by Patient.—It is reported that Dr. Nathan H. Garrick, Boston, was recently stabbed in his right arm by a patient who is said to be suffering from nervous trouble.

Addition to Tufts Faculty.—President Cousens of Tufts Medical School, Boston, has announced the appointment of Dr. Fred Wilbur Thyng as professor of anatomy, and Dr. Jesse Leroy Conel as assistant professor.

Personal.—Dr. Cornelius J. McGillicuddy, Boston, has been appointed by the mayor as temporary physician at the Wayfarer's Lodge.—Governor Cox has reappointed Dr. George M. Kline, Beverly, as director of the department of mental diseases, and Dr. Winsor M. Tyler, Lexington, associate medical examiner of the fourth Middlesex district, to succeed Dr. McCarthy, deceased.—Dr. Thomas Cuddy, assistant resident physician at the Long Island Hospital, Boston, has been made resident physician, to succeed Dr. Albert B. Murphy, who recently resigned to become a member of the staff of St. Mary's Hospital, Rochester, Minn.

MICHIGAN

Industrial Adjustment Center.—An institution to house, employ and manage subnormal persons who are too irresponsible to care for themselves, and not mentally deficient

enough to send to asylums, is planned for Detroit. Dr. David R. Clark, psychiatrist of Receiving Hospital, who conceived the idea, will have charge of the experiment, which will be called the Industrial Adjustment Center.

NEW JERSEY

Personal.—Dr. Duncan W. Blake, Sr., and Dr. Duncan W. Blake, Jr., were elected medical inspectors of the Gloucester schools.

NEW YORK

New York City

Personal.—Dr. Julius Lilienfeld, professor of physics at the University of Leipzig, has arrived in New York, where he has recently given a demonstration of his new roentgen-ray tube before the New York Roentgen Ray Society. Experiments are being carried on with the new tube at Bellevue under the direction of Dr. Isaac Seth Hirsch, director of the roentgen-ray department of Bellevue and allied hospitals.—Dr. George Gray Ward, Jr., sailed for Europe, July 26, to be gone two months.—Dr. Frederick E. Strozzi, Buffalo, has had conferred on him by the king of Italy the grade of Cavaliere of the Order of the Crown of Italy for conspicuous services during the war.

Resolution Relative to Habit-Forming Drugs.—At a meeting of the board of health, July 25, a resolution was adopted declaring as dangerous to the public health and a menace to the public welfare, any unauthorized possession, sale, distribution, prescribing, administering or dispensing of cocaine or opium, or any of their derivatives, or cannabis indica, cannabis sativa, or any of their derivatives, and making such acts unlawful. Certain trades and professions are authorized to dispense these drugs on condition of compliance with all provisions of the Harrison Narcotic Law. The same regulations were made regarding hypodermic syringes or other instruments adaptable for the use of these drugs. The provision does not apply to common carriers or warehouse men, or their employees, engaged in lawful transportation, or storage of such drugs, to public officials or their employees, who are engaged in the performance of their official duties. The resolution makes provision also for the commitment of any addict, on voluntary application, and a discharge or return for further action by the court, when certified by a medical officer or the head of an institution caring for drug addicts. The violation of any of the provisions will constitute a misdemeanor.

PENNSYLVANIA

Hospital News.—The department of pediatrics, St. Margaret's Memorial Hospital, Pittsburgh, recently opened the new wing, which will accommodate thirty-five children. The department is in charge of Dr. Percival J. Eaton. This hospital has also reorganized the department of roentgenology, and installed modern equipment. Dr. Homer Grimm has been made chief roentgenologist.

Lehigh Valley Medical Association.—The forty-first annual meeting of the Lehigh Valley Medical Association was held, July 28, at Delaware Water Gap, under the presidency of Dr. Samuel P. Mengel, Wilkes-Barre. The following officers have been elected for the ensuing year: Dr. Ambrose C. Herman, Lansdale, president; Dr. Alex. Armstrong, White Haven, secretary; Dr. Roger P. Batchlor, Palmerton, assistant secretary, and Dr. David H. Keller, Bangor, treasurer.

Dr. Baldy Named to Welfare Post.—Governor Sproul has appointed Dr. John M. Baldy, as commissioner of welfare under authority of the new law which was passed at the last session of the legislature. The law creates a department of welfare under the state government to take over the powers and duties of the old state board of public charities, the lunacy commission, the prison labor board and other related activities. Dr. Baldy has been president of the state board of medical education and licensure since its creation in 1911, and has had much to do with the raising of the standard of medical practice in Pennsylvania and in the upbuilding of the hospital system in the state. Dr. Irvin D. Metzger, Pittsburgh, has been elected chairman of the state bureau of medical education and licensure to succeed Dr. Baldy.

Philadelphia

Personal.—Dr. Neva R. Deardorff, former head of the bureau of municipal research, has been appointed to the board of trustees of the White-Williams Foundation.

Gifts for Phipps Institute.—The Henry Phipps Institute of the University of Pennsylvania has received a grant of

\$25,000 a year from the Carnegie Corporation, and \$25,000 for two years from the university trustees. The conditions which must be met that advantage may be taken of the Carnegie grant are, first, the grant itself be expended for research, and second, there shall be previously expended for research not less than \$50,000 a year, derived from other sources, in any year in which this grant is claimed.

SOUTH DAKOTA

Sioux Valley Medical Meeting.—The annual meeting of the Sioux Valley Medical Association was held, July 20-21, at Sioux Falls, under the presidency of Dr. Ernest A. Jenkinson, Sioux City. Dr. Robert E. Farr, Minneapolis, gave an address on the use of local anesthesia, illustrated by moving pictures.

TENNESSEE

Cheerfield Farm.—The public were invited to the formal opening exercises at Cheerfield Farm for undernourished children or those with tuberculous tendencies. The farm is situated near Raleigh, and is prepared to take care of fifty children. When active symptoms of tuberculosis are detected the patient will be sent to the sanatorium at Oaksville.

TEXAS

Health Appropriation Cut.—The appropriation asked by the state board of health has been cut \$361,840—almost one half—by the joint appropriation committee. Among the items eliminated were the appropriation to continue the fight against bubonic plague, provision for rural sanitation and the bureau of public health education.

CANADA

Personal.—Gen. George Stirling Ryerson, M.D., Toronto, is spending the summer at Niagara-on-the-Lake, Ontario. —Dr. George D. Porter, Toronto, has been appointed lecturer on public health in the University of Toronto. —Prof. J. W. Bridges, Ohio State University, Columbus, has been appointed assistant professor of psychology at the University of Toronto.

United States Doctors at Summer Association Meeting in New Ontario.—The annual meeting of District No. 9 of the Ontario Medical Association, known as New Ontario, was held, August 3, on board the steamer *Armoorlon*, the Magnetawan River, which district is the summer home of many notable medical men in Canada and the United States. On board the meeting was presided over by Dr. Edgar Brandon, North Bay, Ont. The following contributed papers: Dr. William E. Gallie, Toronto; Drs. Howard A. Kelly, Thomas Cullen, Charles L. Summers, Baltimore; Charles D. Parfitt, Gravenhurst, Ont.; Abraham Flexner, LL.D., New York, and Chancellor Kirkland, Vanderbilt University, Nashville, Tenn.

GENERAL

Reunion of Medical Officers.—The second annual reunion of the Eighty-Ninth Division Medical Officers will be held in Kansas City, Mo., Oct. 28, 1921. It is planned to have this meeting at the same time the Veterans of the World War hold their annual session.

National Association of Federal Medical Officers.—The Medical Reserve Officers stationed at U. S. Public Health Service Hospital No. 41 have recently formed an organization to be known as the "National Association of Federal Medical Officers," the object of which is "to promote and improve the care and treatment of disabled ex-service men; to promote better cooperation among its members; to maintain the highest possible standards of medical efficiency, and to advance the economic welfare of its members." Major John P. Wheeler, New Haven, Conn., was elected president, and Captain George S. Spence, Vineland, N. J., secretary. A local chapter was also formed to be known as the New Haven Chapter, and a business meeting of the association held, July 22. It was voted to forward to all public health stations a copy of the proceedings of the association, together with the constitution and a circular letter urging immediate organization of local chapters.

Warning.—Dr. O. P. Walker, Memphis, Tenn., writes that a male nurse giving the name of Clare D. Brooks, weight about 215 pounds, about 5 feet 7 inches in height, reddish complexion, smooth shaven, dark hair and brown eyes, wearing glasses, while employed in his office as an assistant, collected funds from patients and did not turn them over to the bookkeeper, and also passed a number of checks, signing the

name of one of the members of the firm to a check which he cashed. Investigation shows, according to Dr. Walker, that the nurse has had a police record in Detroit and Kansas City and has been recently heard of in St. Louis, where it has been reported that he again endeavored to pass a worthless check.

Sweet Bill to President Harding.—The Sweet bill for the creation of a veteran's bureau has been adopted by both houses of Congress and signed by President Harding. In the conference between the Senate and the House several final changes were made, the most important being to put the bureau under the direct jurisdiction of the President instead of making it a part of the Treasury Department. The measure combines the Bureau of War Risk Insurance, the agencies of the U. S. Public Health Service that have heretofore had charge of the hospitalization, care and treatment of disabled ex-service men, and the federal Board of Vocational Training into an independent organization. It also makes more liberal terms under which compensation may be granted. President Harding has appointed Col. C. R. Forbes, the present head of the War Risk Bureau, as the new head of the Veterans' Bureau.

Senate Committee to Investigate Hospitals.—The Senate committee headed by Senator Sutherland conducting an investigation into the care and treatment of ex-service men has announced its intention of making inspections of government hospitals before submitting its first report to the Senate. The committee will visit these hospitals unannounced and without advance notice. Patients in these institutions will be questioned by members of the committee regarding treatment accorded them by hospital officials and regarding conditions which they are compelled to bear. The committee is continuing its public hearings in the Senate office building. Col. C. R. Forbes, director of the Bureau of War Risk Insurance, was a witness last week and testified concerning conditions at the Johnson City, Tenn., Old Soldiers' Home, where 850 disabled veterans are patients. He declared that agents of the bureau had conducted a secret investigation and discovered that the inmates were living under the most astounding conditions of vice, corruption and immorality. Unless Congress took immediate action, he asserted, the deaths at the Johnson City institution would be higher than occurred among troops during the war. M. P. McInerney, an investigator for the War Risk Bureau who lived in the home for a week as a patient, testified to having bought morphin, moonshine and extract of ginger containing 95 per cent. alcohol. He stated that the grounds were overrun with immoral women. The witness testified that many patients carried revolvers, and there was no discipline. Senator Walsh, a member of the committee, demanded that the evidence be submitted to the attorney-general for prosecution.

Conference on Pellagra.—A conference to prevent the spread and recurrence of pellagra, attended by Surgeon-General Cumming of the U. S. Public Health Service, health officials from twelve Southern states, representatives of the American Red Cross and officials of the Department of Agriculture, met in Washington, D. C., this week. Discussion of the situation developed the general opinion that "there will be an increase of pellagra this year in localities in certain states where the disease has been epidemic." But, on the other hand, "the data show that the number of cases and deaths during 1921 will still be less than the annual average during the period of 1914 to 1921." Denial was made that there is a "condition approaching a famine or plague in the South," and the conference held that statements "erroneous and misleading" had been made to the public. In the resolutions that were adopted, emphasis was placed on the necessity that "federal health agencies, especially farm and home demonstration agencies of the state agricultural schools, carry into the rural homes the practical necessity for a better balanced diet, which should always include eggs, milk or milk products and vegetables." Further, that "encouragement should be given to efforts for the establishment of health departments in all counties or other units of government which will permit well trained health officers to carry leadership which will insure healthier and more productive lives." Those attending the conference were: State health officials; Dr. W. S. Leathers, Mississippi; Dr. J. P. Folan, Oklahoma; Dr. W. B. Kesting, Florida; Dr. W. F. Cogswell, Montana; Dr. Olin West, Tennessee; Dr. C. W. Garrison, Arkansas; Dr. A. T. McCormick, Kentucky; Dr. James A. Hayne, South Carolina; Dr. S. W. Welch, Alabama; Dr. Oscar Dowling, Louisiana; Dr. Ennion Williams, Virginia, and Dr. W. S. Rankin, North Carolina. Representing American Red Cross: Col. J. S. Joy, Washington, D. C.; Dr.

E. A. Peterson, Washington, D. C.; George H. Jones, director, southwestern division; Robert E. Bondy, director, southwestern division, and Harry L. Hopkins, manager, southern division. U. S. Department of Agriculture: C. O. Bannon, O. B. Martin and J. A. Evans. U. S. Public Health Service: Surg.-Gen. Hugh S. Cumming; Asst. Surg.-Gen. Allan J. McLaughlin, in charge of states relations; Asst. Surg.-Gen. J. W. Schereschewsky, in charge of scientific research; Asst. Surg.-Gen. B. A. Warren, in charge of sanitary reports and statistics; Dr. Joseph Goldberger, pellagra expert, and Edgar Sydensticker, statistician.

LATIN AMERICA

Personal.—Dr. J. Avilés and Dr. A. R. Laugier were the representatives of the Porto Rico Medical Association at the Boston session of the American Medical Association, of which it is a component part.—The Silva Araujo prize was recently awarded by the National Academy of Medicine at Rio de Janeiro to Dr. Belmiro Valverde for his work on "Leprosy in Brazil."

The Exodus from Colombia to Panama.—The *Repertorio de Medicina* of Bogota publishes an address by Dr. E. Montaña at a meeting of the surgical society, protesting against the way in which the sick in Colombia flock to the hospitals in the Canal Zone, and seeking to explain the reasons for this exodus to Panama and the remedy therefor. He said that the physicians and surgeons of Colombia have practically all taken supplementary training in their special fields in the Old World or in North America, but if this exodus continues they will soon have no clients but the indigent, stating that the records of the Ancon Hospital at Panama show that 62 per cent. of its pay patients are from Colombia. It is the fashion to go to Panama for treatment, and people talk of the wonderful operations done there, but he shows how the same kind of operations are done at home in Colombia and with just as much success. He urges the profession in Colombia to do more teamwork. By combining resources it will be possible to secure trained nurses like the famous ones of North America, more comfort in the hospitals and roentgen-ray equipment for differential diagnosis.

FOREIGN

Next International Congress of Urology to Be Held at Rome.—The second meeting of the International Urological Society, which is the name adopted since the war for the reorganized International Urologic Association, is to convene at Rome in 1924. The subjects appointed for discussion are glycosuria; vaccine therapy in urinary surgery, exclusive of gonococcus infection, and the remote results of surgery for calculi in the kidney. Professor Alessandri of Rome is to preside.

Shanghai Medical Society.—The society, recently formed, consists of most of the resident medical practitioners of Shanghai including all nationalities. The object will be the promotion of medicine, surgery and collective sciences in China by means of lectures and clinics. The members will also have the privilege of using the extensive medical and surgical library of St. Luke's Hospital. Dr. S. A. Rawson is president, and Dr. Hugh Lovet Cummins, secretary-treasurer.

Council on Pharmacy and Chemistry for Italy.—The recent merger of the medical school of the University of Pavia with the medical institutions of Milan including the institutes for graduate research, the great hospital, etc., has already been chronicled. It is now proposed to organize in connection with the whole a pharmacotherapeutic institute with purposes much the same as the Council on Pharmacy and Chemistry of the American Medical Association. Prof. P. Piccinini in his appeal on the subject in the *Avenire Sanitario* urges to model the institute on the one recently organized in the Netherlands, as more modest in its scope than the American council. It aims to investigate pharmaceuticals and inform the medical students and others, and combat nostrums.

Appropriation Asked for Further Research on Friedmann's Remedy.—In the 1921 budget of the German government department for science and art, one specification is for 800,000 marks to continue the study of the Friedmann remedy for tuberculosis. Already several hundred thousand marks of government appropriations have been spent on the committee conducting the research. The *Deutsche medizinische Wochenschrift* remarks that it would be better to devote the money to maintaining the sanatoriums which are closing their doors for lack of funds. The social insurance authori-

ties have had to close the children's sanatorium at Lichtenberg and dismiss the personnel, and the full utilization of the great sanatorium at Beelitz is threatened. Our exchange states that \$10,000 has been received from Chicago friends to apply to the support of the children's asylum maintained by the Nationalstiftung, and its name has been changed to Chicago-Kinderheim der Nationalstiftung.

Deaths in Other Countries

Dr. Evaristo García, a prominent physician, professor of medicine and statesman of Colombia, one of the founders of the National Academy of Medicine, president of the first national medical congress, member of the state and national legislature and author of numerous works on leprosy, tropical diseases, malaria, alcoholism, etc. He was appointed to the chair of medicine soon after his graduation in 1870.—Dr. Nicasio Fernández of Madrid, killed in a railroad accident.—Dr. O. Schmiedeberg, formerly professor of pharmacology at the University of Strasbourg, aged 83. He is said to have been the first to introduce and systematize experimental pharmacology, and his *Materia Medica* is now in its seventh edition and has been translated into several languages. He was born in Russia, and had been elected honorary member of a number of foreign scientific societies.—Dr. R. Jahn, chief health officer of Vienna.—Dr. Ramírez Santibañez of Mayaguez, Porto Rico.—Dr. P. Rusca of Rome.—Dr. L. Simarro, a psychiatrist, neurologist and histologist of Madrid, aged 69.—Dr. L. Becker of Berlin, an authority and writer on accident and sickness insurance matters.—Dr. W. Beckh, dermatologist of Nürnberg, aged 85.

Government Services

Purchase of Hospitals Authorized

Secretary Mellon of the Treasury Department has authorized the purchase of sites and buildings of the U. S. Public Health Service hospitals at Augusta, Ga., and Oteen, N. C., for the care of disabled soldiers. An expenditure of \$814,000 at Augusta and \$700,000 at Oteen is also authorized. The institution at Augusta will be developed into a soldier hospital of 500 beds and include five sixty-bed cottages, one twenty-five-bed tuberculosis cottage, one pavilion for disturbed patients, one kitchen and dining room, two cottages for nurses, one cottage for male attendants, and one power plant. At Oteen, the improvements provide for a fire-proof infirmary building with 200 beds for disabled soldiers. This sanatorium is now providing treatment for nearly 1,000 patients.

Public Health Service Inaugurates Nurses' Training School

Surgeon-General Hugh Cumming of the U. S. Public Health Service has inaugurated a training school for nurses. Consideration of the establishment of such a school has been under way for almost a year. The training will be given in selected government hospitals and the first course of instruction will be open Sept. 1, 1921, at Fort McHenry in Baltimore and at Fox Hills, Staten Island, N. Y. These hospitals provide for experience in surgical nursing, including orthopedic, eye, nose and throat; medical, including communicable, nervous and mental diseases; roentgen ray and laboratory technic; experience in diseases of children and public health nursing. Gynecology and obstetrics will be provided in the second and third years of the three-year course through affiliation with civilian hospitals. On entrance a credit of nine months, or approximately an academic year, will be given to graduates of the accredited colleges. Candidates should make application in person or writing to the Surgeon-General, U. S. Public Health Service, Washington, D. C.

Public Health Service Exhibits at Pageant

A feature of the Pageant of Progress held in Chicago was the exhibit of the United States Public Health Service arranged by Dr. Charles Bolduan. This included a series of twenty-four plates depicting the history of medical science and the progress of the health movement from the earliest times as well as demonstrations of modern methods of diagnosis, microscopic slides showing the various types of common pathogenic bacteria and charts showing the methods of conducting health exhibits.

Foreign Letters

LONDON

(From Our Regular Correspondent)
July 18, 1921.

The National Health

The annual report of the chief medical officer of the ministry of health for 1920 shows the steady improvement in the public health during the last decade, which is one of the most important social events of our time increasing the expectation of life. There was a rise in the birth rate last year which is conspicuous and interesting. The birth rate per thousand was:

1901-1910	27.2	1918	17.7
1916	20.9	1919	18.5
1917	17.8	1920	25.4

These figures show that we are recovering from the fall in the birth rate produced by the war. Still more encouraging is the fall in the death rate. The death rate per thousand was:

1901-1910	15.4	1918	17.6
1916	14.4	1919	13.8
1917	14.4	1920	12.4

The principal causes of death in their order were organic heart disease, diseases of the nervous system, cancer, bronchitis, pneumonia and tuberculosis:

Disease	Proportion of Deaths Per Thousand Deaths From All Causes
Organic heart disease	105
Diseases of the nervous system and special senses.....	102
Cancer	94
Bronchitis	82
Pneumonia	80
Tuberculosis of lung (phthisis)	72

INFANT MORTALITY DECLINE

The infant mortality is falling very rapidly. The mortality among children under 1 year, per thousand births, was:

1901-1910	128	1918	97
1916	91	1919	89
1917	96	1920	80

Most of the deaths still occur before the end of the fourth week of life. It is a significant fact that, whereas the general infant mortality rate is 80, that for illegitimate children is 155. This may be ascribed in large measure to lack of maternal care, and shows how great a part British motherhood has played in reducing the child death rate. Unhappily, the number of puerperal deaths has increased. This mortality has scarcely declined since 1894, and last year no fewer than 4,144 women died in childbirth and another 1,086 from conditions associated with it; 1,730 of the 4,144 died from puerperal fever. Epidemic encephalitis increased last year, the figures being: 1919, 541 cases notified; 1920, 890 cases notified. Possibly, however, diagnosis of the condition is improving. Research work is being carried out for its elucidation. There were sharp epidemics of scarlet fever and diphtheria—epidemics to some extent expected—but the case mortality was very small and is declining. Tuberculosis is still the most immediately fatal of the notifiable diseases, being responsible for 8.8 per cent. of the total deaths in England and Wales. Tuberculosis, however, and especially consumption, is declining fast. Notifications show a steady decline since 1912, and even in 1920 there was a fall of 4,500 on 1919. The difference between the figures for pulmonary tuberculosis in 1920, compared with 1917, shows practically a reduction of more than one sixth. The total number of cases notified is by far the lowest recorded since compul-

sory notification came into force. A substantial fall has also taken place in the number of deaths registered. The practice of the ministry of health in regard to venereal disease is based largely on the findings of the royal commission of 1916. But important new steps have been taken.. In 1920 there were made 69,000 microscopic examinations and 138,000 Wassermann tests. Venereal disease schemes of treatment have been instituted in 142 counties and county boroughs. The number of treatment centers now established is 190 with approximately 800 weekly sessions. Several "ablution" centers have been opened for an experimental period. Thirteen hostels have also been approved for the admission of women and girls. Special provision is now made in twenty-two medical schools for teaching the diagnosis, pathology and treatment of venereal disease. The effect of communal action against these diseases is difficult to measure, but in the fourth year of the scheme (1) there was a total number of new cases treated in clinics (including nonvenereal cases) of 103,000; the total number of attendances was 1,488,000; (2) the rapid rise of "new" cases in 1918 and 1919 did not continue; (3) the total attendance has increased greatly, the clinics being more appreciated as time passes.

MATERNITY AND CHILD WELFARE

The fall in infant mortality is held to be due not so much to any one factor as to general enlightenment and the coordination of ameliorative agencies on behalf of the mother. With the increase of the number of infant welfare centers from 340 in 1914 to 1,937 in 1920, the infant mortality rate has fallen from 105 to 80 per thousand during the same years. About 50,000 mothers bring their babies to the centers during a week; the number of mothers going regularly to centers is probably not less than 150,000.

Drunkenness

The annual licensing statistics, issued in a blue book on the operation of the laws relating to the sale of intoxicating drinks in England and Wales, show that in 1920 there were reductions in the numbers of saloons, but that the number of registered clubs is greater than ever. Convictions for drunkenness were more than half as numerous again as in 1919, but are still only just over half the total of the "record" year, 1913. As in 1919, the increase of clubs appears to be in some degree due to the revival of clubs which had ceased to exist during the war, and in a greater degree to the institution of new clubs to meet the desire of large numbers of men to maintain the associations they had formed during service with the forces. The total number of convictions for drunkenness in England and Wales in 1920 was 95,763, as compared with 57,948 for 1919—an increase of 65.26 per cent. This represents a continuance, with somewhat less vigor, of the reaction shown in 1919 from the notable decrease in convictions for drunkenness which began in the latter months of 1914 and persisted through the war years. The reaction began in the middle of 1918, and in 1919 increased month by month until December, which was the high-water mark. During 1920 a slight tendency to diminution was observable toward the end of the year, and for each of the areas—except Wales—the figures for December, 1920, are less than those for December, 1919. The total for 1920 is more than three times as great as the lowest total reached during the war, in 1918, and for the first time since 1915 the year's figures exceed one half of the highest total recorded since 1907—188,877 in 1913.

Awards for Medical Discovery

As reported before, this subject has been discussed from time to time. A conjoint committee of the British Science Guild and the British Medical Association was formed to call the attention of the government to the subject and had

suggested that a system of small pensions, somewhat on the lines of the civil list pensions, ought to be established in order to compensate physicians and others for work of great advantage to the public without being remunerative to themselves. Last year a deputation of the bodies mentioned waited on the government, which received their suggestions with sympathy but felt that there would be some difficulty in selecting particular candidates for the proposed pensions. The committee then wrote to the prime minister asking him to indicate or to establish some route by which awards might be obtained in deserving cases, and suggesting that the powers of the royal commission on awards to inventors might be enlarged so as to include medical and sanitary discoveries and inventions. He still has the matter under consideration. In a letter to the *Times*, Sir Ronald Ross calls attention to a case which illustrates the extreme disadvantages under which physicians now labor in the field of discovery and invention. Before or during the war a physician made valuable additions to methods of diagnosis by the roentgen ray, especially the localization of bullets in wounds. He therefore appealed to the royal commission for leave to apply to it for some reward, the commission having been expressly appointed for considering such claims. He was, however, refused permission on the ground that the chairman had "such a high esteem for the noble ideal which the medical profession had adopted for themselves in foregoing personal advantage in much of their work, giving their services free, discountenancing advertisement, and so on, that he was in favor of maintaining this spirit, and altogether against the idea that the royal commission could be persuaded to give an award to a member of the medical profession." Sir Ronald Ross points out that this means that while the inventors of life-destroying devices may be rewarded, those of life-saving devices, and indeed all medical men who improve medical and sanitary practice by scientific investigations or appliances, are to be excluded. There is only this to be said for it: The medical profession rightly objects, in the interests of suffering humanity, to medical discoveries or inventions being kept secret or monopolized by those who make them; but this does not mean that those who have made such discoveries or inventions and who have not kept them secret and have not monopolized them should be deprived of all reimbursement. Just the converse: these are precisely the cases in which the state is justified in making good the losses which conscientious medical men incur by their altruism. It is precisely because physicians do not patent their ideas that the state should endeavor to reward them in other ways.

PARIS

(From Our Regular Correspondent)

July 15, 1921.

Inquiry into Epidemic Encephalitis

On account of the recurrence of epidemic encephalitis, the minister of public health has requested the Academy of Medicine to devise measures to combat this disease and also epidemic hiccup. In order to furnish the academy with the necessary information, the minister has asked the prefect of police to notify him immediately of all cases coming to his knowledge. Consequently, though it is not compulsory to notify the administration of these diseases, the prefect of police has addressed a circular to all physicians in Paris asking them to advise him of all cases, even though mild, that come to their notice. With this object in view, all physicians have been sent question blanks on which to report their information in regard to the evolution of the disease; the presence or absence of similar cases in the home, in the locality, and in the region in which they live, and the relationship of the disease to influenza and to poliomyelitis.

Repression of Fraud in the Sale of Mineral Waters

The sale of so-called artificial mineral waters is beginning to take on the nature of a fraud on the public. As Monsieur Meillère recently stated before the Academy of Medicine, mineral water is a natural product concerning the composition of which we have but very scant knowledge and one that is hard to preserve with all its original qualities. The original water from which the mineral salts are obtained by evaporation can never be reproduced exactly by redissolving such residue, no matter how much care may be taken to perfect the process. Much less can it be truthfully claimed that a synthetic product is identical with the mineral water of which it is an imitation. To sell to the public an artificially mineralized water in place of a natural mineral water constitutes a fraud and should not be tolerated. The same may be said of saline powders sold for the extemporary preparation of artificial mineral waters corresponding to certain types of natural mineral water. In this case, also, the purchaser is cheated as regards the substantial qualities of the product sold him. The Academy of Medicine has so well recognized the dangers to public health that lie in such practices that it now refuses all authorization for the exploitation of salts derived by the evaporation of mineral waters and intended to be ingested in place of the original mineral waters. The sale of these powders under the name of a natural spring, the composition of which they unjustly pretend to represent, cannot but create confusion in the mind of the public. A decree with the view to repressing existing abuses and frauds in the sale of mineral waters is being drawn up.

Election of Foreign Correspondents of the Academy of Medicine

At a recent session, the Academy of Medicine elected, as foreign correspondents, Professor Henderson of Harvard University; Sir Robert Philipp of Edinburgh; Sir Humphry Rolleston of London, and Sir d'Arcy Power, also of London.

MEXICO CITY

(From Our Regular Correspondent)

July 24, 1921.

Academy of Medicine

At recent meetings of this association, there have been discussed, among others, the following subjects:

Dr. E. Cervera reported his experiences with the Wassermann test as regards the frequent presence in human serums of a varied amount of natural antisheep amboceptor. His conclusions are based on a comparative study of 100 cases, in which he was able to bring about the previous absorption of the natural amboceptors by the use of the antihuman hemolytic system proposed by Noguchi.

Dr. Ulises Valdés reported some cases in which he has resorted to a treatment, both simple and efficient, for the relief of febrile puerperal endometritis. The treatment consists in giving small doses of quinin by mouth, about 0.5 gm. each day, and abstaining from washes and any other local treatment aside from simple drainage with an aseptic gauze drain, and above all in keeping the patient in a sitting position instead of lying down as usual. This method, Valdés said, appealed to him when he first became acquainted with it because of its simplicity, and the results have always fulfilled his hopes. The successful outcome might be explained by the antiseptic action of quinin and the excellent drainage of the infected uterus. The sitting position will not permit the retention of septic products, and therefore their absorption will be very limited or cease absolutely.

Dr. J. Monjarás reported that when he visited Tampico to make an inspection according to orders from the head of the public health department, he examined several dead

bodies of plague patients. He found one of them infested by jiggers (*Sarcopsylla penetrans*). Suspecting that there might be some relation between this parasite and the plague infection, he carried out a bacterioscopic examination of the jiggers taken from the body and found *B. pestis* present. Dr. A. Gochicoa assisted him in this research. This finding brings up the question as to whether the presence of the plague bacillus was a mere coincidence or whether the parasite was the vector for the organism as it is the case with other diseases. The problem has a practical bearing, since, should the second possibility be true, there would have to be determined the place where the jiggers get the plague bacillus, and jigger infestation would have to be guarded against as a prophylactic measure against plague.

Second National Congress on Tabardillo

The call for this congress, which will be held under the auspices of the Public Health Department in the city of Mexico, Dec. 25-30, 1922, has already been issued. Besides physicians, other scientists may participate in the meeting, provided they have made studies related to typhus fever. The organizing committee will invite scientific institutions, both national and foreign, to take part in the congress. The official language will be Spanish but, as a courtesy to foreign delegates, papers in both French and English will be admitted. The committee has recommended for discussion several interesting subjects related to the etiology, prophylaxis and therapeutics of tabardillo. Further information may be obtained from the secretary, Dr. Ricardo E. Cicero, calle de las Moras, No. 34, Mexico City.

Transactions of Fifth Medical Congress

The Fifth National Congress, which had been postponed since 1912, was finally held in January, 1918, in the city of Pueblo. The publication of the proceedings, however, was deferred until a few days ago, when at last they were issued in a volume. The National University bore the expenses of publication, and Dr. Alfonso Pruneda, reporter of the congress, did the compiling. Copies of this book may be obtained by addressing the Director of the University, or Dr. Pruneda, 1^a del Alamo, 14.

Marriages

ARTHUR DUDLEY JACKSON, Major, M. C., U. S. Army, Ft. Riley, Kan., to Miss Hermione Walls Hoge of Kansas City, Mo., August 1.

GEORGE OVERTON BASSETT, Ft. Stanton, N. M., to Miss Kathleen G. Crowley of Forrestville, Conn., May 27.

DUDLEY LOUNSBERY ROSSITER, Fort Wayne, Ind., to Miss Mary Ann Hedgcock of Plymouth, Ill., July 28.

CECIL CLARE COPELAND to Miss Della Scott, both of Beaver City, Neb., at North Platte, Neb., in June.

DOUGLAS MACFARLAN, Ardmore, Pa., to Miss Dorothy Campbell of Whitemarsh, Pa., recently.

CECIL GEORGE NEWBECKER, Mill Valley, Calif., to Miss Grace Cahill, San Francisco, in June.

CHARLES HUTCHINSON, Martinsburg, W. Va., to Miss Nancy Reid, Chatham, Va., recently.

WALTER DENT WISE, Baltimore, to Mrs. Hugh McMillan of Colorado Springs, Colo., July 27.

GEORGE H. MISKO, Arcadia, Neb., to Miss Gladys Irene Whitford, Arlington, Neb., June 7.

JAMES G. EBLEN, Lenoir City, Tenn., to Miss Annie Whittle of Whittle Springs, Tenn., July 12.

WILLIAM C. MINNICH to Mrs. Cleo Gregg Fulton, both of Hot Springs, Ark., July 28.

HARRY S. MOORE to Miss Clara Elizabeth Hogue, both of San Francisco, August 4.

HERBERT H. DAVIS to Miss Olga Metz, both of Omaha, June 29.

Deaths

George A. Lung ☉ Captain, M. C., U. S. Navy, Newport, R. I.; University of Pennsylvania, 1886; died from a gunshot wound, self inflicted, at his summer home, Bristol, R. I., July 26, 1921, aged 59. Captain Lung was serving as medical officer to the members of the Naval War College. He was born in Canandaigua, N. Y., Dec. 21, 1862. After his medical graduation he was appointed assistant surgeon in the Navy, Nov. 3, 1888. In November, 1900, he was promoted to surgeon. He served with Admiral Sampson's squadron in the Spanish American War and was commended for bravery by the Secretary of the Navy for service in Samoa in 1899. In 1900 he served as medical officer with U. S. Marine Detachment in China, and in 1901 in the Canal Zone. During the administration of President Roosevelt he acted as naval officer on the *U. S. S. Mayflower*. Since 1912 he has served at the Naval Home, Philadelphia and during the World War was commander of the U. S. Naval Hospital in Brooklyn. He was president of the Association of Military Surgeons in 1919.

Walter Henry P. Hill, Montreal, Quebec; McGill University, Montreal, 1900; M.R.C.S. (Eng.), L.R.C.P. (London), 1902; formerly on the staff of the Montreal General Hospital; in 1915 went overseas with the McGill (No. 3) General Hospital, major, R. A. M. C., demonstrator of clinical surgery, McGill Faculty of Medicine; and until his death, associate surgeon, Royal Victoria Hospital, Montreal; was found dead in his automobile, July 23, from heart disease, aged 45.

James Foster Means ☉ Claremore, Okla.; Baltimore Medical College, 1892; specialized in ophthalmology; was secretary of the Board of U. S. Examining Surgeons for West Virginia, 1897-1904; took postgraduate courses at the New York Medical College and in Europe, in dermatology and ophthalmology; one of eighteen United States delegates to British Congress on Tuberculosis, in London; Captain in M. C., U. S. Army; died, July 9, from aortitis, aged 55.

William H. Baldwin, Alexandria, La.; Memphis Hospital Medical College, Memphis, 1901; member of the Tennessee State Medical Association, and also of the Louisiana State Medical Society; superintendent of the U. S. Public Health Service Hospital, Camp Stafford, 1919-1921; major, M. C., U. S. Army for four years, discharged, June 12, 1920; died, July 28, at the Baptist Hospital, from appendicitis, aged 50.

David Dandie Brough, Boston; Medical School of Harvard University, Boston, 1893; member of the Massachusetts Medical Society; connected with the Boston Health Department since 1893, and deputy commissioner since 1917; resigned July 26; hanged himself at his home, while suffering from dependency, July 31, aged 55.

Edwin Wilson Moore ☉ San Diego, Calif.; Charity Hospital Medical College, Cleveland, 1869; member of the Medical Society of the State of Pennsylvania; practitioner for nearly half a century; contributor to medical periodicals; died, July 31, at the Memorial Hospital, New York City, from pneumonia, aged 73.

James Monroe Fay, Northampton, Mass.; University of Vermont, Burlington, 1875; member of the Massachusetts Medical Society; elected to state legislature, 1892; died, July 26, at the Cooley Dickinson Hospital, where he had been on the staff for more than twenty years, and was a trustee until his death, aged 74.

Clovis Adams, Jersey City, N. J.; French School of Medicine, Paris; Columbia College, New York City, 1877; served in French army hospital, Franco-Prussian War; on the staffs of the Manhattan Eye, Ear, Nose and Throat Hospital, and the Orthopedic Hospital, New York City, died, July 28.

James T. Gibson, West Newton, Ga.; Georgia Eclectic Medical College, Atlanta, 1881; formerly county commissioner of Newton County, and chairman of the board of trustees of Livingston High School until the time of his death, June 24, aged 63.

Wesley F. Clapp, Fairport, N. Y.; New York Homeopathic Medical College, New York City, 1872; for several years, chairman of the Fairport Board of Education; died, July 15, at the Lee Private Hospital, Rochester, from cerebral hemorrhage, aged 73.

Abraham Jerome Kaiser, Newark, N. J.; Atlantic Medical College, Baltimore, 1909; died, July 8, at the Hahnemann Hospital, New York City, following an operation, aged 41.

☉ Indicates "Fellow" of the American Medical Association.

Rachael Tatnall Moon, Philadelphia; Woman's Medical College, Philadelphia, 1904; physician in charge at the House of Industry for Women and Children; died, July 24, at the Women's Hospital, Philadelphia, aged 47.

William H. Fahrenbruch, Culbert, Neb.; University of Nebraska College of Medicine, Omaha, 1920; died, July 24, at a local hospital in Lincoln, Neb., from pneumonia, following an illness of two years, aged 25.

George De Forest Smith, Kingston, N. Y.; College of Physicians and Surgeons (Columbia University), New York City, 1876; member of the New York Academy of Medicine; died, July 30, aged 69.

Marshal D. Callane, Flora, Ind.; Medical College of Indiana, Indianapolis, 1902; member of the Indiana State Medical Association; died, July 21, after a four months' illness, aged 50.

Benjamin Franklin French, Tippecanoe City, Ohio; Hahne-mann Medical College and Hospital, Philadelphia, 1880; Civil War veteran; died, June 23, at a hotel in Indianapolis, aged 86.

Elizabeth Cohen, New Orleans; Woman's Medical College of Pennsylvania, Philadelphia, 1857; died, May 28, at the Julius Weis Home, from myocarditis, aged 101.

Wallace B. Kelly, Independence, Kan.; New York Homeopathic College, New York City, 1881; member of the Kansas Medical Society, died, July 22, aged 76.

Archibald Campbell, Orrville, Ohio; University of Michigan, 1871; practitioner for nearly half a century; died, June 2, after an illness of two years, aged 76.

Levi Dawson Crawford, Marked Tree, Ark.; Barnes Medical College, St. Louis, 1894; died at Drakesboro, Ky., April 6, from angina pectoris, aged 63.

John P. Houston, Edwardsville, Ala.; Chattanooga (Tenn.) Medical College, 1904; died, July 1, at Heflin, Ala., from cerebral hemorrhage, aged 75.

Chester St. Julien Macbeth, Chicago; Northwestern University, Chicago, 1917; specialized in surgery and roentgenology; died, July 13, aged 35.

Green Munroe Cook, Hazard, Ky. (license, Ky., 1914), years of practice; member of the Kentucky State Medical Association; died, July 15.

William E. Crismore, Fremont, Ohio; Eclectic Medical Institute, Cincinnati, 1895; died suddenly, July 16, from cerebral hemorrhage, aged 49.

Everett Sayles Towne, Burlington, Vt.; University of Vermont, Burlington, 1914; was drowned in Lake Champlain, N. Y., June 18, aged 36.

Will J. Davidson Ⓢ Parkersburg, W. Va.; Atlanta Medical College, Georgia, 1895; died, July 12, in a local hospital, from blood poisoning.

John W. Patton, Morrilton, Ark.; University of Arkansas, Little Rock, 1889; member of the Arkansas Medical Society; died, May 11, aged 53.

Helen Williston Brown, New York City; Johns Hopkins University, Baltimore, 1911; died in the Sloane Hospital, July 29, aged 38.

Francis J. D'Avignon, Ausable Forks, N. Y.; Louisville Medical College, Louisville, 1874; dropped dead on the street, July 10, aged 70.

William A. Amis, Meeker, Okla.; University of Nashville (Tenn.), 1872; died about June 1, from cancer of the stomach, aged 72.

Thomas H. Pelletier, Van Buren, Me. (license, Maine, act of 1895); served in military hospital, Civil War; died, July 17, aged 78.

Douglas S. Tiffany, Waterloo, Iowa; Chicago Homeopathic Medical College, 1888; died, May 27, from heart disease, aged 60.

James Middleditch, Barneveld, N. Y.; University of Buffalo, N. Y., 1881; died, July 11, from cancer of the liver, aged 66.

Oscar Eskew Ⓢ Lebanon, Tenn.; University of Tennessee, Nashville, 1897; died, July 1, from tuberculosis, aged 46.

C. V. Dean, Wichita, Kan.; St. Louis Medical College, 1883; died, May 15, from narcotic toxemia, aged 65.

Margaret B. Best Ⓢ Meadville, Pa.; Trinity Medical College, Toronto, Can., 1899; died, May 26, aged 56.

Louis P. Coates, Altoona, Pa.; University of Pennsylvania, 1885; died, July 6, from chronic myocarditis.

John Haig, Bloomfield, Ind.; Miami Medical College, Cincinnati, 1880; died in July, aged 56.

Correspondence

CHIROPRACTIC IN OHIO

To the Editor:—I am enclosing a letter which I was obliged to address to a physician in Ohio last fall, together with the reply which I received, thinking that perhaps the correspondence might be of interest to readers of THE JOURNAL. Please omit the real names of the persons concerned.

M. M. WICKWARE, M.D., Detroit.

Supreme Physician, Ancient Order of Gleaners.

Dr. _____, _____, Ohio.

Dear Doctor:—I have before me for consideration the proofs of the death of Mrs. _____, who held a benefit certificate in the Gleaner Organization. The medical portion is signed and filled out by one "Doctor" S. B. Yoder, a chiropractic man. Would like to inquire of you whether the state of Ohio allows chiropractors to fill out death certificates? Evidently he was the last attendant upon the deceased and gives the cause of death as follows: "Analysis of spinal column showed complicated diseases. I adjusted for five months and half, which was contributed to her stomach and bowels and kidney which was paralyzed and overcame her heart & caused death."

As the proofs of death show that you attended the deceased at one time, would be pleased if you will, as one of our regular examiners, give me your opinion as to the cause of death, and inform me as to the standing and limitations of chiropractors in your state.

It seems ridiculous to me that these operators should be allowed to sign death certificates and to inflict themselves upon the public in any other capacity than ordinary "rubbers."

DR. M. M. WICKWARE,
Supreme Medical Examiner.

Dear Doctor:—Your letter to hand and will say in reply that Mrs. _____ died from gumma of the brain due to tertiary syphilis. Her blood test was Wassermann ++++.

This is one of the few states that allows chiropractors to sign death certificates.

_____, M.D.

OPPORTUNITIES FOR GRADUATE MEDICAL EDUCATION IN EUROPE

To the Editor:—In England as in other countries having customs different from our own, it is always desirable, especially to hurrying Americans, to know along what lines to proceed, in order to avoid loss both of time and of energy that could have been put to better ends.

So far as London is concerned, since its people speak English, the two special items concerning which Americans who are making their first trip abroad usually wish information are: What and where are the postgraduate facilities in London? What would be an average cost of living in London?

As regards postgraduate work in London, "The Fellowship of Medicine and Post-Graduate Medical Association," which was founded in 1918 under the presidency of the late Sir William Osler, exists for the express purpose of uniting overseas and British schools and students of medicine. This organization has its offices in the building of the Royal Society of Medicine at 1 Wimpole Street, London, W. 1. The building is not far from Oxford Circus, and is almost opposite Old Cavendish Street, where it ends in Henrietta Street. The executive secretary of the organization is Miss M. Willis, who is on duty daily, except Saturday, from 10 to 5. The American University Union in Europe is another London organization, and it offers a cordial invitation to Graduates of Class A American medical schools to register at the office of the society, which is located at 50, Russell Square, W. C. 1, London. It is open from 9:30 to 5:30, except Saturdays, when it closes at 1 p. m. Physicians who contemplate study in England should send twenty cents in American stamps to Miss Willis, with the request that a copy of the Bulletin of the Fellowship of Medicine and Post-Graduate Medical Association be mailed to them. An American physician can receive this bulletin weekly for one year by mailing the minimum membership fee of \$2.50 to

Miss Willis, and asking to be placed on the membership roll and mailing list. Members of this fellowship are also invited to avail themselves of the rooms and facilities of the "English Speaking Union" which are located at 1, Charing Cross, overlooking Trafalgar Square, London.

Living expenses need not exceed the cost of similar standards of living in America. I know of one American who has told me he has a pleasant flat and that his expense of living for himself and his wife totals about \$75 a month. He states that the markets are not expensive, and if one can find such a flat (some of the secretaries of the schools have lists, just as in America) it is seen that one's living expenses need not be any greater than in America. Of course, London has facilities for any kind of purse.

GEORGE H. KRESS, M.D., Los Angeles.

CHANGES IN EDUCATIONAL METHODS AND LEGISLATION ADVOCATED

To the Editor:—The discrepancies in the standards of the different legalized systems of practice are well known to the regular medical profession, and the time would appear to be ripe for a campaign of popular education and the revision of our state laws and regulations governing the irregular, so-called, schools.

It is axiomatic that a definite level of knowledge of certain basal sciences, more especially anatomy, physiology, physiologic chemistry and pathology, must form an indispensably necessary background of any or all practitioners of the healing art. Without doubt the adoption of a uniform standard by the state equivalent to that of the first class, regular schools of medicine in this country, in the branches before named, would enlighten the student to the extent of enabling him to appreciate the limitations of usefulness as curative agencies of osteopathy and other drugless cults, it being generally conceded that some, at least, of these newer sects and isms have a little virtue behind them.

Unfortunately, the regular profession is largely responsible, through neglect of that valuable measure massage, and certain additional forms of mechanotherapy, for the birth of osteopathy and other mongrels, and the present period of social reconstruction would, as already stated, be an appropriate season in which to bring about a just modification of existing state laws and regulations that control them.

Obviously, the desired goal can only be reached by getting the public back of the movement. To this end, the public must be fully informed of the inadequacy in important particulars of the preparation in irregular schools for the diagnosis and treatment of the many ills to which man is liable, that great deficiencies are to be noted in the advantages offered by them, not only with regard to opportunities for the study of the scientific branches, but also for the study of diseases at the bedside as well as from the laboratory side. It will be seen that the situation demands an organized educational campaign on a country-wide basis, and this could be most effectively carried out by the American Medical Association, with the concerted assistance of other leading national and local medical societies. The mechanism needed could readily be developed by this large and influential body on the basis of state or county units.

In concluding, let me recapitulate my proposals: (a) uniformity of training in the vitally important fundamental branches—anatomy, physiology, physiologic chemistry and pathology, for all schools and sects; (b) a corresponding revision of existing laws and regulations as affecting the irregular schools of practice with respect to these subjects; (c) public education as a preliminary and accompanying step, with a view to crystallizing public sentiment in favor of the two preceding propositions; (d) publicity regarding the low

standards prevailing in irregular schools as compared with regular schools of medicine, and (e) direction of public attention to the limited spheres of usefulness of osteopathy and the other newer sects.

JAMES M. ANDERS, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

AUTO-URINE TEST FOR TUBERCULOSIS—INTRADERMAL INJECTION OF URINE

To the Editor:—Please describe the auto-urine test for active tuberculosis.

K. M. LYNCH, M.D., Dallas, Texas.

ANSWER.—This test was first described by H. Wildbolz in the *Correspondenz-Blatt für Schweizer Aerzte* 49:793 (May 31) 1919. Wildbolz demonstrated that when there is an active process of tuberculosis the urine contains an antigen which, injected by the Mantoux intradermal technic, induces infiltration and redness. This does not occur with urine from healthy persons or in urine from persons with healed tuberculous processes. It never occurs unless the person gives a positive response to injection of 1:10,000 tuberculin, but it seems to occur whether the urine is from the person being tested or not, so long as he has an active tuberculous process anywhere in the body, in glands, peritoneum, lung, bones or elsewhere. Wildbolz evaporates morning urine to 1:10, passes it once or twice through a paper filter impregnated with 2 per cent. phenol (carbolic acid), and then makes three sets of two injections on the arms, the two upper with 1:1,000 tuberculin; 3 or 4 cm. below this, two with 1:10,000 tuberculin, and, the same distance below, two with a minute amount of the 1:10 evaporated urine. The response with an active tuberculous process is the same with the urine as with the diluted tuberculin, but the tuberculin response persists unmodified after the process has healed, while the urine response fades out completely. A similar response was never obtained in the nontuberculous, not even in syphilis, influenza, etc., with the single exception that urine containing large amounts of staphylococci induced a reaction, so that the findings are not pathognomonic in certain cases of nephritis. With this exception, this biologic reaction may be depended on to reveal the tuberculous or nontuberculous nature of lesions, and will also disclose when they are healed. If the urine reaction persists after the clinical healing of the known process, there is some other active process elsewhere. The specific nature of the urine reaction is demonstrated still more conclusively by the fact that, after subsidence of the urine reaction, if an injection of 1:1,000 tuberculin is made nearby, the apparently extinct urine reaction flares up anew, the infiltration and redness becoming distinct again.

VITAMINS AND THEIR DISTRIBUTION

To the Editor:—I have noticed of late frequent advertisements extolling the virtue of Fleischmann's yeast as a supplementary food because of its water soluble B content. While it is true that yeast is rich in the supply of this vitamin and that its absence from the diet causes disease—viz., beriberi—the advertisements fail to mention that this disease is exceedingly rare in America and that, as McCollum states, there is seven times as much of this heat-stable, water-soluble vitamin in the average American mixed diet as is needed for health.

HUGH MACDONALD, M.D., Evanston, Ill.

ANSWER.—"The Uses of Yeast" were discussed in this department of THE JOURNAL, Aug. 23, 1919. At that time it was pointed out that while yeast is a rich source of the accessory food factor known as water soluble B, so many common foods also contained this vitamin that there was little likelihood of yeast proving of any therapeutic value on that account. As a matter of fact, there is a vast amount of nonsense promulgated today—usually for commercial purposes—on the subject of accessory food factors. Two years ago a report was published by a committee appointed jointly by the Lister Institute and the Medical Research Committee, detailing briefly "The Present State of Knowledge Concerning Accessory Food Factors (Vitamins)." The findings of this committee are of great interest. At the end of the report a valuable table is given, showing the distribution of the three vitamins in the commoner foodstuffs. In the absence of quantitative data it was impossible for the committee to

do more than indicate the relative values of the foodstuffs as sources of the various vitamins, by the rough method of positive and negative signs. The table, with slight modifications, follows:

Classes of Foodstuff	Fat-Soluble A or Anti- rachitic Factor	Water-Solu- ble B or Anti- neuritic (An- tiberiberi) Factor	Antiscor- butic Factor
Fats and Oils:			
Butter	+++		
Cream	++		
Cod-liver oil	+++		
Mutton fat	++		
Beef fat or suet	++		
Peanut oil	+		
Fish oil, whale oil, etc..	++		
Margarin prepared from animal fat	Value in pro- portion to amount of animal fat contained		
Nut butters	+		
Meat, Fish, etc.:			
Lean meat (beef, mut- ton, etc.)	+	+	+
Liver	++	++	+
Kidneys	++	+	
Heart	++	+	
Brain	+	++	
Sweetbreads	+	++	
Fish, white		very slight, if any	
Fish, fat (salmon, her- ring, etc.)	++	very slight, if any	
Fish, roe	+	++	
Canned meats	?	very slight	
Milk, Cheese, etc.:			
Milk, cow's whole, raw.	++	+	+
Milk, skim, raw		+	+
Milk, dried whole	less than ++	+	less than +
Milk, boiled, whole	undetermined	+	less than +
Milk, condensed, sweet- ened	+	+	less than +
Cheese, whole milk	+		
Eggs:			
Fresh	++	+++	?
Dried	++	+++	?
Cereals, Pulses, etc.:			
Wheat, maize, rice, whole grain	+	+	
Wheat germ	++	+++	
Wheat, maize, bran		++	
Linseed, millet	++	++	
Dried peas, lentils, etc..		++	
Soy beans, haricot beans	+	++	
Germinated pulses or cereals	+	++	++
Vegetables and Fruits:			
Cabbage, fresh (raw)...	++	+	+++
Cabbage, fresh (cooked)		+	+
Cabbage, dried	+	+	very slight
Cabbage, canned			very slight
Swede (rutabaga) raw expressed juice			+++
Lettuce	++	+	
Spinach (dried)	++	+	
Carrots, fresh raw	+	+	+
Carrots, dried	very slight		
Beetroot, raw, expressed juice			less than +
Potatoes, raw	+	+	
Potatoes, cooked			+
Beans, fresh, scarlet run- ners, raw			++
Onions, cooked			+ at least
Lemon juice, fresh			++
Lemon juice, preserved..			++
Lime juice, fresh			++
Lime juice, preserved..			very slight
Orange juice, fresh			++
Raspberries			++
Apples			+
Bananas	+	+	very slight
Tomatoes (canned)			++
Nuts	+	++	
Miscellaneous:			
Yeast, dried		+++	
Yeast, extract and auto- lysed	?	+++	
Malt extract		+ in some specimens	

None of the three factors were found in:
Lard.
Olive, cottonseed, coconut or linseed oils.
Coco butter.
Hardened fats, animal or vegetable in origin.
Margarin from vegetable fats or lard.
Cheese from skim milk.
Polished rice, white wheaten flour, pure cornflour, etc.
Custard powders, egg substitutes, prepared from cereal products.
Peaflour (kilned).
Meat extract.
Beer.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter P. Bowers, 144 State House, Boston.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan Concord.

Massachusetts March Examination

Dr. Walter P. Bowers, secretary, Massachusetts Board of Registration in Medicine, reports the oral, written and practical examination held at Boston, March 8-10, 1921. The examination covered 13 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 47 candidates examined, 18 passed and 27 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Hahnemann Medical College of the Pacific.....	(1916)		75.2
American Medical Missionary College.....	(1904)		75
Rush Medical College.....	(1921)		79.1
Johns Hopkins University.....	(1901)		79.1
Maryland Medical College.....	(1910)		75
University of Maryland.....	(1918)		79.7
Harvard University.....	(1919)		79.9
Middlesex College of Medicine and Surgery.....	(1920)	76.8	82.8
University Medical College of Kansas City.....	(1900)		75
Columbia University.....	(1916)	85.3, (1919)	84.3
Jefferson Medical College.....	(1920)		83.5
University of Helsingfors.....	(1899)		75
University of Edinburgh.....	(1915)*		97.1
Medical School of American University of Beirut.....	(1905)*		76.5

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles.....	(1920)		58
Emory University.....	(1920)		71.7
University of Maryland.....	(1919)		72.7
Baltimore Medical College.....	(1902)		68.7
College of Physicians and Surgeons, Boston.....	(1908)		65.9
Middlesex College of Medicine and Surgery.....	(1918)		59.4
Tufts Medical College.....	(1920)		72.6
Laval University.....	(1918)	60.7, (1920)	68.9
University of Naples.....	(1919)*		51.9
University of St. Vladimira.....	(1904)*		61.1
University of Constantinople.....	(1915)*		52.5
School of Medicine and Surgery, Lisbon.....	(1915)*		57.4
Osteopaths	63, 64.5, 66.2, 67.3, 68.7		

* Graduation not verified.

Ohio April Examination

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports that 26 candidates were licensed by reciprocity at the meeting held April 5, 1921. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University	(1917)		W. Virginia
George Washington University.....	(1907)		Dist. Colum.
Howard University.....	(1908)		Pennsylvania, (1915) Dist. Colum.
State University of Iowa College of Medicine.....	(1919)		Iowa
State Univ. of Iowa Coll. of Homeopathic Medicine.....	(1906)		Iowa
Kentucky School of Medicine.....	(1884)		Indiana
University of Louisville.....	(1876)		Kentucky
Baltimore Medical College.....	(1909)		W. Virginia
Johns Hopkins University.....	(1919, 2)		Maryland
University of Maryland.....	(1903)		Penna.
University of Michigan Medical School.....	(1915), (1916), (1918), (1920, 4)		Michigan
University of Michigan Homeopathic Medical School.....	(1915)		New York
St. Louis University School of Medicine.....	(1918)		Missouri
Meharry Medical College.....	(1918)		Texas, (1919) W. Virginia
(1920) Maryland			
Vanderbilt University.....	(1906)		Alabama, (1910) Kentucky

Delaware June Examination

Dr. P. S. Downs, secretary, Delaware State Board of Medical Examiners, reports the written and practical examination held at Wilmington, June 21-23, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. Two candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Maryland.....	(1921)		82.4
Temple University	(1920)		78.3
University of Pennsylvania.....	(1920)		77.8
Osteopath			77.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Syracuse University College of Medicine.....	(1908)		New York
University of Virginia.....	(1920)		Virginia

Book Notices

MANIC-DEPRESSIVE INSANITY AND PARANOIA. By Professor Emil Kraepelin. Translated by R. Mary Barclay, M.A., M.B., from the Eighth German Edition of the "Text-Book of Psychiatry," Vols. III and IV. Edited by George M. Robertson, M.D., F.R.C.P., Professor of Psychiatry in the University of Edinburgh. Cloth. Price, \$6. Pp. 280. Chicago: Chicago Medical Book Company, 1920.

Kraepelin's approach to the subject is almost purely pictorial. If there has been any advance in the interpretative side of psychiatry, he apparently considers it negligible. It is impossible to read page after page of repetitions of the contents of delusions, pages of percentages in ages, sex, etc., and not be struck by the lack of space devoted to some attempt at understanding the patient. It may be that repetitions such as occur in the chapters on psychic symptoms, manic states and depressive states are necessary; but in the absence of space devoted to some discussion of possible interpretation, it seems like padding. It may be that the text has suffered in translation as, for example, on page 186 a paragraph beginning with the words "weighty reasons" is not preceded by what seem to be weighty reasons. Time after time the occurrence of ideas of sin and persecutions are cited as being coexistent, without a suggestion that there can be any causal relation between the two and without comment as to the origin of the ideas of sin. In fact, on page 13 the author states that "the delusional interpretation is of subsidiary importance." In view of the pictorial nature of the book, it is of interest to observe in a portrait (page 28) great preoccupation or withdrawal from reality which is not mentioned in the text. Is there no relationship between perception, consciousness and memory? There is none hinted at; the different psychic manifestations are handled as if quite independent of one another. Although the manic-depressive predisposition is mentioned as the fundamental state, still the book gives a distinct impression of dealing with a sickness, not of dealing with a personality become sick. The conception of paranoia has gradually grown to be more circumscribed. Is it because cases which can be considered "psychically intact" are becoming more difficult to find? Is the idea of intact psyche in a mental disease something to be thrown aside as paradoxical? The action of emotion, of desire, on perception is too completely proved to be neglected. If the paranoiac is dominated by ideas into which fit his delusions, is his perception not going to be falsified and can he be considered psychically intact? Would not the distinguished author himself be among the first to be offended by the inconsistency of the conception of paranoia? Many of his quotations, such as that on page 222, could scarcely be considered as emanating from one psychically intact. The portion devoted to causes and delimitation is of much greater interest than the rest of the book, but what is condensed into twenty pages seems to be rather overbalanced by the preceding 250 pages.

GLI APPARECCHI ORTOPEDICI. By F. Delitala. Cloth. Pp. 296, with 248 illustrations. Bologna: L. Cappelli, 1921.

This book is interesting and well written. It emphasizes properly the use of celluloid as a material for many varieties of splints, and describes the technic. Sheet celluloid, especially, has been far too little employed in America in the construction of orthopedic apparatus, although celluloid dissolved in acetone has been familiar to us for many years. Vulcanized rubber, which is advocated for some of the arm splints, is undoubtedly useful, but the difficulties in connection with its preparation have interfered with its popularity. In general, the book follows closely the standard practice in those countries where orthopedic work has made a place for itself as a special branch of surgery. The braces for scoliosis are well designed, and will probably be widely copied. An appendix contains a description and specifications for an orthopedic shop. It is somewhat disappointing to find very little reference to prostheses and artificial limbs, especially those designed to be used after kineplastic amputations, but it is probably true that even in Italy, the place of its birth, the kineplastic method has not as yet been sufficiently standardized by the surgeons and the makers of apparatus.

Medicolegal

Town Without Authority to Operate Ambulance and Not Liable for Injuries

(*Ducey v. Inhabitants of Town of Webster (Mass.)*, 130 N. E. R. 53)

The Supreme Judicial Court of Massachusetts, in ordering a judgment to be entered for the defendant in this action brought by the plaintiff to recover damages because, while he was a traveler on a public highway, he was run into and injured by an automobile ambulance owned by the defendant and operated by one of its agents, holds that, as the defendant had no authority to purchase and operate the ambulance for the purposes for which it was used, the defendant could not be held in damages for the negligence of its servants or agents. The court says that the ambulance was purchased and put in charge of the selectmen of the town of Webster by a vote or votes regularly passed in a town meeting, and was used by the town in conveying the inhabitants thereof to hospitals outside the town whenever occasion required, which service was free to residents of Webster. It was also used to carry passengers from surrounding towns, a charge being made for such services. Under the statutes of Massachusetts, a town may erect and maintain a hospital for the reception of persons who require relief during temporary illness. It may establish hospitals within its limits for the treatment of diseases dangerous to public health. It may also contract for the care and treatment by hospitals in the town or in the vicinity thereof of persons who by misfortune or poverty require relief. But no authority is expressly given to towns to operate an ambulance for the general conveyance of the sick and injured who may require hospital treatment; and no such power can be implied, even if the court assume, without deciding, that it may be at times necessary to provide by suitable means for the conveyance of patients to or from a municipal hospital established by the town, or to or from a hospital for the treatment of diseases dangerous to the public health, or for the conveyance to a hospital in a neighboring city or town of poor people who require relief and who because of misfortune are unable to pay; and, also, that it may be a proper charge for which the town can appropriate money. There is no statute in Massachusetts which permits a town to expend the public funds for the purchase and operation of an ambulance for the general use of the inhabitants in case of sickness, when they are able to pay for their conveyance and are not dependent on the public for support. On the record, that was the use to which this ambulance was put. It follows that the operation of the ambulance was beyond the defendant's corporate powers, and was not a necessary charge for which the money of the taxpayers could be appropriated. It is furthermore the established law of Massachusetts that the inhabitants of a town in their corporate capacity are not liable for a tort committed under the supposed authority of an illegal and void vote of the town. Nor, on the record in this case, could the operation of an automobile ambulance be held to be incidental to powers of the town, or sanctioned by long established usage. Neither does the case fall within the recognized rule holding a municipality responsible for injuries when it has undertaken a work under the law, but incidentally and in part for profit.

Society Proceedings

COMING MEETINGS

Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Sept. 6-8.
Delaware State Medical Society, Rehoboth, Aug. 16.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 27-29.
Minnesota State Medical Association, Duluth, Aug. 24-26.
National Medical Association, Louisville, Ky., Aug. 23-26.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Annals of Surgery, New York

July, 1921, 73, No. 1

- *Ruptured Spleens, Spontaneous and Subcutaneous. J. F. Connors, New York.—p. 1.
- *Spontaneous Rupture of Malarial Spleen. W. E. Leighton, St. Louis.—p. 13.
- *Surgery of Cysts of Spleen. R. H. Fowler, Brooklyn, N. Y.—p. 20.
- Technic of Nerve Surgery. K. W. Ney, New York.—p. 37.
- *Surgery of Infantile Paralysis. J. T. Rugh, Philadelphia.—p. 61.
- *Fracture of Skull in Children. J. J. Moorhead and W. Weller, New York.—p. 72.
- *Value of Chlorinated Soda Solution in Treatment of Thoracic Empyema. A. O. Wilensky, New York.—p. 79.
- Primary Closure of Ureter and Renal Pelvis After Nephrolithotomy. L. Guerry, Columbia, S. C.—p. 85.
- *Case of Uretero-Ureteral Anastomosis. J. D. McEachern, Winnipeg, Manitoba.—p. 92.
- *Diverticula of Jejunum. H. N. MacKechnie, Chicago.—p. 96.

Spontaneous and Subcutaneous Spleen Ruptures.—Connors reports the case of a man who complained of pain in the right hypochondriac region which was increased on deep inspiration. He was unable to lie on the right side; was very constipated, having a movement once in three or four days. After severe catharsis bowels would move freely for one day, when the constipation would return. He was nauseated during his attacks of constipation. The roentgenograms showed that he had an obstruction in the region of the splenic flexure. At operation the intestine in the region of the splenic flexure was found to be normal. When the gut at this point was pushed aside, a very large hematoma presented itself, which ruptured as soon as the hand touched it. This proved to be the splenic capsule. The spleen itself was almost bisected longitudinally by a rupture. When the hematoma was cleared away there was no sign of any active hemorrhage. There was no history of trauma. The first pain on the left side occurred the day before his admission to the hospital. Connors believes the rupture occurred that day, and the bleeding was checked by the intracapsular pressure. The man made a good recovery and left the hospital in four weeks in apparently good physical condition. Three months later, he returned with the history that he had had attacks of indigestion with eructations of gas. At the time of these attacks there is a great deal of pain in the abdomen in the region of the umbilicus. For some time he has been unable to stand in the erect posture on account of a dragging sensation in the region of the mass in the abdomen. This pain was markedly increased at every attempt to change his position. He has a sensation of something swelling inside him, which increased the pain and when able to belch gas was considerably relieved. At operation a large cystic mass was found which seemed to spring from the location of the spleen and was bulging between the stomach and the splenic flexure. It was movable and was free from any adhesions to the surrounding organs. The cyst was packed with iodoform gauze, the wound closed and drained. Connors is certain that this was a pancreatic cyst which was the result of the injury to the pancreas at the time of the operation for splenectomy performed three months previously.

Spontaneous Rupture of Malarial Spleen.—Leighton cites one case, and gives an abstract of cases reported between 1842 and 1921.

Surgery of Cysts of Spleen.—Fowler's studies include ninety cases of nonparasitic cysts of the spleen, representing a variety of types due to various causes classified as true and false, depending on their mode of origin. Two authentic cases of dermoid cysts are recorded in the literature. Sixty cases of nonparasitic cysts have been treated surgically, eleven by puncture, fourteen by incision and drainage, six by excision or partial splenectomy, thirty by splenectomy. The latter is usually the method of choice. The mortality for splenectomy is 3.5 per cent. Echinococcus disease of the spleen represents the one type of parasitic cysts reported in the literature. This disease is rarely a surgical problem of

the spleen alone, for in about four fifths of the cases the liver or other organ is involved. There are about one hundred recorded cases up to 1890. The mortality for twenty-three cases subjected to splenectomy up to 1908 is about 17 per cent.

Surgery of Infantile Paralysis.—While the surgery of infantile paralysis has been proved to be one of the most beneficial agents in correcting deformities, and in reconstructing parts for the development and maintenance of function, Rugh states that there are two aids which may never be lost sight of in the quest for success. These two aids are proper and efficient mechanical support until sufficient power has developed to take care of the condition and developmental exercises and training to improve and increase the power which may remain in any of the muscle structures. Coordinate and cooperative efforts are absolutely essential to this work.

Skull Fracture in Children.—A statistical survey of 100 cases was made by J. J. Moorhead and W. Weller. The mortality in this series was 26 per cent., in which 5 per cent. followed vault fracture, and 10 per cent. basal and 11 per cent. combined vault and basal injury; stated in another way, involvement of the base gave a mortality of 21 per cent., four times that of the vault. If associated injuries are excluded, mortality is only 17 per cent. Early death (within forty-eight hours) was due to the head injury or associated injury; thereafter infection in the form of meningitis, often pneumococcic, was the chief factor. Sixteen patients died within twenty-four hours, four within forty-eight hours; this means that over three-fourths (76.7 per cent.) of fatalities occurred in the first two days. Fifty-one per cent. of the quoted cases involved the vault with a mortality of 5 per cent.; 17 per cent. involved the base with a mortality of 10 per cent.; 32 per cent. involved base and vault with a mortality of 11 per cent. By comparison with adults, children have a 25 per cent. better chance for life with an equal grade of skull injury. The number of cases requiring operation is relatively small; in this group 12 per cent. of patients were operated on.

Surgical Solution of Chlorinated Soda Ineffectual in Empyema.—Wilensky expresses the belief that in the cases in which the use of surgical solution of chlorinated soda is satisfactory, a healing similar in all respects would be obtained without the use of this antiseptic solution of the same meticulous care were exercised in the postoperative management as is necessary according to the precepts of the method.

Case of Uretero-Ureteral Anastomosis.—McEachern has modified Van Hook's technic. He closes the end of the lower segment and invaginates the upper segment in a slit made in the side of the lower segment—a sort of end to side anastomosis.

Diverticula of Jejunum.—MacKechnie reports one case and reviews twenty-five cases from the literature.

California State Journal of Medicine, San Francisco

July, 1921, 19, No. 7

- *Some Aspects of Pernicious Anemia and Its Treatment. S. H. Hurwitz, San Francisco.—p. 275.
- Peripheral Nerve Surgery. C. L. Tranter, San Francisco.—p. 280.
- *Amebic Abscess of Liver with Pulmonary Sequels. R. Brown, Santa Barbara.—p. 282.
- Ureteral Diverticula. N. G. Hale and C. E. von Geldern, Sacramento.—p. 284.
- One Hundred Consecutive Perineal Prostatectomies. A. B. Cecil, Los Angeles.—p. 287.
- Cases of Fractured Skull Seen in San Francisco Emergency Hospitals. E. Butler, San Francisco.—p. 289.
- Surgical Results from Economic Standpoint. G. G. Moseley, San Francisco.—p. 291.
- Case of Chronic Dilatation of Duodenum. H. Shoemaker, Los Angeles.—p. 292.
- *Acute Suppurative Thyroiditis. P. K. Gilman, San Francisco.—p. 294.

Treatment of Pernicious Anemia.—The essential factors of importance in the general care of a patient with pernicious anemia, Hurwitz says, are diet and rest. The latter in particular should be emphasized. Iron and arsenic are of secondary importance. Transfusion of blood is a valuable emergency measure to tide a patient over a severe relapse. It gives remarkable symptomatic relief, and in patients who

are not in a state of the disease refractory to any form of treatment, transfusion helps to bring on a remission. It does not prolong a spontaneous remission, nor does it lengthen the average duration of life of patients suffering from the disease. Removal of the spleen in pernicious anemia may produce an immediately beneficial effect in selected cases by increasing the activity of the bone-marrow, provided the latter does not show evidences of depressed function or exhaustion. Splenectomy may also prolong life in about one-fifth of the patients.

Case of Amebic Abscess of Liver.—Brown's patient had a severe attack of dysentery, which, with remissions, was continuous to death. Following a choking attack, he coughed up a large quantity of pus. Progressive exhaustion and toxemia ensued. Physical examination of the chest and abdomen, supplemented by roentgen-ray findings, revealed what was considered an abscess of the right lung continuous with an abscess of the liver. Dullness reached from the fourth rib above to two finger breadths below the costal margin, where the lower margin of liver was plainly felt. The abdomen was opened. The liver was needled in several directions without aspirating pus. A needle inserted below the angle of the right scapula filled with pus. The rib in that section was resected and a large tube was placed in an abscess of great size. The patient died nine days later. The necropsy showed that the lung tissue in the lower three-fourths of the right lower lobe had been destroyed, and immediately beneath the pleura was a large pulmonary cavity. A second, smaller abscess cavity was found in the left lower lobe. The case presents some interesting features. One, the most important, is the absence of an opening through the diaphragm connecting the liver and lung abscesses. The distribution of the ameba from liver to lung must then have been through the circulation, unless perhaps there was an opening at one time which closed over. The necropsy, however, did not justify such a conclusion. Two, the discovery of an abscess in the left lung, which was overlooked in the diagnosis. This finding could have been made by a more careful study of the roentgenograms, as was determined later.

Johns Hopkins Hospital Bulletin, Baltimore

July, 1921, 32, No. 365

- *Theories of Blood Coagulation. J. Bordet, Brussels, Belgium.—p. 213.
- Certain Variations in Form of Human Electrocardiogram. E. P. Carter and F. R. Dieuaide, Baltimore.—p. 219.
- *Statistical Note on Epidemic Encephalitis. R. Pearl, Baltimore.—p. 221.
- *Therapeutic Significance of Gram Reaction. J. W. Churchman, New York.—p. 225.
- Treatment of Placenta Praevia; Anatomic Description of Two Specimens. W. B. Thompson, Baltimore.—p. 228.
- Supposed Life-Cycle of Bacteria. H. Berstrand, Stockholm, Sweden.—p. 234.
- *Capacity for Phagocytosis Shown by Polymorphonuclear Leukocytes in Dead Animals and After Preservation in Salt Solution. H. B. Cross, Baltimore.—p. 238.
- Ingestion of Melanin Pigment Granules by Tissue Cultures. D. T. Smith, Baltimore.—p. 240.

Theories of Blood Coagulation.—Bordet gives a brief résumé of the chief theories which have been held concerning the mechanism underlying the coagulation of the blood.

Statistics on Epidemic Encephalitis.—Pearl shows that in 1920 the case incidence of epidemic encephalitis increased in New York City nearly five-fold over 1919. At the same time the case fatality rate increased from 26 per cent. of the attacked to 37 per cent. of the attacked. It is believed that this increase in case fatality rate is a real phenomenon, and it is certainly statistically significant. The seasonal incidence, as judged by monthly distribution of cases was significantly different in 1920 from what it was in 1919. The peak of mortality in an epidemic outbreak may be expected to occur from 23 to 37 days after the peak of case incidence (morbidity). There is a significantly larger proportion of males among the attacked than there is in the general population, or, put in another way, males are especially susceptible, to a statistically significant degree. Deaths occur among males no more frequently in comparison with females than would be expected from the normal proportions of the two sexes in the population at large. The disease is not more likely to attack either males or females at one age than

at another. The age distribution of attacked cases, in other words, does not significantly differ in either sex from the age distribution of the general population. The age distribution of deaths does differ significantly in both sexes from the age distribution of the population. There appears to be a definite tendency for the disease to be more fatal in the higher age groups.

Gram Reaction.—There may exist within a single bacterial strain two types of individuals which, although in every other morphologic, tinctorial and cultural characteristic identical, are quite dissimilar in their reaction toward gentian violet, one growing vigorously and the other not at all on mediums containing this dye. The latter Churchman refers to as a "strain-within-a-strain" variant. The factor which determines the reaction of an organism toward the Gram stain is not necessarily, therefore, the same as the factor which determines its cultural behavior toward gentian violet; and the chemical affinity hypothesis must be abandoned as the sole explanation of the parallelism between Gram and gentian reactions.

Capacity for Phagocytosis in Dead Animals.—Cross asserts that polymorphonuclear leukocytes sometimes take up and digest bacteria within the body after death. In one instance these phagocytes remained alive within the body for eleven days after death and were still capable of energetic phagocytosis. Leukocytes suspended in physiologic sodium chlorid solution, provided a trace of serum be present, may remain alive and manifest active phagocytosis for a considerable time. Marked changes in the temperature of the phagocytes after separation from the body do not destroy and often do not even alter the capacity of the leukocytes for phagocytosis. Polymorphonuclear leukocytes which had retained their functional capacities for three days within the dead body were removed and after being kept several days in a test-tube were still capable of energetically phagocytizing bacteria. Phagocytes from the blood and exudates seem to possess about equal tenacity of function. Human leukocytes are capable of sustained independent existence.

Journal of Biological Chemistry, Baltimore

July, 1921, 47, No. 2

- Studies in Vitamin Content: II. Yeast Test as Measure of Vitamin B. W. H. Eddy, H. L. Heft, H. C. Stevenson and R. Johnson, New York.—p. 249.
- Apparatus Used in Determining Respiratory Exchange in Man: I. Adaptation of French Gas Mask for Use in Respiratory Work. C. V. Bailey, New York.—p. 277.
- Id. II. Sampling Bottle for Gas Analysis. C. V. Bailey, New York.—p. 281.
- *Digestibility of Proteins in Vitro: II. Relative Digestibility of Various Preparations of Proteins from Chinese and Georgia Velvet Beans. H. C. Waterman and D. B. Jones, Washington, D. C.—p. 285.
- Metabolism of Nitrobenzaldehydes and Nitrophenylacetaldehyde. C. P. Sherwin and W. A. Hynes, New York.—p. 297.
- *VIII. Fat-Soluble Vitamin Content of Peas in Relation to Their Pigmentation. H. Steenbock, M. T. Sell and P. W. Boutwell, Madison, Wis.—p. 303.
- Determination of Cresol by Phenol Reagent of Folin and Denis. R. M. Chapin, Washington, D. C.—p. 309.
- *Effect of Hydrochloric Acid Ingestion on Composition of Urine in Man. R. L. Stehle and A. C. McCarty, Philadelphia.—p. 315.
- *Distribution of Calcium and Phosphoric Acid in Blood of Normal Children. M. R. Jones and L. L. Nye, San Francisco.—p. 321.
- VII. Autolysis of Brain. C. A. Gibson, F. Umbreit and H. C. Bradley, Madison, Wis.—p. 333.
- Catalase Reaction. S. Morgulis, Omaha.—p. 341.
- Relation of Migration of Ions Between Cells and Plasma to Transport of Carbon Dioxid. E. A. Doisy and E. P. Eaton, St. Louis.—p. 337.
- *Experimental Rickets in Rats: II. Failure of Rats to Develop Rickets on Diet Deficient in Vitamin A. A. F. Hess, G. F. McCann and A. M. Pappenheimer, New York.—p. 395.
- Methods of Extracting and Concentrating Vitamins A, B and C, Together with an Apparatus for Reducing Milk, Fruit Juices and Other Fluids to Powder Without Destruction of Vitamins. J. F. McClendon, Minneapolis.—p. 411.
- *Hemato-Respiratory Functions. XII. Respiration and Blood Alkali During Carbon Monoxid Asphyxia. H. W. Haggard and Y. Henderson, New Haven, Conn.—p. 421.
- Antiketogenesis. I. An In Vitro Analogy. P. A. Shaffer, St. Louis.—p. 433.
- Id. II. Ketogenic Antiketogenic Balance in Man. P. A. Shaffer, St. Louis.—p. 449.

Relative Digestibility of Various Proteins.—Estimations made by Waterman and Jones of the comparative digestibility in vitro by the method of Waterman and Jones of six preparations of the proteins of the Chinese and Georgia

velvet beans indicate: (1) That partial indigestibility is the limiting factor in the failure of raw dialyzed Chinese velvet bean protein to promote growth, and that the normal growth secured with the protein prepared by coagulation from either bean is probably to be attributed to an increase in digestibility brought about by the boiling incident to the preparation of the latter material; and (2) that cooking under the conditions described renders the dialyzed protein from either seed as digestible as the coagulated product, and that probably, therefore, these cooked dialyzed proteins will support growth as well as do the coagulated proteins. The double disadvantage of toxicity and nonassimilable protein content amply explains the behavior of the raw ground bean, while the cooked meal probably still contained dihydroxyphenyl-alanine. The experiments also support the contention that the results of such estimations run parallel with the results of growth experiments, in as far as differences in the digestibility of the proteins are concerned.

Pigmentation and Fat-Soluble Vitamin of Peas.—In ripe peas, out of six samples investigated by Steenbock, Sell and Boutwell, those of a green color, also carrying considerable yellow pigment, were far richer in their fat-soluble vitamin content than yellow peas which contained much less yellow pigment.

Effect of Hydrochloric Acid Ingestion on Urine.—Data are presented by Stehle and McCarty which show that the ingestion of hydrochloric acid causes an increased excretion of potassium, sodium, ammonia, phosphoric acid, and hydrogen ions.

Blood Content of Calcium and Phosphoric Acid in Normal Child.—The alkali reserve of plasma and the distribution of calcium and the various compounds of phosphoric acid in the blood were studied by Jones and Nye in thirty-four normal children whose ages ranged from 4 weeks to 14 years. It appears that the blood corpuscles are richer in all types of phosphoric acid compounds than plasma. The amount of unknown phosphoric acid in plasma is negligible, if any, while in corpuscles it averages approximately 70 per cent. of the total. In general, the values for boys averaged slightly higher than those for girls. The lipid phosphoric acid content of corpuscles averaged 17.7 per cent. higher in boys than in girls, while the plasma value in boys was 16.6 per cent. higher than that in girls. The inorganic phosphoric acid content of corpuscles showed the greatest percentage variation of all the phosphorus compounds of the blood. The average calcium content of corpuscles was found to be slightly less than that of the plasma, the values in mg. per 100 c.c. being as follows: whole blood, 9.4 mg.; corpuscles, 8.7 mg.; plasma, 10 mg. A relation between the calcium and phosphoric acid contents of the blood is not apparent. The carbon dioxid combining power of the plasma averaged 51.8 per cent. by volume in thirty-two children. No relation between the alkali reserve and the concentration of calcium and phosphoric acid in the blood can be established.

Experimental Rickets in Rats.—Young rats receiving a diet complete except for a lack of the fat-soluble vitamin invariably failed to grow and generally developed keratitis. The keratitis developed less frequently when the ration included orange juice. If this diet is continued for a period of months the animals die, either of inanition or, more often, of some intercurrent infection. The skeletons of such rats show no gross changes whatsoever. Microscopic examination of the bones of twenty-two rats on a ration of this character presented definite signs of a lack of active osteogenesis, but in no instance lesions resembling rickets. In view of these results and their conformity with our previous experience in regard to infantile rickets, Hess, McCann and Pappenheimer are of the opinion that this vitamin cannot be regarded as the antirachitic vitamin, and that, if the diet is otherwise adequate, its deficiency does not bring about rickets.

Respiration and Blood Alkali in Carbon Monoxid Asphyxia.—Carbon monoxid asphyxia, Haggard and Henderson state, induces, not acidosis, but alkalosis. The lowering of blood alkali is due to the acapnial, not the acidotic, process. The anoxemia induces excessive breathing (up to 300 per cent. or more), and the decrease of blood alkali is an attempt at compensation. The rate of oxygen consump-

tion is scarcely, if at all, decreased until death is imminent, but the respiratory quotient may be more than doubled. After section of the vagi, on the contrary, anoxemia due to carbon monoxid causes no overbreathing, and no distinct lowering of blood alkali, even up to death. This fact, appears to be a decisive demonstration that oxygen deficiency itself does not directly cause in the tissues and blood an increased production of organic acids.

Journal of Orthopedic Surgery, Lincoln, Neb.

July, 1921, 3, No. 7

- Supply of Artificial Limbs to War Amputees in England. E. M. Little, London.—p. 307.
*Musculature of Foot, and Its Treatment by Electricity. G. M. Levick, London.—p. 317.
*Static Deformities As Factor in Production of So-Called Hypertrophic Arthritis. R. Patek, San Francisco.—p. 324.
Operative Treatment of Scoliosis. R. Whitman, New York.—p. 330.

Electrical Treatment of Foot Musculature.—Little describes a method of electrical treatment of the foot which is recommended as a preliminary to voluntary exercise, as inseparable from the satisfactory treatment of flat foot. Often it is extremely difficult or impossible to redevelop the small muscles by voluntary exercise alone. This applies especially to those cases that have been repostured by surgical methods, so that they are suddenly relaxed after a long period of overstretching with its accompanying atony.

Hypertrophic Arthritis Not Due to Static Strain.—The percentage of cases with hypertrophic arthritis in which static strain, Patek says, is also present is 11 per cent. But this is practically the same as the percentage seen in all cases coming to orthopedic clinics. Therefore hypertrophic arthritis is not due to static strain.

Journal of Parasitology, Urbana, Ill.

June, 1921, 7, No. 4

- Cytamoeba Bacterifera in Red Blood Cells of Frog. R. W. Hegner, Baltimore.—p. 157.
Two New Monostomes from Asia. E. O. Harrah.—p. 162.
Some Protozoa Parasitic in Fresh-Water Fishes of New York.—R. Kudo.—p. 166.
Gregarines. M. W. Kamm.—p. 175.
Occurrence of Moniliformis Sp. in Rats in Texas. A. C. Chandler.—p. 179.
*Case of Urethral Myiasis. N. Leon.—p. 184.

Case of Urethral Myiasis.—In the case cited by Leon, a student urinated eleven worms which were recognized as normal larvae of *Musca domestica*, about 6 mm. long.

Philippine Journal of Science, Manila

March, 1921, 18, No. 3

- Tropical Geology and Engineering. W. D. Smith.—p. 221.
Philippine Termites. I. S. F. Light.—p. 243.
New Records and Species of Psyllidae from the Philippine Islands, with Descriptions of Some Preadult Stages and Habits. L. B. Uichanco.—p. 259.
New Philippine Myrtaceae. E. D. Merrill.—p. 289.
Descriptions of New Philippine Wasps of Subfamily Pseninae. S. A. Rohwer.—p. 309.

Public Health Journal, Toronto

June, 1921, 12, No. 6

- Consultative Council on Medical and Allied Services. Interim Report on Future Provision of Medical and Allied Services. J. H. Holbrook.—p. 241.
*Schick Reaction in Control of Diphtheria. B. Hannah.—p. 250.
Report of Committee on Rural Communities, Nursing and Social. F. C. Middleton.—p. 254.

Schick Reaction in Control of Diphtheria.—In the Hospital for Sick Children, Toronto, over 2,000 children have had this test performed on them. The statistics correspond very closely to those of Schick, Park, Zingher and various other workers along this line. It is interesting to note the increase in susceptibility of children up to 3 years of age. Following these years, there comes a gradual increase in immunity up to 15 years of age, when it is found that from 10 to 15 per cent. of adults are susceptible to diphtheria. The percentage rate on the prevalence and mortality of diphtheria is greatest between the ages of 1 and 5 years. Under 3 months 15 per cent. were positive; from 3 to 6 months, 30 per cent.; from 6 months to 1 year, 60 per cent.; from 1 to 2 years, 70 per cent.; from 2 to 3 years, 60 per cent.; from 3 to 5 years, 40 per cent.; from 5 to 10 years, 30 per cent.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

June, 1921, 26, No. 1

- Preliminary Report of Roentgen Ray and Radium Protection Committee. H. Rolleston.—p. 5.
 *Heart in Relation to Habitus and New Method of Estimating Morphologic Changes. I. S. Hirsch.—p. 10.
 *Treatment of Exophthalmic Goiter. Herraman-Johnson.—p. 20.
 Purity of Barium Sulphate for Roentgen Ray Work. R. V. Stanford.—p. 25.
 Robert Boyle Lecture: "Electrons and Ether Waves." W. Bragg.—p. 25.

New Method of Estimating Morphologic Changes in Heart.

—Hirsch is of the opinion that an estimation of the relative size of the heart chambers can be obtained with a fair degree of accuracy by the determination of the convexity of the curve which constitutes the profile of the chamber. By actual measurement it has been found that the value of the curves varies with the habitus.

Treatment of Exophthalmic Goiter.—Herraman-Johnson advises careful individual study of each case and small, frequent doses of the roentgen rays, at any rate, at the beginning of a course of treatment. Roentgen-ray treatment in exophthalmic goiter is in no sense an alternative, much less a rival to surgery. It should be regarded as, in principle, a *via media* between unsuccessful medical treatment and operation. In the worst kind of chronic cases, roentgen rays have no place other than to make the patient a little more fit to stand operation. It cannot fail to be of advantage to the surgeon if even a temporary symptomatic improvement can be obtained. The question as to when to advise operation is not affected by their use—except in so far as their early employment in general will tend greatly to reduce the number of cases in which operation need be considered. Finally, the postoperative application of electricity to the remaining portion of the gland would diminish the by no means negligible risk of recurrence.

British Medical Journal, London

June 18, 1921, 1, No. 3155

- Radium Therapy in Uterine Cancer. A. E. H. Pinch.—p. 881.
 *Treatment of Acute Pyogenic Infection of Knee-Joint. A. H. Southam.—p. 884.
 Results of Ninety-Eight Cases of Nerve Suture. P. G. Dane.—p. 885.
 Five Cases of Rat-Bite Fever: Two Cases Treated Successfully by Novarsenobillon. F. W. Burton-Fanning.—p. 886.
 Treatment of Cutaneous Anthrax. W. H. Ogilvie and A. W. Hall.—p. 889.
 Cryptogenetic Pneumococcal Septicemia. J. Lumsden.—p. 890.
 Herpes and Varicella. G. E. Elkington.—p. 890.
 Case of Myoclonic Epidemic Encephalitis. E. J. Bradley.—p. 891.
 Action of Quinin on Pregnant and Nonpregnant Uterus in Tropics. W. Fisher.—p. 892.

Removal of Pus in Knee-Joint.—Southam questions the advisability of starting immediate movement of a joint infected by streptococci in a patient who is already in an acutely toxic condition. He recommends a method which has yielded good results in these cases. Operation should be carried out immediately when pathologic examination of the fluid withdrawn from the joint shows that pus cells and pyogenic organisms are present. Under general anesthesia the knee-joint is opened by two lateral incisions on either side of the patella. These extend from the head of the tibia to the upper limit of the subcrural pouch. The joint is then thoroughly irrigated with hot saline solution, by means of a Higginson's syringe. Every corner of the joint is explored with the nozzle of the syringe and the knee is flexed and extended to ensure thorough lavage. The irrigation should be continued for ten minutes. The synovial cavity is then dried with lint swabs soaked in ether and held in artery forceps. When this has been completed a small quantity of bipp is applied systematically to the articular surfaces and synovial membrane lining the joint. No sutures are used, the lateral incisions being left open for drainage. About a dozen turns of broad gauze are then wrapped round the joint, plenty of wool and a firm bandage being applied over this. A strapping extension is fixed to the leg and the limb placed in a Thomas splint, with the knee slightly flexed. The patient

is then returned to bed and a light weight applied to the extension. The dressing is not changed till the fourteenth day, when a fresh one is applied, a little bipp being at the same time rubbed over the lateral incisions. The acute symptoms have usually completely subsided by this time; the splint is removed and the patient encouraged to move the joint. Massage accompanied by active and passive movements is carried out, and the patient should start walking, when the conditions permit, as early as possible. The dressing is changed about every seven days or as required.

July 16, 1921, 1, No. 3159

- *Malignant Granuloma of Nose. R. Woods.—p. 65.
 Infective External Hydrocephalus. C. E. Reynolds.—p. 66.
 *Treatment of Asthma by Autogenous Streptococcal Vaccines. L. Rogers.—p. 71.
 Transfixion and Impalement Injuries. W. F. Brook.—p. 71.
 Physical Basis of Social Inefficiency. J. A. Berry.—p. 72.
 *Plea for More Frequent Use of Cesarean Section, with Description of New Operation. A. Jones.—p. 75.
 Acute Dilatation of Stomach. C. J. Lewis.—p. 76.
 Rat-Bite Fever. C. Randolph.—p. 76.

Malignant Granuloma of Nose.—Two cases are cited by Woods. One patient was a man aged 68. The bridge of the nose was sunken just below the nasal bones. The region of the right lacrymal sac was swollen, and a fistula below the internal canthus discharged a watery fluid on to the cheek. Both sides of the nose were filled with fetid crusts, the cartilaginous septum was gone, some of the soft tissues were deficient, and the walls of the nose in a condition of ulceration. The patient was well nourished, appetite good, no glands were enlarged, and the disease was strictly a local one. Syphilis had nothing to do with the complaint. The fetor was quite peculiar; the crusts were glutinous, and adhered tightly to the forceps used for their removal. Arsphenamin was administered intravenously, mercury and potassium iodid were prescribed, but without the slightest obvious effect on the disease. Examination showed granulation tissue to be the dominant feature, but in one place at least it had developed into something very like a sarcoma. Two years later the disease began to infiltrate the soft palate and back of the nose. In June of that year a necrotic area began to develop in the right side of the soft palate, and toward the end of July had perforated the palate. Deafness from Eustachian obstruction was very marked and as all attempts at catheterization failed, relief had to be given by myringotomy, which had to be repeated whenever the wound in the membrane healed. Some awkwardness in swallowing resulted from the perforation in the palate. The patient's condition became steadily worse. He died four and a half years after the onset of the disease. The case was as puzzling to the pathologists as to the clinicians. It seemed as if a wave of granulation tissue advanced irregularly into the healthy parts, breaking down behind as it advanced in front, so that there was never any great depth of pathologic growth present. The term "malignant granuloma" was suggested. The second patient was also a man aged 67. Radium therapy apparently effected a cure in this case.

Vaccine Therapy of Asthma.—The method used successfully by Rogers consists simply in making cultures from the sputum, preferably that obtained during or soon after an attack, subculturing a number of colonies of streptococci, including any short chain pneumococci, so as to include a number of strains, and making up a vaccine of the strength of 100 millions in 1 c.c., which can be conveniently put up in one of Wright's small rubber-capped bottles. The initial dose is .25 to .5 c.c., and as soon as little or no reaction ensues it is rapidly worked up to 1.0 c.c. weekly, and after several such doses to 1.5 to 2.0 c.c., the larger doses being given at intervals of ten days. If any marked reaction or temporary increase of the symptoms occurs the dose should be decreased to one-half and cautiously increased again when no reaction follows an injection. The treatment usually has to be continued for two or three months and sometimes longer, several injections being given definite improvement is observed to obtain more lasting results. There has been no selection of cases. In 15 per cent. of the cases the treatment failed to give material relief of a lasting nature. In 32.5 per cent. great relief was afforded, but it was either not permanent or it was incomplete. In 52.5 per cent. the

patients remained well when last heard of from one-half to four years after the treatment.

Improvement on Cesarean Section.—An operation has been devised by Jones with a view to leaving a scar which will stand the strain of future pregnancy. It is based on the fact that there are three layers of uterine muscle; the outer layer with its muscle fibers running transversely, the middle, which contains the vessels, with its fibers running longitudinally, transversely and obliquely, with no regular arrangement, and the inner, arranged as two hollow cones with their bases joining at the middle of the body of the uterus, and their apices surrounding the orifices of the fallopian tubes. In the nonpregnant uterus these layers are difficult to differentiate surgically. In the pregnant uterus, on the other hand, the outer and middle layers are easily differentiated. Jones has taken advantage of this to preform what might be described as a form of gridiron incision. The abdomen is opened in the middle line, and a large strip of gauze wrung out of warm saline is packed between the uterus and the anterior abdominal wall in order to form a dam completely round the incision. The external layer of uterine muscle is now incised transversely, the incision being just below the center of the body in front and two inches above Bandl's ring. To start the incision Jones makes a small V exactly in the middle and about one-eighth inch into the muscle. This V facilitates accurate apposition in stitching later. A pair of straight, blunt-pointed scissors are inserted into this and passed transversely under the superficial layer of muscle, first to one side and then to the other. The superficial layer is then incised along this tract. It is necessary to carry this incision the full distance across the front of the uterus. The superficial layer is then peeled from the middle layer upward towards the fundus. The middle and inner layers are incised longitudinally, and the line of incision selected which seems most clear of blood vessels. This is usually, but not always, the middle line. The child and placenta are delivered, the assistant grasping the uterus firmly to control hemorrhage. The uterus is turned inside out and its interior inspected. Jones' experience with this operation is that the bleeding is distinctly less than with the ordinary incision.

International Journal of Public Health, Geneva, Switzerland

July-August, 1921, 2, No. 4

- Education of Health Officers. G. C. Whipple.—p. 337.
On the Ravages of Congenital Syphilis and Its Prevention. S. Hata.—p. 354.
Health Propaganda in Great Britain. N. Burnett.—p. 360.
Child Welfare Programs. W. O. Pitt.—p. 365.
Treatment of Tuberculosis. R. Burnand.—p. 375.
Public Health Program of Jugo-Slavia. A. Stampar.—p. 384.

Lancet, London

July 16, 1921, 2, No. 5107

- Objective Study of Neurosis. F. L. Golla.—p. 115.
Etiology of Skin Diseases. A. Whitfield.—p. 122.
*Mortality of Premature Infants. T. W. Edenh.—p. 127.
*New Method of Exposing Supraclavicular and Infraclavicular Regions. N. A. Dobrovolskaya.—p. 129.
Cases of Acute Hemorrhagic Pancreatitis. A. T. Compton and F. Heber.—p. 130.
*Acute Pancreatitis, Followed by Development of Pancreatic Cyst; Recovery. R. B. Carslaw.—p. 132.

Causes of Mortality of Premature Infants.—Eden asserts that not much information is available from the reports as to the cause of the heavy mortality among the premature infants. From the mortality tables it would appear that no other cause of death than "prematurity" was found in 78 per cent. of the cases. It is not stated in how many cases necropsy was made, and the probability is that in the great majority the diagnosis of the cause of death was clinical only. It is fairly safe to assume that the predominant factor in death from "prematurity" is malnutrition, i. e., failure of the infant to digest or to assimilate the food given. The fatal susceptibility of premature infants to infections of all kinds must not be overlooked; it is due to the fact that their tissues have not yet elaborated a defense against bacterial invasion, and are therefore incapable of "resistance." Breast-fed babies do receive, with the milk of the first fourteen days, immunity bodies, which are, no doubt, serviceable for defen-

sive purposes. Bottle-fed premature infants are without defense of any kind, and, of course, fall an easy prey to infection. While in the lying-in hospitals they are fairly free from risk of infection, except that of seasonal catarrh, and the probability is that infections play but a small part in their mortality during the period under consideration.

New Method of Exposing Clavicular Regions.—A method, worked out by Dobrovolskaya on the cadaver for reaching the subclavian vessels, has been tried on patients and found to be satisfactory. The direction of the incision is as follows: It starts in the middle of the neck, between the two heads of the sternoleidomastoid muscle, runs down to the sternoclavicular joint, which it surrounds in semicircle, and proceeds along the lower border of the clavicle, where it is carried right down to the bone. The periosteum of the inferior and posterior surfaces of the clavicle is to be carefully separated with the raspator, and the sternal end of the clavicle disarticulated. Care must be taken not to injure the large vessels lying behind these structures. Thus loosened, the sternal end of the collar-bone, with the skin flap still attached to it, is retracted upwards by means of a strong hook or a strip of gauze. The whole region of the subclavian vessels, anomya included, and the brachial plexus becomes easily accessible.

Acute Pancreatitis Followed by Pancreatic Cyst.—Carslaw's patient was a woman, aged 27. She suddenly developed severe pain in the upper abdomen and back, this being repeated at irregular intervals during the next five weeks. A tender mass, about the size of a hen's egg, was discovered in the left hypochondrium; and two days later a marked increase in pain, accompanied by almost incessant vomiting. Within twelve hours of admission the general condition became much worse. Vomiting continuous; slight cyanosis; abdomen rapidly becoming greatly distended. The tender mass now filled epigastric and both hypochondriac regions. Abdomen having been opened in middle line, pancreas was found to be enormously enlarged, stomach and transverse colon being displayed downward. The pancreatic enlargement, which was covered by the gastrophatic omentum, was solid, uniform, yellowish in color, and involved the whole gland. There was marked edema of the peripancreatic tissues, and, in the vicinity of the tail, fat necrosis (confirmed by histologic examination) was present. The general peritoneal cavity contained some free fluid, which was not, however, blood-stained. Four weeks after the operation there was a recurrence of vomiting, and within the next week a painless swelling appeared which soon filled the epigastric and left hypochondriac regions. An estimate of the fat in the stools at this time showed a slight degree of pancreatic insufficiency. The abdomen was again opened. The swelling was found to be a large cyst of the tail of the pancreas, about the size of a child's head. Two months after the second operation the cavity had become completely obliterated, and the patient had since then been perfectly well.

Medical Journal of Australia, Sidney

June 11, 1921, 1, No. 24

- Spinal Analgesia in Urinary Surgery. R. J. Silvertown.—p. 475.
Local Anesthesia. H. R. G. Poate.—p. 479.
Some Modern Methods of General Anesthesia. M. C. Lidwill.—p. 482.
Observations on Blood Conditions in Acute Pneumonia. H. F. Maudsley.—p. 484.

June 18, 1921, 1, No. 25

- Some Experiences in Gastric Surgery. A. M. Cudmore.—p. 495.
Treatment of Bacillary Dysentery. R. R. Stawell.—p. 496.
Spinal Analgesia in Urinary Surgery. R. J. Silvertown.—p. 497.
Sarcoma of Stomach. A. A. Lendon.—p. 501.
Case of Embolism of Cerebellar Arteries. R. H. Marten.—p. 502.

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- Recent Advances in Medicine. S. F. McDonald.—p. 515.
Advances in Radiology. A. T. Nisbet.—p. 518.
Strangulated Ovarian Hernia. R. A. Stirling.—p. 519.

Tropical Medicine and Hygiene, London

July 1, 1921, 24, No. 13

- Undulant Fever. P. W. Bassett-Smith.—p. 173.
Apparatus for Taking Blood-Culture, Giving Subcutaneous or Intravenous Injection, and Collecting Antitoxin. J. G. Willmore.—p. 176.
Typhus. S. B. Wolbach, J. L. Tood and F. Palfrey.—p. 183.
Importance of Microscopic Examination of Human Milk. L. Gershenfeld.—p. 185.

Bulletin de l'Académie de Médecine, ParisJune 28, 1921, **85**, No. 26

*Subacute and Transient Ataxia. G. Guillain.—p. 732.

*Paraffined Starch in Treatment of Diarrhea. E. Doumer.—p. 741.
Vaccine Therapy of Epidemic Bronchitis. E. Sacquépée.—p. 743.

Curable Form of Ataxia in Tabes.—Guillain refers to a subacute ataxia developing in the course of a few hours, without any muscular paralysis, but otherwise closely resembling classic ataxia of long standing. It appears usually as the first sign of abortive tabes, and is distinguished further by the fact that it yields to treatment in the course of a few weeks although the tabes persists. His study of the subject is based on three cases which he describes. The incoordination had all the features of true tabetic ataxia, and all the three patients recovered their normal gait completely in a few weeks, under repose, mercury and iodid. No arsenicals were given. The onset had followed an exceptional physical strain in each case.

Paraffined Starch in Treatment of Diarrhea.—Doumer theorizes that the failure of lactic ferments given in treatment of abnormal intestinal fermentations is often due to the lack of a favorable medium for development of these ferments at the proper place. He supplies this favorable medium in starch, and to insure that the starch reaches the proper point intact, he coats the grains of starch with paraffin. This proved effectual in controlling diarrhea in adults, and he now reports similar success in sixty-four cases in children during a severe epidemic of diarrhea at Lille and one in Southern France. A heaping dessertspoonful of the paraffin starch in the twenty-four hours answered the purpose in each case, in three days on an average.

Bulletin Médical, ParisJune 11, 1921, **35**, No. 24

Clinical Aspects of Cholesterin. P. Gastinel and P. Jacob.—p. 483.

Electroselenium Treatment of Gastric Cancer. Blumenthal-Jacquet.—p. 492.

July 2, 1921, **35**, No. 27

Early Diagnosis of Cancer. J. L. Roux-Berger.—p. 553.

Bulletins de la Société Médicale des Hôpitaux, ParisJune 17, 1921, **45**, No. 21

*Syphilis of Calf Muscles. A. Lemierre and R. J. Weissenbach.—p. 896.

*Syphilitic Melanoderma. Crouzon and R. de Brun.—p. 905.

*Teratoma in Infant's Kidney. G. Variot and F. Cailliau.—p. 907.

*Syphilitic Myositis. Laederich and Tassin.—p. 911.

*Vaccine Therapy in Septicemia. P. Merklen, P. P. Lévy and C. Malet.—p. 914.

*Protein Therapy in Pneumonia. M. Renaud.—p. 919.

*Adjuvant Causes of Malaria. F. Regnault.—p. 927.

Peripheral Venous Tension. M. Villaret et al.—p. 929.

Oscillometric Determination of the Blood Pressure. G. Billard and E. Merle.—p. 933.

Gummatous Tumors in Calf.—In one of the two cases reported the syphilitic myositis had developed in the secondary period of syphilis. In the other young woman, the gummatous tumors in both calves were tardy manifestations of the disease, untreated in both cases.

Syphilitic Melanoderma.—The pigmentation developed early in pregnancy in a tuberculous young woman.

Sarcoma of Kidney in Infant.—The adenolymphosarcoma was found in the left kidney removed from an eight months male infant. It seemed to be of teratoma nature.

Syphilitic Myositis.—In this case both sternocleidomastoid muscles were symmetrically involved in the gummatous myositis in the woman of 40. There was also a process of periosteitis in the sternum.

Septicemia Arrested by Vaccine.—In the case reported by Merklen and his co-workers, bacteriologic examination of the blood was constantly negative in the woman of 36 although the fever had kept between 102.2 and 104 F. with other signs of grave septicemia for thirty days. She was then given a subcutaneous injection of a polyvalent vaccine (staphylococci, streptococci and pneumococci), and the condition began to improve at once. Complete recovery followed. Four injections of the vaccine were given. The response was so prompt and so decided, the only plausible explanation is the assumption of an anaphylactic shock of the col-

loidoclasia type. The case is thus a fortunate example of parenteral protein therapy applied at the right moment. Colloidal metals had been injected early in the disease, and antipneumococcus serum from the ninth to the twelfth day, but there was no reaction to these. The vaccine had been used as a last resort when the patient seemed already lost.

Treatment of Pneumonia.—Renaud has been using for over two years in the treatment of pneumonia a simultaneous injection of epinephrin and antipneumococcus serum. Two years ago he reported a series of 27 cases without a death, and he now adds 17 more to the list. During the period in question he has had over 630 cases of pneumonia. This combined treatment brings on the crisis which normally terminates the disease. This explains the regular efficacy of this protein therapy in pneumonia, while its action is uncertain in other diseases which are not characterized by a terminal crisis like pneumonia.

The Adjuvant Causes of Malaria.—Regnault lists among these causes, overcrowding both in the houses and the crowding together of houses, and the scarcity or lack of domestic animals to attract the mosquitoes away from human beings, but chief of all causes is ignorance leading to disregard of the simple hygienic measures required to protect against malaria. Children must be trained in them in school, he says, and also the sick temporarily in the hospitals.

Journal de Médecine de BordeauxJune 25, 1921, **92**, No. 12

Chemical Composition of Amniotic Fluid. Labat and Favreau.—p. 341.

*Index for Infant Feeding. J. Peyrot.—p. 342.

The Campaign Against Tuberculosis. E. Leuret.—p. 345.

Index for Infant Feeding.—Peyrot adds one tenth of the weight to the height and the chest measure, all in decimal figures. This gives average figures of 406, 467, 542, 617, 690, 806, 851, 893 and 930 for the first nine months of life. These figures are midway between those proposed by various pediatricians as guides in infant feeding. Fifty-three infants given grams of milk according to the above index all thrived well, doubling their weight at the fifth month and tripling it at the twelfth.

Presse Médicale, ParisJune 25, 1921, **29**, No. 51

*Mechanism of Pulsating Pleurisy. L. Bard.—p. 501.

*Paroxysm of Intense Uremia. H. Chabanier, R. Marquezy and A. de Castro Galhardo.—p. 503.

*To Ward Off Accidents in Arsphenamin Treatment. L. Cheinisse.—p. 506.

Pulsating Empyema.—The necropsy findings in the case described by Bard explain the mechanism of such a condition.

Wave of Intense Uremia.—Chabanier explains that the nitrogen content of the blood may increase to a notable extent for a longer or shorter period owing to overproduction of urea, because the kidneys are not secreting enough water, or nephritis may be responsible for the oliguria. Derangement in metabolism of proteins, increasing the amount of urea in the blood, may be secondary to the uremia from other cause. The residual nitrogen figure is an index of the extent of this derangement, whatever the urea content of the blood. But this index is only significant day by day; no ultimate prognosis can be based on it. Hyperazotemia from oliguria of renal origin is combated by promoting the output of water; heart tonics are required when the oliguria is of cardiac origin, but in both these, as well as in hyperazotemia from deranged metabolism, intravenous injection of hypertonic glucose solution seems to act on all the factors of the hyperazotemia at once. In fifteen cases thus treated, the residual nitrogen as well as the urea content subsided. It was supplemented in some cases by subcutaneous and intrarectal injection of the same. The intravenous infusion exceptionally induced a pronounced reaction, with a chill, but it was always transient. Chabanier has encountered cases in which the residual nitrogen content was abnormally high in simple uremia, while in cases of nephritis without uremia it was within normal range. This and other facts cited seem to confirm that the symptoms in uremia are due to derangement

in the metabolism of protein substances; the intensity and the nature of this derangement vary from case to case.

Prophylaxis of Shock on Injection of Arsphenamin.—Chéinisse remarks that the phenomena sometimes observed after injection of arsphenamin and after parenteral injection of foreign proteins, etc., are all of the nature of an anaphylactic shock. This conception has been fruitful in practical results, especially in teaching how to ward off the phenomena indicating intolerance for the arsenicals. These phenomena seem to be the manifestation of an upset in the colloidal balance in the blood serum, with resulting flocculation. Various measures have been tried to ward off this flocculation. The most successful and harmless to date, he says, is Sicard's preliminary injection of 30 c.c. of physiologic saline containing 0.6 or 0.75 gm. of sodium carbonate. The arsenical is injected at once afterward through the same needle. Even after an arsphenamin shock has developed, an immediate injection of 10 c.c. of a 10 per cent. solution of the sodium carbonate may abort it. Kopaczewski has found that addition of three or four drops of ether to the arsenical seemed to ward off all acute arsphenamin reactions in 27 patients thus treated. In 16 other patients, the same effect was realized by dissolving the arsenical in a 20 per cent. solution of saccharose, but a slight chill followed in one case. In 60 other patients he injected 3 c.c. of ether subcutaneously ten minutes before the arsenical, or 5 c.c. of camphorated oil half an hour before it. In 4 of this group there was a slight acute reaction.

Progrès Médical, Paris

May 21, 1921, 36, No. 21 and Supplement

*Tuberculous Infiltration of Lung. G. Caussade and E. Doumer.—p. 225.
Chemical Changes in Vagus During Digestion. M. Loeper, et al.—p. 227.

Treatment of Tuberculous Adenitis. A. Broca.—p. 227.
Hexamethylenamin in Therapeutics. F. Helme.—p. 237.

*Pregnancy Pyelonephritis. C. Achard.—p. 241.
*The Anemia with Gastric Cancer. Loeper et al.—p. 244.
The Seventh Cervical Rib. G. Bréchet.—p. 246.

Tuberculous Edematous Infiltration of Lung.—Caussade and Doumer describe a form of lobar bronchopneumonia developing in the tuberculous, with pulmonary edema as the first manifestation. In a case described, the man of 59 died the fifty-second day. There were no signs of softening at any time.

Pregnancy Pyelonephritis.—Achard recalls that this develops usually in the second half of the pregnancy. The pain in the kidney is explained by pus in the urine as the general symptoms grow less pronounced. The right kidney is the one generally involved. As the colon bacillus is usually responsible, the digestive tract must be purged and disinfected by restriction to milk. Under this and repose the clinical picture generally subsides. In the grave cases it may be necessary to empty the uterus, but this is exceptional. Nephrostomy can be considered in intense and rebellious cases. The fever usually drops after the pelvis is rinsed out with a 1 per thousand solution of silver nitrate. To rouse the pelvis to contract, Pasteau advises to distend the bladder by injecting some disinfectant until there is a violent desire to urinate. Surgical treatment is required only when the persistence of general symptoms indicates retention of septic urine in the pelvis. Fluids should be supplied in abundance, especially a glass or two of mineral water on rising. The patient must be kept under supervision during the rest of the pregnancy and for a time afterward, as relapses are common.

Anemia With Gastric Cancer.—Anemia is not a constant symptom of gastric cancer, but when it occurs it may dominate the clinical picture. Its hemolytic origin is now almost beyond question. Loeper isolated the albumins in the blood serum and redissolved them in physiologic saline. The solutions thus obtained displayed no hemolytic action, but hemolysis occurred promptly on addition of a few drops of a 5 per cent. suspension of lecithin. This experience is like the cobra venom test. The combination of protein and lecithin is hemolytic in malignant disease. His research demonstrated further that cholesterol protects against hemolysis. In four cancer anemia cases the cholesterol content was unusually low. This suggests the advisability of supplying cholesterol to combat the hemolysis responsible for the anemia.

Schweizerische medizinische Wochenschrift, Basel

June 23, 1921, 51, No. 25

*Gastric and Duodenal Ulcers. F. de Quervain.—p. 573.
*Artificial Pneumothorax. M. Roch and C. Saloz.—p. 576.
The Ion Balance in the Organism. K. Spiro.—p. 580.
Digitalis by the Vein. P. Wolfer.—p. 587.

End Results of Surgical Treatment of Gastric and Duodenal Ulcers.—De Quervain has had all his patients of this class during the years since 1910 repeatedly reexamined to compare the outcome with conservative and operative treatment, and with various technics. He discusses on the basis of these 247 cases whether and when to operate for gastric or duodenal ulcer. In fully 70 per cent. of his operative cases, the ulcers were of many years' standing, rebellious to conservative measures. The hydrochloric acid after a test meal increased in some cancer cases and not in some simple ulcer cases, so that this has no differential import. Lactic acid was never found in a nonmalignant case. Occult blood was evident in the stools in nearly all the cancer cases, but only in 50 per cent. of the gastric ulcers and 65 per cent. of the duodenal ulcer cases. An indented outline was found almost indiscriminately with various lesions and with normal stomachs. The gastric ulcer was located with precision in only 87 per cent. In 72 per cent. of 100 ulcers of the lesser curvature, a "niche" was distinct; and in 50 per cent. of the ulcers remote from the pylorus the stomach still contained some food six hours after the meal. A "niche" was evident in only 4 of the 58 duodenal ulcer cases and a local diagnosis was possible in only 54 per cent. In 6 per cent. of the total cases, the microscope was required to differentiate the lesion. After gastro-enterostomy, 80 per cent. were cured for four years but later than this the proportion was reduced to 75 per cent. The more radical operations gave a similar figure of 80 per cent. cured.

Perforation of Lung During Artificial Pneumothorax.—The cheesy-fibrous tuberculous process in the right apex of the woman of 27 was being treated by induced pneumothorax. From 600 to 700 c.c. of nitrogen were injected, stopping the injection each time when the pressure reached plus I. At the twelfth injection, when only 300 c.c. had been injected, acute empyema developed, probably from some tear in the lung acting like a valve closed on the side of the pleura. This forbade thoracotomy, and treatment was restricted to evacuation of pus and injection of nitrogen as required. The pyopneumothorax healed in four months, but the valve action was finally lost and the patient died two years after the pneumothorax had been begun under apparently favorable auspices, although the compression of the apex had never been quite complete.

Policlinico, Rome

June 15, 1921, 28, Surgical Section No. 6

*Repair of Injury of Joint Cartilages. F. Ciociola.—p. 229.
*Treatment of Tumors of Urethra and Bladder. E. Pellecchia.—p. 240.
*Partial Resection of the Kidney. G. Berti.—p. 261. Cont'd.

Repair of Wounds of Cartilage in Joints.—Ciociola reports eleven experiments on dogs for research on the healing processes after injury of articular cartilages.

High Frequency Current in Treatment of Bladder and Urethra Tumors.—Pellecchia gives the details of nine cases out of a much larger experience with the high frequency spark. The results were most gratifying, and the technic simple and convenient both for patient and surgeon. He prefers to combine resection with the electric treatment in malignant disease.

Partial Resection of the Kidney.—As the reports and conclusions of different surgeons have been so contradictory in respect to the effect of partial resection of the kidneys, Berti has undertaken a series of experiments on rabbits to determine the question for himself whether there is hypertrophy and increased functioning of the remaining portion of the kidney. The article is to be continued.

June 1, 1921, 28, Medical Section No. 6

*Trophic Disturbance of Fingers from Freezing. F. Sabatucci.—p. 233.
*The Radius Extensor Reflex. C. Pastine.—p. 239.
*Lesions of Optic Thalamus. G. Malan and A. Civalleri.—p. 242.
Mechanics of Skull as Affecting Brain. Pedrazzini.—p. 250. Cont'n.

Drumstick Fingers from Freezing.—Three years after the hands had been frozen there were still signs of vasomotor disturbances in the hands, and the drumstick deformity of the fingers which had developed after the injury showed no signs of retrogression.

The Radius Extensor Reflex.—Anything affecting the seventh cervical root is liable to modify the response that normally follows tapping on the styloid process of the radius or on the lower end of the outer margin of the radius. Pastine describes the significance of the findings.

Lesions of the Optic Thalamus.—The only pathologic findings were in the optic thalamus in the case described, in which preparalytic hemichorea had developed suddenly in a coachman of 52, addicted to alcohol.

Riforma Medica, Naples

June 18, 1921, 37, No. 25

- *Nephrectomy for Polycystic Kidney. I. Tansini.—p. 577.
- *Nystagmus from Protein Intoxication. F. Pentimalli.—p. 578.
- *Wiring for Pseudarthrosis of the Humerus. G. Marsiglia.—p. 580.
- *Autoplastic Closure of Gap in Skull. C. Righetti.—p. 582.
- *Hypernephroma. R. Mosti.—p. 584.
- Operative Treatment of Purulent Pleurisy. E. Aievoli.—p. 586.

Polycystic Kidney.—There has been no recurrence of disturbances in Tansini's case to date, two years since the removal of the left kidney, three years after pain and other symptoms had first attracted attention to it. The urine was comparatively normal, and the other kidney seems to have escaped the tendency to polycystic degeneration.

Nystagmus in Anaphylaxis.—Pentimalli has encountered nystagmus quite frequently as a manifestation of anaphylaxis in man and in animals. It may be the only symptom of the protein poisoning, or it may accompany convulsions, dyspnea or other features of the anaphylactic shock. One rabbit being treated with parenteral injections of milk presented the nystagmus regularly, and he theorizes to explain this, and also the arrest of the nystagmus and of the other manifestations of anaphylaxis under ether anesthesia.

Mechanical Treatment of Pseudarthrosis of the Humerus.—Marsiglia tied two wires, 1 or 2 mm. thick, around the bone, or fastened the stumps firmly together with wire in three cases described. The outcome of this wire osteosynthesis is perfect, he says, surpassing the results with metal plates, etc. Immobilization is imperative from the first. The wire can be buried with simple fracture, but it is better to remove it when there has been suppuration.

Autoplasty of the Skull.—Righetti's method of closing a gap in the skull is by slitting the bone nearby and turning back over the gap the pedunculated thin sheet of bone and periosteum thus pried up. He introduced this method in 1909, and it found wide application on the war wounded, but it is generally regarded as impracticable for children and for the elderly on account of the small size or brittleness of the skull bones at these ages. To correct this impression, Righetti here describes five cases at the extremes of life, three children between 8 and 11 and two men in the sixties, with perfect results in all. This practical demonstration answers all theoretical objections.

Hypernephroma.—In the case described, pain and the palpation of a tumor were the only symptoms from the large hypernephroma in the man of 63, with an over thirty years' course.

Brazil Medico, Rio de Janeiro

May 28, 1921, 35, No. 22

- *Suspension Laryngoscopy. F. Castilho Marcondes.—p. 271.

Direct Suspension Laryngoscopy.—Castilho is assistant professor of otorhinolaryngology, and he here gives a profusely illustrated description of Killian's method of laryngoscopy with the head hanging below the level of the shoulders. He also describes some clinical cases to show the working of the technic and the fine results realized with it in the clinic.

Gaceta Médica de Caracas, Venezuela

March 31, 1921, 28, No. 6

- Tuberculin Treatment of Tuberculosis. E. Meier Flegel.—p. 69.
- Plague in Paris in 1920. J. R. Rísquez.—p. 72.

Semana Médica, Buenos Aires

May 26, 1921, 28, No. 21

- Tribute to Morquio. G. Aráoz Alfaro et al.—p. 597.
- *Treatment of Urine Fistulas. J. Salleras Pagés.—p. 602.
- *Importance of the Anamnesis. J. B. de Quirós.—p. 611.
- Double Bovine Monster. M. Falsía and H. Aprile.—p. 613.
- Calculus in Wharton's Duct. P. V. Cernadas.—p. 617

Treatment of Fistulas by Inversion of Skin.—Salleras' illustrations apply particularly to a fistula into the male urethra, as he applied the technic he describes in four cases of urine fistula opening into the urethra. This is Cathelin's method, he says, and commends it as applicable to fistulas elsewhere. A large catheter is inserted in the urethra and the skin is incised from 3 to 5 mm. from the outer edge of the fistula. This skin flap is then dissected loose, working from the periphery inward and downward to form a kind of funnel, reaching down nearly to the mucosa. The circular skin flap is then slit at top and bottom. Each of the two flaps thus formed is rolled up on itself, the raw side out. These two straight rolls are then sutured together and the skin is sutured over them, first a lengthwise and then a third, transverse incision. The urethra has to be supervised afterward to ward off stricture; in one of his cases the lumen has grown smaller, and now requires dilatation.

The Anamnesis.—In one of the instances related, De Quirós was puzzled to explain the case of a child brought to the hospital in coma, with signs of severe bronchitis. By insistent questioning he finally discovered a fact to which the parents had paid no attention, namely, that the child had access to a bottle of alcohol which was found empty.

Siglo Médico, Madrid

June 11, 1921, 68, No. 3522

- *Intravenous Treatment of Syphilis. E. Alvarez Sáinz de Aja.—p. 549.
- Grave Complications of Otitis Media. I. Fernández Seco.—p. 552.
- Indications for Deep Radiotherapy. J. Ratera.—p. 557. Cont'd.

Intravenous Treatment of Syphilis.—Alvarez discusses the signs of a correctly made puncture of a vein, the symptoms from intolerance of mercury, and the rarer accidents liable to be encountered. He protests further against the abuse of injections by the vein, continuing the course to excess.

Archiv für Kinderheilkunde, Stuttgart

June 21, 1921, 69, No. 6

- *Congenital Syphilis. R. Fischl and E. Steinert.—p. 399.
- *Prevention of Tuberculosis Infection in Hospitals. K. Peyrer.—p. 419.
- Spasmophilia and Induced Muscle Contraction. A. Eckstein.—p. 426.
- *Fats in Infant Feeding. F. K. Noack.—p. 431.
- *Creatin and Creatinin in Infants. E. Schiff and A. Bálint.—p. 439.
- *Edema and Intestinal Tuberculosis. A. Wiechers.—p. 450.
- *Local Conditions Influencing Tuberculin Tests. L. Salmony.—p. 454.
- *Abdominal Pain in Children. A. Peiper.—p. 462. Conc'n.

Problems of Congenital Syphilis.—Fischl and Steinert relate that ever since May, 1912, all the mothers and children in the children's clinic at Prague have had the Wassermann test systematically applied every month. The data thus obtained confirm the placental transmission of syphilis, and also, most unexpectedly, confirm Profeta's law to the extent that 17 apparently healthy infants failed to show any signs of syphilis although their mothers were in the most contagious phase of florid syphilis. Ten of the infants in this group never responded positively to the Wassermann test, applied from six to twelve times. Five of the mothers in this group were also constantly negative, notwithstanding their florid papules at the anus, etc. Immunization by way of the placenta before birth and by suckling afterwards will have to be accepted in these cases, they assert, even allowing for the defective production—common to all the new-born—of the substances yielding the Wassermann reaction. They tabulate several cases of infants with pronounced lesions swarming with spirochetes but with a constantly or frequently negative Wassermann reaction. Treatment with arsphenamin did not display any provocative action in this respect. Chronic jaundice in early infancy is suspicious of syphilis, even with negative serologic tests. In 34 infants the manifestations of the inherited syphilis developed late, and the Wassermann reaction did not become positive until some time later, but in 11.7 per cent. the Wassermann veered to positive as the precursor of the clinical manifestations. In 2 cases the Wassermann became negative after the tardy

eruption had developed. In apparently healthy infants a supposedly harmless staphylococcus skin lesion may often shelter spirochetes and spread them broadcast. In several such cases, nothing but a positive Wassermann in the mother suggested looking for spirochetes in the vesicle fluid.

Hospital Contagion with Tuberculosis.—Peyrer reports that the experiences at the children's clinic at Graz in this line prove that contagion does not occur if the tuberculin negative children are kept apart from the coughing tuberculous cases. When the children are in bed all the time a glass partition is sufficient protection.

Metabolic Findings in Infants on Butter-Flour Mixture and Cream-Milk.—Noack's findings speak decidedly in favor of fat in infant feeding.

Creatin Output in Infants.—Schiff and Bálint determined the amount of creatin and of creatinin eliminated by seven infants from 2 to 7 months old. The smallest output of creatinin was in an infant with doughy hypotonic rachitis; the largest, in an idiot infant with unusually well developed muscles. The only infant with no creatin in the urine was breast fed with well developed muscles and tendency to hypertony. The creatinin output was 111 mg. in this case. In the others it ranged from 42.75 to 127.6 mg. The creatin output in these extreme cases was 3.8 and 31.1 mg.; the weight 3,200 and 5,150 gm.

Famine Edema and Intestinal Tuberculosis.—The child of nearly 6 had presented for several weeks the picture of famine edema although the food had always been ample. Severe diarrhea suggested that the edema might be a sequel of chronic dysentery that had escaped detection. Necropsy corrected the diagnosis to chronic intestinal tuberculosis. This had evidently prevented absorption of nourishment from the bowel, and the diffuse edema followed, the same as in the starving. Wiechers has been unable to find any case of the kind on record.

Modification of the Skin Tuberculin Test.—Salmony has noticed great variations in the response to the Pirquet test according as the blood was circulating slow or fast through the region of the test. The most pronounced response to the test was obtained when the local circulation was arrested. The skin in certain regions is also prompter in responding. She never was able to reverse the findings of the test by measures along these lines.

Abdominal Pain in Children.—Peiper here concludes a general survey of this subject. His conclusion is that as abdominal pain in children often accompanies remote organic disturbances and often occurs without organic lesions anywhere, it is imperative to examine the whole child and not merely the abdomen alone.

Archiv für klinische Chirurgie, Berlin

May 24, 1921, 115, No. 4

- Retroperitoneal Lipomas. A. L. von Wahrendorf.—p. 751.
Regeneration of Tendons. A. Salomon.—p. 769.
*Occult Blood in Diagnosis of Gastric Ulcer. K. Lutz.—p. 780.
*Local Anesthesia Between Two Tourniquets. R. Sievers.—p. 796.
*Thrombosis of Abdominal Aorta. E. Hesse.—p. 812.
Surgical Tuberculosis, Wieting.—p. 868.
Foreign Bodies in Esophagus. R. Vogel.—p. 910.
Changes in Shape of Trachea. M. Sgalitzer.—p. 967.
Progressive Pulmonary Tuberculosis After Goiter Operations. A. Clairmont and E. Suchanek.—p. 995.
Regeneration of Gallbladder After Cholecystectomy. Walzel.—p. 1000.

Occult Bleeding in Diagnosis of Gastric Ulcer.—Lutz' extensive experience and research confirm that occult blood is the most reliable sign at our disposal for detecting ulceration in the stomach. The gradual disappearance under treatment of the blood from the stools till it vanishes completely testifies to the nonmalignant character of the lesion, as also the alternation of positive and negative findings. Positive responses in the stool and never in the stomach content, locates the ulcer below the pylorus.

Transverse Section Anesthesia.—Sievers' further experience has brilliantly confirmed, he says, the efficacy and harmlessness of anesthetizing a limb by infiltrating a circular band of tissues with 1 per cent. solution of procain between two constricting bands. He calls this *querschnittsanästhesie*, and declares that it is adapted for all operations on limbs

that require something more than simple ordinary infiltration anesthesia. The aim is to anesthetize the entire incarcerated segment, and it requires a few whiffs of ether in addition for children. It is particularly easy and convenient for children.

Thrombosis of Abdominal Aorta.—Hesse summarizes 73 cases of thrombosis and embolism of the abdominal aorta on record. Nearly 95 per cent. died under expectant treatment, but in 10 cases an attempt was made to remove the obstruction. It was successful in 50 per cent. and in some of the others came too late, as the limb was already dead. Embolism of the aorta is more common than thrombosis. It is usually secondary to endocarditis, principally mitral stenosis. The symptoms are in the legs at first, as the circulation is shut off. If there is no pain in the abdomen, no bladder symptoms, the embolus is probably at the bifurcation. In over half the cases the embolus projected into the iliac artery. Transperitoneal aortomy with extraction of the embolus is advisable in recent cases, but with thrombosis, high amputation of the thigh is the only resort; ligation of the vein cannot be recommended. If the blood stream becomes obstructed again after the embolus has been removed, he advocates high amputation of both thighs.

Deutsche medizinische Wochenschrift, Berlin

June 16, 1921, 47, No. 24

- Errors in Diagnosis of Back Pains. R. T. von Jaschke.—p. 669.
Transmission of Foot-and-Mouth Disease to Guinea-Pigs. P. Uhlenhuth.—p. 671.
Revaccination and Its Problems. G. Sobernheim.—p. 672.
Methods with Simplified Indicators. L. Michaelis.—p. 673.
Late Sequels of Epidemic Encephalitis. H. Grage.—p. 673.
Apparatus for Sitting and Reclining During Extension of Spine. E. Brunthaler.—p. 674.
Prophylactic Use of Quartz Lamp in Rachitis. E. Mengert.—p. 675.
Icterus Following Arsphenamin Administration. P. Tachau.—p. 677.
Conc'n in No. 25.
Observations on Capillaries of the Skin in Connection with Syphilitic Exanthems. W. Krantz.—p. 679.
Decrease of Tuberculosis in Germany. A. Wolff-Eisner.—p. 681. Comment. B. Möllers.—p. 681.
*Mechanism of Inheritance of Sex. T. Péterfi.—p. 682. Conc'n.
Causes and Treatment of Foot Affections. F. Loeffler.—p. 684.
Treatment of Tuberculous Skin Ulcer with Celluloid Plate. H. Deutsch.—p. 686.

Mechanism of Inheritance of Sex.—Péterfi presents evidence that the chromosome which has no mate to pair with it is the morphologic element bearing the sex factors, although it is not the sex determining factor.

Wiener klinische Wochenschrift, Vienna

June 16, 1921, 34, No. 24

- A Practical Iodin Solution. F. Pregl.—p. 288.
Pathology of Pulmonary Vessels. J. Wiesel and R. Löwy.—p. 289.
Cardiospasm. J. Pal.—p. 290.
*Status Thymicolymphaticus. C. Sternberg.—p. 291.
Anatomic Basis of Findings in Spinal Fluid in the Early Stage of Syphilis. H. Königstein and E. A. Spiegel.—p. 292.
Diagnosis of Sciatica. F. Deutsch.—p. 293.

Status Thymicolymphaticus.—Sternberg, in discussing the various aspects of this condition, refers to the anatomicopathologic experiences of the World War, which bear on the subject. Several writers report that frequently in necropsies on the bodies of soldiers they found a lymphatic state. Borst and Groll, on the basis of 2,000 necropsies, report that a lymphoid hyperplasia existed in 56 per cent. of all soldiers, and in those 19 and 20 years of age, 86 per cent. Sternberg thinks that this finding must be interpreted as meaning that in young persons the lymph glands normally are extremely well developed, and that in such cases hitherto a lymphatic state was assumed simply because the normal condition was not understood. The lymphatic tissue retrogresses evidently with advancing years, especially under the influence of disease, nutritional disturbances, etc. On necropsy, we find therefore the lymph glands of persons who die in the hospitals, as a rule, small, and we thus arrive at a false conception of the normal condition. In the light of the investigations of Borst and Groll, a thorough revision of our conceptions of lymphatism or the lymphatic constitution seems imperative. However, it would seem true that in certain individuals, even in advanced years and in spite of various diseases passed through, an abnormally large thymus and

an unusual amount of lymphoid tissue are sometimes present; furthermore, that in such cases we find, at the same time, other anomalies; particularly hypoplasia of the vascular system. In such cases, so far as we know as yet, there seems to be a constitutional anomaly, and we are doubtless justified in speaking of a status thymicolymphaticus. But such cases are certainly rare and have nothing to do with what is commonly and loosely termed lymphatism.

Zentralblatt für Chirurgie, Leipzig

June 18, 1921, 48, No. 24

Successful Resection of Esophagus Through the Neck for Carcinoma. H. Küttner.—p. 846.

*Stomach Resection by Billroth I Method. H. Haberer.—p. 847.
Abdominal Closure After Cholecystectomy. F. Franke.—p. 856.
Arterioesenteric Duodenal Occlusion. E. Goldberg.—p. 857.

Further Extension of the Principle of the Billroth I Method in Resection of the Stomach.—Since Haberer reported last year 55 cases in which he had performed stomach resection by the Billroth I method he has operated in 165 other cases, partly for duodenal ulcer and partly in ulcerations of the stomach. In 8 of the 220 cases the patients died after the operation, a mortality of over 3 per cent. Two of the 8 fatal cases are chargeable to the technic, the result of dehiscence of the sutures. One patient died ten hours after the operation, of severe cachexia; 5 patients from lung complications occurring up to twenty-two days after the operation, but in all 5 cases the peritoneum was smooth and glistening; the anastomosis suture had healed, and the anastomosis itself was permeable. Haberer is well satisfied with the results in the remaining 212 cases although it is too early to estimate the permanent results. During the period that he operated on the 165 cases by the Billroth I method, he used the Billroth II method in 10 cases, all of which resulted in recovery. He gives illustrations of an extreme case in which the Billroth I principle was applied to total gastrectomy and with complete success.

Zentralblatt für innere Medizin, Leipzig

May 28, 1921, 42, No. 21

*Daily Variations of High Blood Pressure. E. Kylin.—p. 417.

Daily Variations of Arterial Tension in High Blood Pressure.—Kylin opposes Volhard's recent declarations in regard to the etiology of high blood pressure. Volhard holds that high blood pressure is caused by a contraction throughout the whole vascular system; in some cases including the most minute capillaries. This contraction is said to be produced reflexly, possibly by way of the suprarenals. The original cause must be an injury to the kidneys. Kylin argues that if kidney injuries are the cause of high blood pressure then kidney symptoms must necessarily appear before increased blood pressure. He gives records of cases to show that such is not the case. Then, again, the kidney injuries in general would be in direct relation to the increase in blood pressure. The greater the damage, the higher the blood pressure would be. As for such a direct relationship, Kylin's investigations lead him to deny that it exists, and he declares that in our present state of knowledge of the pathology of the kidneys and their function we must admit that it is impossible to regard high blood pressure as the result of kidney injuries. On the contrary, he thinks that everything indicates that the primary condition in so-called diffuse glomerulonephritis is a diffuse damaging of the capillary system probably caused by poisonous substances acting directly on the capillaries, such poisons having been produced during the course of acute infectious diseases and taken over into the bloodstream. He finds that with this theory as a basis all such pathologic manifestations can be consistently explained.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

May 28, 1921, 1, No. 22

*Practitioners' Blunders in Treating the Eye. W. P. C. Zeeman.—p. 2908.

*Temporary Sterilization of Women. T. H. van de Velde.—p. 2920.
Course of Typhoid in the Vaccinated. P. H. Kramer.—p. 2927.
Physiotherapy in Infantile Paralysis. J. van Breemen.—p. 2936.
Amebic Liver Abscess. J. van der Hoeven.—p. 2940.
Abscess from Ascarids. O. Lanz.—p. 2943.

Blunders in Treatment of the Eyes.—Zeeman describes among others a case in which a nevus in the iris was mistaken for a foreign body by the general practitioner, the actual foreign body having escaped in the interim. He cites a number of instances in which a foreign body had long been overlooked while the eye was being treated on a mistaken diagnosis. In one case the pain and swelling from a blow on the edge of the orbit were assumed to be the result of a fracture in the depths, but the grave prognosis was disproved by return of normal conditions. Blunders in other cases were in ophthalmia neonatorum. This still occurs, notwithstanding the great progress in this line. His figures show a drop from twenty-seven cases in 1899-1901 to seven in 1917-1919. Other blunders were the nonrecognition in infants of a tendency to buphthalmos, months being allowed to elapse with merely plain boric acid treatment, and the nonrecognition of stenosis of the lacrimal passages, which should have suggested tentative treatment for syphilis. In one infant, edema and bluish discoloration of the eyelids proved to be due to scurvy with subperiosteal hemorrhage in the orbit. The family physician was called to one infant on account of a sty; he reassured the parents, but the lesion worked backward into the depths with fatal outcome. An incision in time might have warded this off. Chronic glaucoma comparatively frequently fails to get the proper treatment; in one case a nose specialist was consulted, as a friend's vision had improved after her nose had been treated, and the nose treatment was continued twice a week for a year. Fortunately it proved possible even then for the ophthalmologist to save partial vision. Another person complained of stomach disturbance and was treated for dyspepsia for six months, when eye symptoms sent him to an ophthalmologist who found severe albuminuric retinitis. Zeeman doubts whether the stomach had been at fault at any time. Some other cases cited illustrate the folly of treating eye disease without the internist seeking for and removing the primary cause; in one case this was cardio-renal disease, in another a tuberculous iridocyclitis. He comments that the general practitioner is not to blame if his training had neglected to teach him the possibility of such mistakes.

Temporary Sterilization.—Van de Velde expatiates on the advantages of a means of preventing conception which can be remedied at any time when the need for it is past. The method he has found simple, harmless and effectual is to shift the ovaries forward, burying them in the peritoneum. The ovaries are completely isolated from the rest of the genitals, walled in by peritoneum on all sides. Each ovary is drawn through a slit in the broad ligament into the fold of the peritoneum between the bladder and uterus, and this fold is sutured together above to make a closed sac. He has performed this operation in nine cases since 1908, and always with complete satisfaction and no by-effects or disturbances of any kind at the time or later. In one case he had occasion to restore the ovaries to their normal place three years later. They seemed normal in every respect, and there were no adhesions. The woman has had two normal pregnancies since.

Hospitalstidende, Copenhagen

June 15, 1921, 64, N. 24

*Polycythemia. F. Rydgaard.—p. 379. Conc'n No. 25, p. 385.

June 22, 1921, 64, No. 25

Treatment of Gonorrheal Urethritis. H. Haxthausen.—p. 394. Conc'n No. 26.

Radiotherapy in Polycythemia with Enlargement of Spleen.—Rydgaard relates that the clinical picture of Vaquez' disease retrogressed completely after roentgen exposures of the woman's enormously large spleen. The cure has been permanent during the eighteen months to date. The first symptoms had been of a vasomotor nature, chilliness and anesthesia in the legs, about a year before. Erythromelalgia ushered in the clinical picture in six cases on record, like the vasomotor disturbances in this case. The literature contains a number of similarly successful cases from raying of the spleen or bone marrow, or both, but there are also a number of failures recorded.

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SYPHILIS A RURAL PROBLEM*

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Since syphilis has been subjected to intensive study, more physicians know more about the disease in its clinical and therapeutic aspects than ever before. Nevertheless, its recognition and treatment have not yet been generally mastered in a degree commensurate with public needs. Whenever a malady depends for understanding and management on technical minutiae, men in general practice develop a fear neurosis as to their ability to master the problem, and exaggerate the endowments of their better trained brothers. Worse, the inexpert, partly because of their follies of doubt and partly because of inertia, adhere to old biases and antiquated methods, at the expense of society.

There is, indeed, little required to become a serviceable syphilis therapist. Three months in any good clinic in any city of a hundred thousand or more of population would furnish men of average training and dexterity the necessary degree of practical technic. It is not at all implied that an army of Fourniers would thus be mobilized. Nor is the need for so highly endowed a force imperative for the ordinary demands of the community. Rather do we require great numbers of practically trained medical soldiery. These would better be able to stem syphilis than can the small high command of, accredited syphilographers alone from their metropolitan bases.

The discussion at the symposium on syphilis¹ jointly held by the Sections on Dermatology and Pharmacology at the New Orleans session of the American Medical Association, in 1920, revealed a rather higher degree of pharisaism than is wholesome for the public welfare. Any good physician can master any branch of medicine on which he concentrates. Geniuses may be few, but able men are numerous, and an Ehrlich can do nothing for society without the humble support of the great masses of practitioners. Knowledge is useless unless widely disseminated and, if mixed figures may be permitted, ambulatory friars are quite as necessary as the high priests guarding the ark of the covenant. There are and should be no mysteries in medicine.

As a matter of fact, syphilis is so common that it would be a physical impossibility for the available syphilographers to treat the afflicted without the aid of the rank and file of physicians. The reasons for energetic and prompt treatment are obvious. To mention

infection of the innocent, transmission to wives and infants; the words tabes, paresis, aortic insufficiency, the loss to the community in time and work, will conjure up a picture sufficiently compelling to emphasize the need of a larger trained fighting force to cope with the malady than syphilographers alone afford.

The most effective way to create such a force is to simplify the weapons. The study of a few tables issued by the United States Public Health Service² stimulated the foregoing reflections and this brief exposition on a real public need. In the first place, I wish to state that I am kindled by no hysteria such as the sentimental exaggerations of Brioux ignited six or seven years ago. Nor can the dramatic possibilities of paresis, as employed by Ibsen in *Ghosts*, appeal to seasoned students of syphilis. Comparatively few syphilitics come to a highly dramatic end. But the small proportion is nevertheless unwarrantedly great, and could be substantially reduced if all physicians throughout the country were equipped against potentialities that should be neither minimized nor morbidly magnified.

DISTRIBUTION OF SYPHILIS

The tactics are simple. The battlefield is distinctly drawn on a map in Pamphlet 30. The population of the Southern states, except Virginia, Tennessee, North Carolina and New Mexico, presents 10 per cent. of venereal infection and over; the remainder of this group, together with West Virginia, Mississippi and New Mexico, from 5.01 to 7.5 per cent.; Oklahoma and Alabama, from 7.51 to 10 per cent.; and the rest of the country up to 5 per cent., the lowest incidence being in the New England states, the Dakotas, Minnesota, Wisconsin, Oregon, Idaho, Wyoming, Utah and Colorado, which do not exceed 2.5 per cent. Vermont has 1.3 per cent.; Hawaii, only 1.96 per cent.; New York, 2.91 per cent.; while Georgia has 13.03 per cent., and Florida, 15.63 per cent. These figures were supplied from an analysis of the second million of men drafted during the war. The ratio of syphilis in the total is not stated, but assuming it to be only 10 per cent. in a state the size of New York, there would be about 30,000 active syphilitics. Nor does this reveal the facts, for the drafted men were on the whole too young to have much more than active, or at least comparatively recent infections. These men were in their third decade. What of those in the fourth, fifth, sixth and even seventh decades, the older generations of syphilitics, with the complications and sequelae of the disease? It would be no overstatement to assume that the total syphilitic population of New York State would be between 150,000 and 180,000.

* Chairman's address, read before the Section on Dermatology and Syphilology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Arch. Dermat. & Syph., September, 1920.

2. Venereal Disease Pamphlets 30 and 47.

Venereal Disease Pamphlet 47 deals with an analysis, from the same source, of conditions in cities. Columbia, S. C., leads cities of from 30,000 to 40,000 inhabitants with 14.98 per cent.; Macon, Ga., leads those of from 40,000 to 50,000 inhabitants with 18.43 per cent.; Savannah, Ga., cities of from 50,000 to 100,000 with 27.45 per cent.; and St. Louis, cities of 500,000 and over with 8.58 per cent. In cities of from 30,000 to 40,000, Jamestown, N. Y., has only 0.8 per cent. of venereal infection; of cities of from 40,000 to 50,000 inhabitants, Racine, Wis., 1.15 per cent.; of from 50,000 to 100,000, Bayonne, N. J., 0.82 per cent., and New York City, in its class, has only 2.44 per cent. Except as to New York, of the major cities in this country, the municipalities suffer a greater incidence of venereal disease than the states at large. On the other hand, always in their respective classes, the cities with the greatest number of illiterates show the highest proportion of infection. Baltimore, St. Louis, Houston, Birmingham, Fort Worth, Augusta, Charleston, Jacksonville, Tampa, East St. Louis, Savannah, Galveston, Portsmouth (Va.), Montgomery, Macon, Wilmington (N. C.) and Columbia (S. C.), are among these. For Northern cities the incidence in East St. Louis, Ill., which is 22.7 per cent., and Detroit, which is 6.83 per cent., is truly astonishing. Equally astonishing is the low rate in New York City, 2.44 per cent., which indicates that whatever may be stated of the ethics and morals of a large metropolis, its sophistication, handmaid of intelligence, is a serviceable armor against what poetic justice might wish to exact as the fitting wages of sin. In fact, it may not be amiss to indicate that enlightenment and venereal disease exist in inverse ratio, and that community which, for industrial aggrandizement, political ascendancy or race prejudice, battens upon the ignorance of a large portion of its citizenry, collects a usurious human toll that will be its own undoing.

PROPHYLAXIS AND TREATMENT

To cope with the problem, two lines of procedure may be followed: prophylaxis to prevent infection, and intelligent treatment when infection has taken place. Prophylaxis includes the employment of means during or after coitus that are recognized as effective. Venereal stations, modeled after those evolved in the army, would meet the requirements of prevention after intercourse. It goes without saying that high ethical standards, in other words, continence, are the only certain measures; but since humanity appears disinclined to relinquish its impulses because of the persuasion either of fear or of logic, it must shield itself from the consequences of its frailties. Speculation on this subject has no prominent place in the present paper, which is dedicated rather to a discussion of the proper economic management of the disease as a concrete fact.

So far it is clear that ignorance and the incidence of syphilis go hand in hand; that municipalities have greater syphilitic populations than sparsely settled districts, but that, with few exceptions, this difference is scarcely noteworthy. In other words, syphilis presents a rural problem at least as important as a municipal one. Actually, as a rural problem, it is more important, for municipalities are better fortified against the disease than are rural districts, because of their greater number of clinics and experts.

If New York State has only about 30,000 active or recent cases, it is conservative to estimate that there are

at least 3,000,000 in the entire United States. Nor would conservatism be violated if we increase our conjecture by a million. Let us, however, accept the lower figure. There are about 140,000 physicians in the United States, or approximately one to every twenty-one active syphilitics. There may be a thousand trained syphilographers in the land, or about one to every 3,000 active or recent syphilitics, and most of these experts are in large cities inaccessible to most syphilitics. How, then, can the proper treatment be supplied wherever it is needed? Only by making it easy for all physicians to recognize and properly treat the disease.

There are sixty-two cities whose population exceeds 50,000. Undoubtedly each of these has at least one clinic in which the disease is properly managed. New York City probably has no less than twenty-five; Chicago, Philadelphia and Boston, at least half this number, and every state surely has one focus of enlightenment, such as the clinics at Ann Arbor, Rochester, Minn., Minneapolis and Cleveland. A three months' preliminary training for every physician in the country, and another month every two years for those whose native commonwealths furnish little opportunity for maintaining the knowledge gained, would amply cover the situation in a practical manner. And, if commercial inducements may be advanced, the community will more willingly pay well for good than for bad treatment, so that the time lost to physicians during their training would be amply made up for in subsequent remuneration. In the meantime, medical schools would be forced to provide an ample basic training so that graduates would not require the preliminary three months.

Without going into pedagogic details, a knowledge of the problem demands recognition of the cardinal signs of the disease, including its parasitology, the interpretation of the Wassermann test, a knowledge of the preparation and administration of arsphenamin, its indications and toxicology, and an understanding of mercury and the iodids. No doubt it would be better to have experts, but as has been pointed out, this is impossible except in cities. In any event, sufficiently trained general practitioners would form a most valuable reinforcement to experts, for peculiar or obscure cases could be brought to consultants. No district is prohibitively remote from adequate centers should exigencies arise demanding special aid.

One of the most effective methods of bringing proper treatment within convenient reach would be to divest treatment of its largely fancied complexities. To prepare arsphenamin for injection is something within the capacity of any one able to read the directions accompanying each ampule. To administer the drug skilfully requires experience. There are certain dangers inherent in its use. Both patients and physicians must be willing to face these risks, for the ultimate advantage of the community will thus be furthered. In cities this knowledge is not necessary for all, nor need risks be taken, for experts are available. Who should treat syphilitics in municipalities rests with the conscience of the physician and the wishes of the patient. In smaller communities and rural districts the risks must be assumed by the general physician, and it is distinctly necessary for him to equip himself, within reason, for any eventuality, even if he sees only one syphilitic in ten years, provided the patient is unable to go where he can find greater skill; for such patients, whether they reside in the mountains of West Virginia, the fastnesses

of the Rockies, or the less remote Adirondacks, are as much a public menace and concern as the metropolitan roué with fifty experts ready to his call. But physicians in such districts are, on the whole, still unqualified. First, their training remains inadequate; secondly, they feel unequal to the task because the preparation of arsphenamin possesses a fancied kinship to the black art; thirdly, it is expensive to lay in the necessary appurtenances considering their probably restricted use; fourthly, it is difficult to obtain the proper water, and the cost of a still would be heavy. It must be remembered, however, that a still has other medical uses than merely to prepare water for intravenous injections, and a well equipped physician should be able to prepare distilled water, since it is indispensable in nearly all of his work.

The subjective difficulties would be surmountable, but the financial ones are more serious, for the necessary equipment for arsphenamin administration with breakage and wear and tear amounts to a substantial investment, the turnover on which in rural regions would be inadequate. In a lesser degree the same applies to the administration of mercury by injection. Thus, conservatism forces rural practitioners to perpetuate the archaic method of pill therapy with its manifest and well recognized ineffectiveness, if not peril, or forces them to use arsenical preparations which circular 219 of the United States Public Health Service distinctly warns against.

This body, in the circular mentioned, recognizes only the preparations of the arsphenamin group manufactured by the Dermatological Research Laboratories of Philadelphia, H. A. Metz, and the Takamine Laboratories, the Diarsenol Company, and the permanent solution of the Lowy Laboratory. Certainly, any physician could easily master the use of neo-arsphenamin. Neo-arsphenamin is easier to administer. In slightly larger and more numerous doses than generally employed, it is probably as efficacious as arsphenamin. Probably, too, the manufacturers could be induced to supply ampules containing the right amount of distilled water for each dose of the drug. Thus, all the physician would require by way of apparatus would be a sterile syringe, for neo-arsphenamin may be administered in a high degree of concentration, and would simply have to be dissolved in the distilled water supplied. Or, if arsphenamin was preferred, the permanent solution referred to would meet all needs in a manner completely divested of the technical and financial encumbrances outlined. Silver arsphenamin, too, should be considered.

It is not purposed to discuss the relative merits of the various preparations. It resolves itself into a matter of individual opinion whether neo-arsphenamin, properly employed, is superior or inferior to the older substance, the utilization of which is somewhat more complex. In any event, two forms of the arsphenamin group, to say nothing of silver arsphenamin, are available for everybody, and their employment is technical simplicity itself.

CONCLUSION

The art of treating syphilis is something that only the seasoned can master. There is no absolute routine. Each patient presents peculiar questions which lend themselves to fine appreciation only by those of rich experience, but the first step is simplification of method. So far as the problem is largely a rural one, this is the

most important step. The situation may be compared with that in obstetrics. If every physician called to a confinement were a Marion Sims there would be fewer accidents, but for the average case, the average alert practitioner will do. After all, the majority of presentations are left occipito-anterior, and the majority of cases of syphilis, were it only known, have the same relative simplicity. When called on, the average physician can perform a low forceps delivery; when called on, he should be able to treat the ordinary case of syphilis by approved methods. Medical schools giving proper training, medical centers cooperating with rural districts, the simplification of technic rather than increased complexity, will render this possible. Mahomet graciously accommodated himself to the mountain in deference to established geographic conditions.

780 Madison Avenue.

FRAMINGHAM COMMUNITY HEALTH AND TUBERCULOSIS DEMON- STRATION

CERTAIN MEDICAL RESULTS *

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AND

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The Framingham Community Health and Tuberculosis Demonstration has been in active operation now for more than four years. This is too short a time completely to evaluate the results of this work, but certain medical observations that have been made can be given at this time. It is to be remembered in the study of any of the aspects of this demonstration that at no time has medical treatment been offered by any physicians connected with the demonstration staff. Most of the medical work at the present time is being done through the consultation service, at the request of physicians, and the results that have been obtained have been due to the cooperation of the physicians. While some of the cases of tuberculosis that have existed in Framingham have had no direct contact with the health station, practically all of the cases have been studied at least through their histories.

Interesting aspects of the work may be studied under these heads: (1) the amount of tuberculosis in Framingham; (2) diagnostic methods used in discovery; (3) study of arrested cases that have become active during the demonstration; (4) deaths from tuberculosis and a study of their histories, (5) present status of cases discovered during the demonstration.

The amount of tuberculosis discovered in the early part of the demonstration, through all channels, indicated that 1 per cent. of the people had active pulmonary tuberculosis. In the early part of the demonstration when the so-called examination drives were held, nearly 5,000 people were examined, and the number of cases of tuberculosis discovered was considerably in excess of what has been discovered at any time since.

The average number of tuberculosis cases reported to the board of health in Framingham in the decade before the demonstration started was thirteen per year. During the last four years, the average number of cases

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reported to the board of health has been forty-three per year. In 1917, the first year of the demonstration, when the physical examination drives were held, there were fifty-seven cases reported.

In the four years since the demonstration started there have been 138 cases of tuberculosis placed on our chart in the apparently arrested group at the time of discovery. On careful reconsideration, twenty-one of these have now been placed in the deferred group, as data are not sufficient for one to be reasonably sure that the patients had tuberculous disease at any time. It is hoped that a further study of these cases can be made and that they can be definitely classified. Ten of the tuberculous cases discovered in the apparently arrested form have become active since the demonstration started. We shall return to this group later.

At the present time (June, 1921), the number of active tuberculous cases is considerably less than at any time since the demonstration started. On our list we find fifty-three cases active at the present time. Out of the fifty-three cases, fourteen are in sanatoriums or hospitals. In our apparently arrested group of cases, there are also being studied 119 people, with four of them in sanatoriums or hospitals.

In the diagnosis of tuberculous disease, in all cases that have been seen by the community demonstration examiner, the diagnostic standards prepared for this demonstration have been followed closely. These standards, covering pulmonary and nonpulmonary disease in childhood and adults, were prepared for the demonstration by a committee appointed by the president of the National Tuberculosis Association, and then published in pamphlet form by the demonstration committee. Additional issues were necessary to supply the demand from all over the United States, and the standards are now published, and furnished in pamphlet form, by the National Tuberculosis Association.

It is to be remembered that not all of the cases of tuberculosis recorded on our chart have been seen by the community health examiner, and the information obtained has occasionally been through the cooperation of the physicians, and the board of health and other cooperating agencies. There were, at the time the demonstration opened, twenty-seven cases of tuberculosis that were being followed by the board of health, and these were considered in the group from which the figures in this paper have been taken.

In analyzing the apparently arrested cases of tuberculosis that have become active during the period of the demonstration, numbering ten, a few interesting features have been discovered. Out of this number, three cases have apparently no reason for activation; in two cases there have been acute infections which seemed responsible for their upset. Poor economic conditions seemed possibly to be responsible in three cases for activation, and three were due to lack of understanding on the part of the patients, or unwillingness properly to care for themselves. To assign the exact cause of reactivation of cases of tuberculosis that have had an apparent arrest is very difficult, and it has been the purpose of this study to analyze carefully such cases where possible. Even with the most careful history and a study of all the factors which might be involved, it is impossible in all instances to make any definite statement as to the cause of the loss of resistance in these cases and the reason of their reactivation.

Since the demonstration opened there have been eighteen deaths that, after careful analysis of their histories, it would seem should have been prevented or at least postponed, if our machinery had been in perfect working order and cooperation had been satisfactory. This number represents one fifth of the total number of deaths analyzed since the demonstration opened. During the four-year period, out of a group of 376 individuals, including active, arrested, early and advanced disease, 21 per cent. died. Those whose deaths were classified as preventable or postponable constitute 4 + per cent. Consequently, the percentage of the total that might be considered to represent the irreducible fatality rate for such a representative group of tuberculous individuals over a period of four years would be 21 per cent. minus 4 per cent., or 17 per cent. Several of these cases were not discovered until the disease was far advanced, and apparently, with our present machinery, a few should not be discovered in an earlier stage. Two or three patients were of the secretive type who did not seek medical advice until they were in a hopeless condition. This class of people are apparently found in every community, and there seems to be little or no hope of ever discovering cases of this type. Poor economic conditions played an important part in advancing the disease in only a small number of this group.

In connection with this group of patients that have died when their deaths might have been prevented or postponed, we have analyzed the fifty-eight tuberculous cases discovered in the advanced list (including cases reported at death). An analysis of this group would seem to show that nine cases should have been discovered and reported in an incipient or moderately advanced stage. In arriving at these conclusions, we have used the histories at our disposal. Two of the patients out of this number reported as tuberculosis in an advanced stage were probably not advanced at the time of being so reported on our chart, in which the histories were very meager because of lack of machinery to get reports in the early part of the demonstration. Out of the foregoing fifty-eight cases, there were ten discovered before the demonstration started, and advanced at the time of being placed in our group.

Table 1 shows from what groups these advanced cases were recruited.

TABLE 1.—GROUPS FROM WHICH ADVANCED CASES WERE REPORTED

Patients moving here from out of town and advanced at time of coming here; also patients that were not Framingham residents and could be considered as floaters.....	18
Cases reported at death.....	9
Cases of acute onset after influenza and influenzal pneumonia, apparently in good health preceding influenza.....	2
Tuberculous meningitis, acute miliary tuberculosis	2
31	

The remainder of the cases we were unable to tabulate because of some special history defect. Of the nine cases in this group which we believe should have been discovered in an earlier stage, one occurred in 1918, four in 1919, and four in 1920.

From the point of view of treatment, all the cases at the time the demonstration started and discovered since have been analyzed, and the percentage that have had sanatorium or hospital treatment have been noted in Table 2. This does not include patients that have

left town during the period of the demonstration, but does include the patients that have died and had hospital or sanatorium periods.

From the incipient group, up to the present time, there has been one death, a case that was discovered in what we believe to have been an incipient stage since the demonstration started. From the early group 6 per cent. have died; from the moderately advanced group, 28 per cent.; from the far advanced rapid group, 92 per cent.; from the advanced slow group, 37 per cent.; from the advanced stationary group, 40 per cent.

TABLE 2.—PERCENTAGE OF PATIENTS WHO HAD SANATORIUM OR HOSPITAL TREATMENT AT THE TIME DEMONSTRATION STARTED AND DISCOVERED SINCE

Groups	Per Cent.
Incipient cases	47
Early cases in town	45
Moderately advanced cases	65
Advanced rapid cases	78
Advanced slow cases	61
Advanced stationary cases	80
Arrested advanced cases	14
Arrested early cases	17

and from the arrested early group, two have died. One of these patients had bronchopneumonia. The other was one of the group of arrested cases that became active, and died.

In the first year of the demonstration after the examination drives and through all sources of discovery, there were nine or ten active cases of tuberculosis to one annual tuberculosis death. At the present time the number has dropped, so that while the numbers may change a little from month to month, at present there are about five active cases to each annual tuberculosis death.

SUMMARY

The chief factors that seem to be responsible for the late discovery of tuberculosis cases which give to the community every year advanced and dying patients that have not been known or treated for tuberculosis in the early stages of the disease are: the recluse type, which seems to be the main type, never receiving any medical attention; failure of patients to seek medical advice early, or, if they do, not to give the physician sufficient time to make a diagnosis; occasional failure of physicians to detect disease early; failure of both physician and patient to use all of the services at their command for early diagnosis of tuberculous disease; lack of complete annual medical examination, and lack of annual factory and school examinations.

ABSTRACT OF DISCUSSION

DR. ROGER I. LEE, Boston: Dr. Bartlett has confined himself very strictly to the medical results of this remarkable demonstration. Many of the other results have been published elsewhere, but we should confine ourselves to the actual medical results of the demonstration. It is necessary to remember that the Framingham demonstration is purely voluntary and unofficial. It has no official standing in the town of Framingham. Therefore everything is accomplished through the medium of the cooperating official agencies, the board of health, etc. The national association has appointed a committee, of which I am the chairman, to study the medical results of the Framingham demonstration. As the Framingham demonstration does not undertake to treat any cases, it does not have very much in one sense in the way of medical results. On the other hand, the demonstration has had a

remarkable experience in that it has, as Dr. Bartlett pointed out, all kinds and conditions of patients. It has patients who are cooperative, and patients who are absolutely not cooperative. It has seemed, therefore, that it might be possible to evaluate some of the methods of treatment, because one has control statistics here at Framingham. Most of our statistics previously have been furnished by cooperative patients who were willing to go to a given sanatorium or hospital, or who were willing to participate in a tuberculosis class for home care. In Framingham they have had all kinds of patients. It would seem, therefore, that it might be possible to get some real facts with regard to the efficiency of the treatment of tuberculosis among people as we actually find them in a typical community like Framingham. Framingham was selected for this demonstration because it was regarded as a typical community so far as one could be found in the United States. Dr. Bartlett is now working up his data from this angle, and possibly some valuable information can be obtained.

DR. EDWARD O. OTIS, Boston: The Framingham demonstration has been a serious and sustained attempt to determine the amount of tuberculosis existing in a typical industrial town, and to see that proper treatment was afforded to those requiring it. It may be called a great laboratory investigation for the purpose of obtaining facts on which to base methods and practice to guide other communities in solving their tuberculosis problem. Several leading facts were brought out as the demonstration went on. In the first place, there was the striking difference in the cases reported before the beginning of the demonstration and afterward, thirteen and forty-three, respectively. When the consultant service came into play in this demonstration, the condition was very much improved. Another fact brought out was the relation between the deaths and the number of active cases, one to nine or ten at the beginning, and later one to five. Dr. Bartlett says that, after eliminating all deaths that might have been prevented by earlier discovery and treatment, there finally remains an irreducible minimum of 16 per cent.—which means that all we can ever do in the campaign against tuberculosis is to strive to reach and maintain this irreducible minimum; and this we must do, as Dr. Bartlett says, by using all available resources, both medical and social. As the majority of children become infected before the adolescent age, it would seem to be a reasonable procedure to test all schoolchildren by the von Pirquet test to guard them against converting their immunity infection into an active one. This Framingham demonstration has also been fruitful in stimulating the community to establish other general health measures, for it is only by the combination of all health activities that we can best and most effectively combat tuberculosis. A certain number of supposedly arrested cases will always relapse; but by after-care and instruction we can reduce this number to the minimum amount. Unfortunately, in our industrial civilization many inevitable risks have to be taken which conduce both to the development of active tuberculosis and to its reactivation, after the man with an arrested disease has returned to his former occupation, as he generally does. Of all the methods employed by the Framingham demonstration, the most important was the expert consultant, on whom the local physicians could call at any time for advice.

DR. PHILIP C. BARTLETT, Framingham, Mass.: In studying the histories of our tuberculous cases during the last few days I have found that there are so many factors involved that it seems best to make a very careful study of these histories, as there are a large number of cases in our tuberculous group, active and arrested, that have never had sanatorium or hospital treatment. It is our purpose to see what proportion of them would have been benefited by sanatorium or hospital treatment, and also the number that have apparently done well at home.

Syphilis in the Third and Fourth Generation.—J. Audrain publishes in the *Bulletin* of the French Société de Dermatologie, Feb. 10, 1921, p. 85, the tabulated details of thirty families through three or four generations from a progenitor with unsuspected syphilis. Comparing the different families and generations confirms the law of persistent localization of the lesions and their periodicity, and the rarity of pain in them; also a peculiar moral and physical energy, a functional excitation which may be felt in all the organic systems and even in the exaggeration of the appetite and of the "ego."

TREATMENT OF ACUTE POLIOMYELITIS
WITH IMMUNE HORSE SERUM

SUMMARY OF RESULTS

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The apparent good effects in the treatment of poliomyelitis with an immune horse serum prepared by repeated injection of the pleomorphic streptococcus from poliomyelitis¹ were demonstrated in a series of cases during the epidemic at Davenport, Iowa, in 1917.² Similar serums were used in an epidemic at Dubuque, Iowa, in 1918, and have been used since in sporadic cases by myself and by physicians in various parts of the United States to whom the serum was sent on request. Owing to the increased incidence of poliomyelitis during the hot weather of the summer months, a detailed analysis of the further results obtained in the treatment of this disease was undertaken. The results are such as to warrant a short summary.

In selecting the method of administering the serum, intraspinal injections were not considered advisable, because intraspinal injections of horse serum render monkeys more susceptible to virus (a point overlooked by Amoss and Eberson,³ who gave only intraspinal injections in testing the protective effect of my serum against experimental poliomyelitis in monkeys), because the virus is only rarely present in spinal fluid, and because I found that the intraspinal injection of immune horse serum failed to protect monkeys against intracerebral inoculations of virus, whereas intravenous injection protected them against properly gaged doses of virus, not too far removed from the human source,¹ and that intravenous and intramuscular injections in man gave excellent results.² Nuzum and Willy, who used a similar serum, obtained similar results in protecting monkeys against virus⁴ and in the treatment of the disease in man.⁵

In the Dubuque epidemic,⁶ as in the epidemic at Davenport and in the sporadic cases, the patients were not removed from their homes. The necessary equipment for spinal puncture and immediate examination of fluid was carried from house to house. The patients were seen in consultation with the family physician. The history, the spinal fluid, and other findings, and the results obtained following the serum injections were obtained first hand.

In the series of patients treated by other physicians, information concerning them was reported on cards which were sent with each shipment of serum. The chief items asked for were the sex and age of the patient; the condition of the teeth, tonsils, cervical glands, and adenoids; description of the poliomyelitic

symptoms—the date of onset, extent of muscular weakness and paralysis, the spinal fluid findings (amount of fluid withdrawn, the cell count, and the globulin test); the method of serum injection, the date on which the serum was injected and the amount given; the effect, if any, on the temperature, pulse rate and other symptoms; the immediate and late results with regard to the arrest of progressive paralysis; restoration of muscle function; exposure to other patients, whether or not more than one member of a family was affected, and whether there were other cases in the community.

For purposes of study, the patients in each series were divided into three groups according to their condition at the time of treatment: Group 1, patients in the preparalytic stage; Group 2, patients with slight paralysis, and Group 3, patients with advanced paralysis.

The cases summarized in the table represent the series which I treated in the epidemic at Davenport (fifty-eight cases), the epidemic at Dubuque (fifty-eight cases), and sporadic cases (fifteen) since those epidemics, 131 in all, and 128 cases treated by physicians to whom the serum was sent.

SUMMARY OF RESULTS, ACCORDING TO GROUPS, OF ALL PATIENTS TREATED WITH THE SERUM

Condition of Patients	Patients	Deaths	Recovery With Residual Paralysis	Complete Recovery	Recovery Without Developing Paralysis	Early Good Effects	Late Results Unknown	Effect Doubtful or Not Apparent	Average Cell Count	Average Duration of Disease at the Time of First Serum Treatment, Days	Average Age, Years	Average Amount of Serum Given Each Patient, C.c.
Group 1. Patients without paralysis at the time of serum treatment.....	60	0	0	60	59	59	0	1	111	1.7	5.3	18
Group 2. Patients with slight paralysis at the time of serum treatment.....	61	0	1	60	0	53	0	3	120	2.1	5.4	22
Group 3. Patients with advanced paralysis at the time of serum treatment.....	123	18	30	61	0	74	14	34	117	5.8	7.2	32
Sporadic cases.....	15	1	6	8	..	12	0	3	148	3.4	5.3	49
Total.....	259	19	37	189	59	203	14	41	119	3.8	6.2	27

Following the administration of the serum during the febrile stage, the temperature and pulse rate were lowered in a high percentage in each of the four series of cases. Abolished reflexes returned, or diminished reflexes became stronger. Often restless, hyperesthetic, irritable, wakeful children went to sleep soon after the injection, and the mental condition even of semi-comatose, apathetic children became normal within a short time. Often progressive paralysis was arrested, or groups of weakened muscles showed increased power very soon after the injection, provided it was given soon after weakness appeared. Postparalytic pains and slight increase in the function of muscles occurred even as late as ten days after the onset of paralysis.

None of the sixty patients of Group 1, treated in the preparalytic stage, died, and all recovered completely without residual paralysis. Paralysis developed in only one of these, and in this one it was slight. Early good effects, such as diminution in the temperature and pulse rate, and lessening of rigidity of the neck and spine, were noted in all but one of these cases.

Of sixty-one patients in Group 2, with slight paralysis at the time of the serum treatment, all but one

1. Rosenow, E. C.: The Production of an Antipoliomyelitis Serum in Horses by Inoculations of the Pleomorphic Streptococcus from Poliomyelitis, J. A. M. A. **69**: 261 (July 28) 1917.
2. Rosenow, E. C.: Report on the Treatment of Fifty-Eight Cases of Epidemic Poliomyelitis with Immune Horse Serum, J. Infect. Dis. **22**: 379 (April) 1918.
3. Amoss, H. L., and Eberson, F.: Therapeutic Experiments with Rosenow's Antipoliomyelitic Serum, J. Exper. Med. **27**: 309 (Feb.) 1918.
4. Nuzum, J. W., and Willy, R. G.: Further Studies of an Antipoliomyelitic Serum, Its Protective and Curative Properties in Experimental Poliomyelitis of Monkeys, J. Infect. Dis. **22**: 258 (March) 1918.
5. Nuzum, J. W., and Willy, R. G.: Specific Immune Therapy of Epidemic Poliomyelitis, a Report of One Hundred Fifty-Nine Cases Treated with Antipoliomyelitic Horse Serum, J. A. M. A. **69**: 1247 (Oct. 13) 1917.
6. Rosenow, E. C.: The Etiology and Treatment of Acute Poliomyelitis, Minnesota Med. **2**: 253 (July) 1919.

recovered completely, and in this one residual paralysis was limited to the shoulder muscles. Early good effects were noted in all but three of the patients in this group.

Of the 123 patients in Group 3, with advanced paralysis, eighteen died. Eleven of these had symptoms of involvement of the medulla at the time of the treatment. Thirty have residual paralysis; in fourteen the late results with regard to the paralysis are not known; sixty-one recovered completely.

One of the fifteen patients with sporadic poliomyelitis died. Six recovered with residual paralysis. The serum was given late in the disease to all of these patients.

The average duration of illness at the time of the first serum treatment was shortest in Group 1 (one and seven-tenths days), somewhat longer in Group 2 (two and one-tenth days), longest in Group 3 (five and eight-tenths days), and in the group of sporadic cases three and four-tenths days, a total average of three and eight-tenths days. The cell count was almost equally high in the three groups, and somewhat higher in the group of sporadic cases. The average age was nearly the same in all. The average amount of serum given was 18 c.c. in Group 1, 22 c.c. in Group 2, 32 c.c. in Group 3, and 49 c.c. in the group of sporadic cases.

Nineteen of the 259 patients treated died, a mortality of 7.3 per cent. Seven of the patients were moribund at the time of the treatment, and the outcome should not be counted against the serum. In four others, respiratory muscles were involved, and swallowing was difficult because of marked and rapidly advancing paralysis at the time of the first serum treatment. A 2 weeks old baby who died, seemingly of inanition, was given only 5 c.c. of serum, subcutaneously. If these eleven patients in whom serum could scarcely be expected to stay the process are eliminated, there are 248 patients whose conditions might have been affected by the serum. Eight of these died, a mortality of 3.2 per cent.

Residual paralysis is known to be present in thirty-seven patients (21 per cent.), and if the fourteen patients in whom the late results are not known are added, the total might be fifty-one (29 per cent.), which is in sharp contrast to the incidence of residual paralysis reported for the 1916 epidemic in New York City: 7.64 per cent. of 2,715 patients.

Of 197 paralyzed patients, nineteen (9.6 per cent.) died; eliminating the eleven patients whose cases were hopeless at the time of the serum treatment, the mortality is 4 per cent. Thirty-seven (21 per cent.) of the 176 paralyzed patients who survived are known to have residual paralysis. In fourteen the late results are not known, but, granting that they all have residual paralysis, which, judging by the early findings, is not likely, the total might be fifty-one (29 per cent.). This incidence of residual paralysis is far lower than was the average in paralyzed patients in a number of epidemics in Europe, summarized by Wickman.⁸ In Wickman's compilation of 1,405 cases, residual paralysis occurred in 970 (68 per cent.).

Moreover, the outcome, with regard both to death and to restoration of muscle function in the patients treated, is far better than that noted in the patients

not treated at Dubuque⁶ and at Davenport,² and in the other patients who were ill at about the same time and in the same communities. Of a total of seventy-two patients not treated whose cases have been studied, nineteen (25 per cent.) died of respiratory paralysis. This does not include the eleven patients treated whose cases were hopeless. If these are added, the mortality is 36 per cent. The mortality in the untreated patients in this series is somewhat higher than that for the epidemic of 1916 in New York City, which is variously estimated at from 16 to 25 per cent. The final outcome in twenty-five cases in which the patients were untreated was determined. Of these patients fourteen (56 per cent.) had varying degrees of residual paralysis.

A comparison of the results obtained with immune horse serum with those obtained with serum from convalescent persons is indicated, since Amoss⁹ in a recent paper infers that the latter is the only serum treatment available. In my reports on the results obtained at Davenport,² it was shown that the mortality and incidence of paralysis in patients treated in the preparalytic stage was less than was reported from the use of serum from convalescent persons. There were no deaths, as is shown in the table, and only one patient developed slight paralysis, which disappeared completely in a group of sixty patients treated in the preparalytic stage, and no deaths and only one patient with slight residual paralysis in a group of sixty-one patients treated after paralysis had begun, but which was slight at the time of treatment. Thus, of a total of 121 patients treated in the early stages, none died, and only one showed slight residual paralysis.

In contrast are the results reported from the use of the serum from convalescent persons in the preparalytic stage of the disease. Ten of fifty-four patients treated by Zingher¹⁰ developed paralysis; six of fourteen treated by Amoss and Chesney¹¹ developed paralysis, and two died; sixteen of fifty-one in Peabody's¹² series developed paralysis, and five died. Thus, of a total of 119 patients treated in the preparalytic stage, 26.8 per cent. developed paralysis, and 5.8 per cent. died.

It should be stated that nearly all physicians who had opportunity to observe the effects of the immune horse serum became convinced that it possesses definite and often striking power to prevent paralysis, that it is of definite benefit if given within from thirty-six to forty-eight hours after the onset of paralysis, and that if given after that it is of less value.

The epidemics studied were severe. The mortality rate and incidence of residual paralysis in the untreated patients were high. The patients treated lived in widely separated communities.

There was no difference in the severity of the early symptoms in the patients untreated and in the different groups in the patients treated. The average age was somewhat higher in Group 3, patients with advanced paralysis, but on the whole it corresponded accurately to the usual age incidence in this disease. The various types of the disease were quite equally divided among the groups. The incidence of contact infection approxi-

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mated the average in other series of cases. The average cell count in the spinal fluid and the average amount of serum given were about the same in the various groups.

The good effects noted at the bedside following the injection of the serum were in general proportional to the earliness of the injection. They were often striking, occurred after repeated injections, and were independent of the withdrawal of spinal fluid. When improvement occurred, it was with such regularity and in such marked degree in the early cases as to exclude accidental occurrence and to indicate that the absence of deaths, the low incidence of paralysis, and almost total absence of residual paralysis in Groups 1 and 2 are due to the early administration of the serum.

The results in the collective investigation corroborate in detail those which I obtained in both epidemics and in the sporadic cases in which the primary data were obtained at first hand.

The conclusion that my immune horse serum, prepared by repeated injections of increasing doses of freshly isolated strains of the pleomorphic streptococcus, has curative power in poliomyelitis, especially when given in the early stage of the disease, is warranted. Its general use in the treatment of this dread disease is indicated, and the need for early diagnosis in suspicious cases by spinal puncture is again emphasized.

CERTAIN ASPECTS OF POSTDIPHTHERITIC DIAPHRAGMATIC PARALYSIS

REPORT OF EIGHT FATAL CASES IN FOUR THOUSAND TWO HUNDRED AND FIFTY-NINE CASES OF DIPHTHERIA *

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AND

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When one attempts to review the literature on the subject of postdiphtheritic diaphragmatic paralysis, one is struck by the fact that it is scanty and incomplete. The condition is barely mentioned, and when mentioned is passed over without much comment, and few cases are reported in detail. And yet, as we shall make apparent, it is a fairly common sequel of diphtheria, a much-dreaded one, and one which should be looked out for, particularly in those cases in which antitoxin has been given after the third day of the disease.

A word in regard to postdiphtheritic paralysis in general, excluding the diaphragmatic type, for the time being: Of all the sequelae of diphtheria, paralysis is undoubtedly the most common and the most important. It occurs in from 10 to 25 per cent. of all cases and is strictly a sequel, usually occurring in the second or third week of convalescence. It may follow mild cases of diphtheria, and by some observers, notably Osler and Huber, it has been stated that it may have no relation to the previous treatment of the disease,

whether antitoxin is given or not. Nor do they think that the type, mild or severe, determines its occurrence. It is possible that the local lesion may go unrecognized, and there have been cases cited, and the onset of the paralysis alone may call attention to the previous infection by the Klebs-Loeffler bacillus. It is our opinion, however, that there is a distinct relationship of the initial angina to the frequency and severity of the paralysis. In other words, the more severe the diphtheritic attack, the more frequent and severe are the various paralyses liable to be, and in no type does this follow more closely than in the diaphragmatic type. In our series of eight cases, every one was preceded by the severe type of diphtheritic angina. We also feel, and it is the opinion of later writers on the subject, that the early administration of antitoxin by the intravenous route diminishes the liability to paralysis.

ANATOMY OF THE PHRENIC NERVE

As diaphragmatic paralysis is primarily due to a degeneration of the phrenic nerves, it does not seem amiss to emphasize their anatomy:

The phrenic nerves arise chiefly from the fourth cervical nerve, with a few filaments from the third, and a communicating branch from the fifth cervical nerve. They descend to the root of the neck, enter the chest, and descend nearly vertically in front of the root of the lung and by the side of the pericardium, between them and the mediastinal portion of the pleura, to the diaphragm, where they divide into branches, some of which are distributed to the thoracic surface, but most of which separately pierce the diaphragm and are distributed to the under surface. Each nerve supplies filaments to the diaphragm, pericardium and pleura. Branches have been described as passing to the peritoneum. From the right nerve one or two filaments pass, to join in a small ganglion with phrenic nerve branches of the solar plexus; and branches from this ganglion are distributed to the hepatic plexus, the suprarenal capsule, and the inferior vena cava. From this wide distribution, it can readily be seen how dangerous involvement of the phrenic nerve might be. Surgically, one may be cut or affected, without death, as only unilateral paralysis of the corresponding half of the diaphragm results. This is recognized with difficulty, as the patient can still take deep inspirations, the thoracic muscles not being paralyzed. It is obvious that any bilateral involvement of the phrenic nerve means complete diaphragmatic paralysis with ensuing death within three and a half days, at the latest.

PATHOLOGY

The paralysis affecting the phrenic nerve is the result of a toxic peripheral neuritis, a parenchymatous degeneration of the nerves, and is not of central origin. The direct application of the toxin to the nervous system causes a degeneration, and an inflammatory action starting at the point of application and spreading from that point on. The toxin first attacks the myelin sheath, then the nerve, and finally the nerve center in the medulla. This slow course would explain the late onset of the neuritis following diphtheria, although just why it should affect the palatal nerve supply more frequently is conjectural, aside from its anatomic nearness to the portal of entry. To quote Batten: "It is at the present time generally recognized that the lesion most com-

* From the Diphtheritic Service, Willard Parker and Riverside Hospitals, Department of Health.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

monly found in a diphtheritic paralysis is a parenchymatous degeneration of the myelin sheath of the nerves, and that this degeneration affects both motor and sensory fibers alike." Elirlich's theory that the paralysis is caused by the toxon,¹ while the general poisoning is caused by the toxin has been confirmed by later observers. It has been shown that there is no relation (Dunn) between the size of the dose of toxin necessary to produce death and that which produces paralysis. Apparently the power of diphtheria toxin to produce paralysis, and its power to produce death, are distinct features. It has also been demonstrated that antitoxin

TABLE 1.—ONSET OF PARALYSIS AFTER ONSET OF DIPHTHERIA

	Series I Days	Series II Days
Case 1.....	44	37
Case 2.....	44	38
Case 3.....	32 (?)	?
Case 4.....	42	42
Average	40	39
Grand Average.....	7 cases	39½

never produces paralysis per se. The apparent increase in the number of cases of postdiphtheritic paralysis since the introduction of antitoxin is due to the fact that many severe cases, which formerly would have resulted fatally, go on to paralysis instead.

FREQUENCY OF PHRENIC NERVE PARALYSIS

It will be found by examining our two series of cases that the frequency of this paralysis is higher than one would suppose. Our figures, Series I, show fifty cases of paralysis of all kinds in 2,000 cases of diphtheria, or 2.5 per cent. In Series II, there are forty-nine cases of paralysis in 2,259 cases of diphtheria, or 2.1 per cent. This corresponds closely to the first series. In the first series of fifty cases, four were diaphragmatic, making a percentage of 8 in all cases of paralysis, or 0.2 per cent. of all cases of diphtheria. In Series II, of forty-nine cases, four were diaphragmatic, making a percentage of 8.1 in all cases of paralysis, or 0.16 per cent. of all cases of diphtheria. J. D. Rolleston's figures were much lower. He reports sixteen cases of diaphragmatic paralysis in 864 cases of paralysis, or 1.85 per cent. It is interesting to note in this connection that he states

TABLE 2.—DURATION OF PARALYSIS FROM FIRST INVOLVEMENT OF DIAPHRAGM TO DEATH

	Series I Hours	Series II Hours
Case 1.....	10	28
Case 2.....	43	80
Case 3.....	48	38
Case 4.....	8	36
Average	27	45
Grand average.....	..	36

that there were no fatal cases of diaphragmatic paralysis in children more than 8 years of age. In Series I, Case 3, the child was 10 years old, the other three being 3, 5 and 7, respectively. In Series II, Case 4, the child was 13 years old, the other three being 4, 4 and 7 years, respectively. We have had no adult cases since the time of these statistics. The average time of discharge, however, from the Willard Parker Hospital is three weeks, so it is perfectly possible that these cases might be very vastly increased in number, as a diagnosis of bronchopneumonia or lobar pneumonia is frequently made in these cases by the outside practitioner.

1. A toxon is a toxin in which the toxophore group has diminished toxicity.

Case 2, in Series II, is interesting in that the paralysis lasted eighty hours, or forty-four hours longer than the average.

Therefore, it is evident that after the first two weeks, when palatine paralysis usually starts, no serious paralysis need be feared before the fifth week. It is at this time, and still more frequently in the sixth and seventh weeks, that the generalized form of paralysis is liable to develop, including paralysis of the diaphragm.

DIAGNOSIS AND SYMPTOMS PRIOR TO PARALYSIS

Both limbs as a rule are drawn up; both thighs are flexed and pressed against the abdomen. Respiration is carried on by the voluntary upraising of the shoulders for each respiration, and each effort is accompanied by the contractions of the intercostal muscles. The entire breathing is intercostal in character, and is markedly dyspneic. There is also a well defined contraction of the diaphragm, and a tendency to scaphoid abdomen. As a rule, diaphragmatic paralysis is preceded by vomiting, tachycardia, dyspnea, and a weak, irregular, compressible pulse. The patient is very restless, there is usually a dry cough (palatine paralysis), and he complains of being unable to swallow (involvement of esophagus); but the mind is generally clear, and the

TABLE 3.—SYMPTOMS PRIOR TO PARALYSIS *

	Number of Cases
Vomiting and regurgitation.....	6
Dyspnea	5
Tachycardia	5
Abdominal pain.....	5
Cyanosis	4
Dysphagia	4
Coughing	3
Restlessness	2
Burning in throat.....	1

* The most common symptoms are vomiting, dyspnea, tachycardia and abdominal pain.

expression is not an anxious one. The face is pale, and sometimes cyanotic, and frequently there are attacks of acute epigastric abdominal pain.

TREATMENT

It is our belief, and this is justified by the cases reported, that there is no active treatment possible by means of drugs when diaphragmatic paralysis ensues. There have been various drugs tried, among them strychnin, atropin, epinephrin and caffein, but with no encouraging results. Necessarily one has to employ some drug to ease the parent's mind, and for this purpose strychnin is advised. Massage and electricity are mentioned, only to be discarded, as they have no direct curative action on the nerves. We have had a 100 per cent. mortality in our series, and this percentage is corroborated by the few observers who have seen similar cases. In this connection it is of interest to cite a case reported by Dr. W. McKim Marriott at the 1920 meeting of the American Pediatric Society:

The patient was a girl, 10 years of age, who had suffered a severe attack of diphtheria six weeks previously. She developed paralysis of the palate, ocular muscles, legs, back and neck muscles, and partial paralysis of the arms. Ultimately the diaphragm became involved, so that it failed to move at all during inspiration. The thoracic respirations were at first very active; later the intercostal muscles became involved, and the child became cyanotic and semicomatose. The child was obviously dying from suffocation, and it was thought that, if the respirations could be maintained for a sufficient period of time to allow for restoration of function of the respiratory muscles, recovery would be possible. Artificial

respiration was given by means of the Erlanger-Gesell air current interrupter, connected with a nitrous oxid mask. The child failed to cooperate at first, but later it was possible to get her to open the glottis at the right time, so that air could be forced into the lungs at the regular rate. The effect was immediate. The cyanosis was relieved, and after a period of about ten minutes of artificial respiration the child fell asleep, and the mask was removed. Cyanosis slowly developed and was again relieved by a period of artificial respiration. This was kept up more or less continuously for five days, at the end of which time the function of the respiratory muscles began to return, and the child was able to breathe without the aid of the apparatus. She made a complete recovery and is now in perfectly good health.

It is quite obvious that in a large hospital practice, and perhaps in private practice, this method would be difficult to apply. If one could employ this method of artificial respiration by using a pulmotor, a Meltzer pharyngeal insufflation apparatus, or such an apparatus as described by Marriott, it is possible that in special cases life *might* be prolonged. Judging from the length of time required in the regeneration of the nerves in other paralyses, notably the palatine type, which generally takes from four to six weeks, it is not our opinion that the phrenic nerve usually regenerates in the time stated. To quote Church and Peterson:

The course of a neuritis depends upon its cause and the amount of damage done the axis cylinders of the nerve. The general tendency is to restoration of healthy function, as soon as the cause is removed. A slight neuritis may pass away within two or three weeks, but if the lesion has resulted in degeneration of the nerve, months may be required for the regenerative process.

However, if one case has recovered by means of artificial respiration, it is certainly indicated as a last resort. We should again like to emphasize the futility of antitoxin administration after the third day of the disease and, in this connection, advocate giving a sufficient amount of antitoxin intravenously, as soon as the case comes under observation. In addition absolute rest, flat on the back in bed, should be insisted on for a period of six weeks in these cases of late administration of antitoxin.

Incidentally, it is well to remember that paralysis of the diaphragm never occurs alone, but accompanies a generalized multiple neuritis which involves many parts of the body.

PROGNOSIS

In the series of cases here reported, the mortality was 100 per cent, and we have no reason to believe that in true bilateral diaphragmatic paralysis the percentage would be any lower in other series of cases, unless artificial respiration was employed. Even then the cardiac involvement, which usually accompanies the paralysis, might prove too much for the patient. To quote Marriott in a personal communication:

I would not expect a high percentage of recoveries, chiefly on account of the cardiac involvement which is usually present, and which is certainly not benefited by the pressure changes occurring in the chest.

In other words, ordinarily the prognosis is as hopeless as it can be. It leads one to give a guarded prognosis in every case of diphtheria where antitoxin has been administered late, or after the third day, or in insufficient amounts early. It is well to remember that these paralyses do not appear until the fifth or sixth week, and that there is absolutely no way of prognosticating their appearance.

REPORT OF CASES

SERIES I

CASE 1.—*History*.—G. P., a girl, aged 7 years, admitted to the hospital, Oct. 30, 1920, had been sick for three days. On admission, she was given 9,000 units of antitoxin intravenously. Her condition was considered bad. On both tonsils there was a sloughing membrane, which extended over the soft palate; the cervical glands were moderately enlarged, and there was a slight nasal discharge.

Course of Disease.—November 7, there was noted bradycardia with marked myocarditic dilatation; November 9, cardiac arrhythmia with many extrasystoles; November 11, marked gallop rhythm; November 20; epistaxis; December 6, tachycardia of the arrhythmic type with extrasystoles; December 9, esophageal paralysis, the respirations becoming entirely thoracic at 10 p. m., with marked retraction of the abdomen at the diaphragm. The patient died at 6:20 a. m., December 10. During the course of the disease there had been frequent vomiting, which had little relation to the intake of food, or to its constituents. Just previous to paralysis, she complained of a burning feeling in the throat, and was very restless and fretful. There was difficult swallowing, and vomiting and dyspnea. Her condition was very poor.

The onset of the paralysis occurred forty-four days after the onset of diphtheria. Its duration was eight hours and twenty minutes. The temperature was normal until three days before death, when it ranged from 101.4 F. to 100 F. The pulse for three days prior to death was from 130 to 110. Respiration averaged 30. During paralysis, digitalis, strychnin, rhubarb and soda, and cascara were administered.

CASE 2.—*History*.—I. G., a girl, aged 3 years, admitted to the hospital, June 28, 1919, had been sick for fourteen days. On admission she was given 19,000 units of antitoxin, in four doses. There was no exudate in the throat, but there was a paralysis of the right side of the palate and a nasal voice. Gallop rhythm was present, and there was the usual regurgitation of food through the nostrils associated with a palatine paralysis.

Course of Disease.—June 29, there was noted gallop rhythm and puffiness of both feet. This continued until July 11, when a multiple neuritis followed. July 13, diaphragmatic paralysis developed, and the patient died, July 15, at noon. During the course of the disease, from July 13 to death, there was difficult swallowing, resulting in severe paroxysms of coughing, with complete loss of breath, cyanosis, convulsive breathing, and marked air hunger. Restlessness was marked. Vomiting occurred at times.

Onset of paralysis occurred about thirty-two days after the onset of the disease. The duration of the paralysis was forty-eight hours (?). The temperature rose to 101 F. two days before death. The pulse registered from 130 to 150, respiration from 24 to 36.

SERIES II

CASE 1.—H. McM., a girl, aged 4 years, admitted to the hospital, May 28, 1917, had been ill for twelve days. Eight days before admission, or four days after the onset of the disease, she had received 2,000 units of antitoxin intramuscularly, given by a private physician. There were no signs of an exudate. The patient was considered gravely ill. Her pulse was from 110 to 130, and she had a subnormal temperature.

Course of Disease.—May 28 to June 8, the condition was not improved; June 9, a slight palatine paralysis was noted; June 12-19, the patient was apparently convalescing. June 21, there was complete diaphragmatic paralysis; with temperature, 103 F.; pulse, 108, and respiration, 44. The patient died June 22, at 8:45 p. m.

The symptoms prior to paralysis were difficult swallowing, labored breathing, and pain in the abdomen. The onset of paralysis occurred thirty-eight days after onset of diphtheria. Its duration was twenty-eight hours.

CASE 2.—*History*.—L. K., a boy, aged 4 years, admitted to the hospital, July 31, 1915, had been sick for three days. On admission he was given 15,000 units of antitoxin intravenously. The prognosis was considered doubtful. There was an exudate on both tonsils and uvula, a marked nasal discharge and bilateral cervical adenitis.

Course of Disease.—August 1, the temperature was 100.4 F.; the pulse, 128, the respiration 36. August 12, palatine paralysis was noted, with marked regurgitation; August 16, irregular pulse; September 6, dyspnea, labored respirations, pain in the abdomen, and complete diaphragmatic paralysis. The patient died, September 10, at 1 a. m.

Onset of paralysis occurred forty-two days after the onset of diphtheria. Its duration was eighty hours. The temperature was 98; respiration, 48; pulse, from 120 to 140.

SUMMARY

1. The cases enumerated show extensive initial exudate covering both tonsils, the uvula, and the soft palate, and a nasal discharge; and in all but one case (of which the exact facts are unknown) antitoxin was not given until *after the third day* of the disease.

2. The average time of onset of paralysis was thirty-nine and a half days.

3. The duration of paralysis averaged thirty-six hours.

4. The prognosis is 100 per cent. fatal.

5. Of the eight patients, six were girls, two were boys.

6. As regards treatment, on account of the development of the paralysis, due to the late administration of antitoxin, we wish to emphasize the importance of absolute rest for the patient for a period of at least six weeks, for the purpose of possibly obviating paralysis.

In these two series of cases, we found no treatment effectual; but, in view of Dr. Marriott's report, we intend trying a similar method of artificial respiration in our next series of cases, as this at the present time is the only form of treatment which offers any hope for recovery.

134 East Seventy-Sixth Street—Willard Parker Hospital.

ABSTRACT OF DISCUSSION

DR. ROBERT J. WILSON, New York: Statistics are reliable as far as they go, but these are not the ones on which to base conclusions because they come from a service which is notably a very bad one. They were hopeless cases before they came to the hospital. They represent the dregs of the worst kind of bad practice in New York City. Therefore, such statistics must necessarily give a more or less wrong impression. Had the physicians in New York been doing their duty, there would not have been a chance to report these cases. All of this paralysis is preventable. It is the duty of the American Medical Association and this section to see to it that the people become educated, as far as that can possibly be done, to a sufficiently intelligent degree to know when to call in a physician, and then that the physician be intelligent enough to know when to give antitoxin and not wait for a Schick test or a throat culture.

DR. HENRY W. BERG, New York: These cases are important because they are uniformly fatal at present. Only bilateral diaphragmatic paralysis is fatal; and if you can learn to recognize diaphragmatic paralysis when it is unilateral, before both phrenic nerves are involved, you may be fortunate enough to have your patient get well by therapy applied to the first side soon enough. A large number of unilateral palsies occur in diphtheria, but are not recognized because the other side is doing the work. How are you going to recognize unilateral phrenic nerve palsy? First, Litten's sign is absent on the paralyzed side; and, secondly, there is no abdominal respiration on the paralyzed side; thirdly, the respiratory movements in the intercostal spaces are obviously exaggerated on the diseased side; and fourthly, the fluoroscopic picture shows an immobile diaphragm on the paralyzed side. In addition, the muscles supplied by the glossopharyngeal, even the hypoglossal nerves, are paralyzed and the result is that there is an inability to swallow, and a great deal of material falls down into the bronchi, and secondary bronchitis occurs. The patient being unable to

cough, the air cells rapidly fill up; and in bilateral cases the patient drowns in his own mucus in the early stages of the disease, or in the late stages develops bronchopneumonia of a paralytic character. A great deal was said as to artificial respiration either by mechanical means or by the Sylvester method. There is absolutely nothing to be expected from that. This disease does not kill by lack of air; it kills by drowning. The cough is peculiar. It is an incomplete or paralytic cough. You can hear the mucus rising in the air cells from hour to hour. Use strychnin injections in the sixth intercostal space, the galvanic current over the sternocleidomastoid muscle. The strychnin is given for the purpose of stimulating the respiratory center and thus the long respiratory nerve of Bell, in order to bring out the adjuvant respiratory function of the intercostal muscles.

DR. BORDEN S. VEEDER, St. Louis: In one thing I will agree with the previous speaker, and that is that these cases are far more frequent than is generally recognized. I think that if these postdiphtheritic paralysis cases are examined very closely, some degree of phrenic paralysis will often be found which is generally overlooked. On the other hand, I would disagree with him in the statement that these cases are hopelessly fatal. I saw the case which Dr. Mixsell described and which Dr. Marriott treated with the Erlanger apparatus, and I have also seen two other cases of postdiphtheritic paralysis involving the phrenic nerve in which the patients recovered; so I do not feel that it is a hopeless proposition.

DR. EDWIN H. PLACE, Boston: When there is paralysis of the pharyngeal muscles, which so frequently occurs with paralysis of the diaphragm, the patient may have a cough with inability to raise secretions. If the patient sits up, the secretions rattle back and forth in the throat and tend to gravitate into the lungs and cause hypostatic pneumonia. This cough can be entirely relieved by posture, elevating the foot of the bed so that this mucus can flow out. Unfortunately, however, this is a bad position for the diaphragm. The diaphragm should be fixed so that the other respiratory muscles may allow some air to enter. I agree with Dr. Berg about the distention of the diaphragm to keep it at the lowest point.

DR. CHARLES A. FABER, Milwaukee: The New York men have outlined a very good treatment for postdiphtheritic paralysis. A child, 9 years old, was injected with antitoxin. On the third day I found the child up playing with its toys. The mother said the doctor did not forbid that. Four days later when I called again there was crape on the door. The child, while playing, fell over dead. My advice is that very little drugging should be done in any treatment for diphtheria after antitoxin has been administered, but rest in bed, preferably a dark room and light diet are indicated.

DR. E. C. FLEISCHNER, San Francisco: I wish to call attention to three or four simple procedures which can easily be carried out in the convalescence of all diphtheritics and which may help to forestall these cases; namely, routine examination of the muscles of accommodation, the condition of the knee jerks and the palatal reflex. If those things are carried out daily, some of the postdiphtheritic paralysis may be avoided by proper rest over a sufficient length of time.

DR. HAROLD R. MIXSELL, New York: I want to emphasize again the early administration of antitoxin, especially by the intravenous route, before the third day of the disease. It has been my habit, and I know that many New York men do the same, to make cultures in all cases of suspicious throat, whether or not they are clinical diphtheria, and if there is any reasonable doubt, antitoxin is given before the culture is completed. Dr. Berg brought up the subject of the injection of strychnin. I fail to see any use of this procedure. No good results can follow the injection of strychnin into the diaphragm or elsewhere. I agree with Dr. Veeder that artificial respiration in some form should be used. If in the past there have been reported recovered cases, this should be sufficient to justify its use. As far as we know now this is the only way of possibly saving life. I agree with Dr. Faber in regard to the importance of rest, particularly after the late administration of antitoxin. This we hope may prevent these paralyses. At Willard Parker

we like to keep patients in bed for six weeks after the late third day administration of antitoxin. Dr. Fleischner's suggestions are most important. We make daily examinations on those points in all of our cases.

THE CONTROL OF COMMUNICABLE DISEASES *

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I propose to consider the control of communicable diseases with special reference to the adequacy of our control, and the probable reasons why in certain diseases our control is inadequate.

There are three kinds of official health departments: federal, state and local. The official control of communicable diseases comes within the province of these three distinct health jurisdictions and is one of the fundamental duties of all health officers, federal, state and local. To secure adequate control, it is necessary to have a partnership of these three jurisdictions, with a clear understanding in the firm of the powers, functions and duties of each member.

Powers, functions and duties may be considered under the three heads: (1) police; (2) investigative and demonstrative, and (3) coordinative.

POLICE POWER

Police power has been given very sparingly to federal health authorities and delegated by states in large measure to local authorities, because the ultimate application of police power to the individual citizen logically belongs to the agency with which he is in direct contact, namely, the local board of health.

It is clear that police power not specifically given by the constitution to federal agencies is reserved to the states or to the people. There is also police power, implied but not expressed in the constitution, which is inherent in the federal government in connection with the general welfare and interstate commerce clauses. This power is necessary to cover conditions not amenable to or corrigible by state police power, and its exercise cannot be an usurpation of state authority.

Congress has repeatedly given police power by statute to federal agencies to cover such conditions, but has always maintained the attitude that in health matters the state and local agencies should be utilized to the limit of their legitimate fields.

The quarantine law of 1890 gives very definite powers to the federal health authorities to prevent the introduction of cholera, yellow fever, smallpox and plague, or to prevent the spread of these diseases from one state to another, without reference to utilization of state machinery, and it provides for the promulgation of rules and regulations, with penalties for infraction.

The quarantine law of 1893, which includes all communicable diseases, provides that the Public Health Service shall cooperate with and aid state and municipal health boards in the execution and enforcement of state laws and regulations and of federal laws and regulations. It provides that where no state or local regulations exist or where these are, insufficient, the Secretary of the Treasury shall make such addi-

tional rules and regulations as are necessary to prevent interstate spread of such diseases. It provides, further, that the rules and regulations promulgated by the secretary shall be enforced by state and local authorities where they will undertake to execute and enforce them; but if state or municipal health authorities fail or refuse to enforce said rules and regulations, the President shall execute and enforce the same and adopt such measures as in his judgment shall be necessary.

In order to carry out this policy of utilizing state and local health machinery in the prevention of the spread of disease, Congress has repeatedly appropriated large sums "to aid state or local boards or otherwise in preventing and suppressing communicable disease." Without invoking any of the police powers of the federal government, entirely satisfactory results can be secured by utilizing state and local police power, coordinated by the federal Public Health Service.

As the state health machinery becomes more highly organized and perfected, the need of exercise of federal police power will diminish, and the need of federal coordinative activity will increase.

The prevention of the spread of epidemic disease from one state to another may be handled in one of two ways: (1) by the present system of awaiting the outbreak of an epidemic and then attempting its suppression, or (2) by maintaining such a close check on disease prevalence that prompt and early information of undue prevalence is at once available, and that suppressive measures may be taken before actual epidemic proportions are reached.

It is manifest, therefore, that the policy of the United States Public Health Service should be to develop state health departments, especially those divisions in a state health department whose effective operation in the interest of the state itself tends to prevent the spread of disease from one state to another.

The most effective means of preventing an interstate spread of disease at the disposal of the federal government today lies in the development and utilization, in every state department of health, of strong divisions for control of communicable diseases, of water and of sewage.

INVESTIGATIVE AND DEMONSTRATIVE FUNCTIONS

The investigative function of the Public Health Service has no limit other than that set by the amount of money which may be appropriated by Congress.

The act of 1912 authorized the service to study and investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage, and the pollution, directly or indirectly, of the navigable streams and lakes of the United States. Under this very broad authority, investigation of any phase of public health work may be undertaken. The act further provides for the publication of information for the use of the public. Sufficient funds should be secured from Congress to undertake and carry on such research as is necessary in order to furnish, to the health officer in the field, diagnostic, prophylactic and curative weapons for the suppression of communicable disease. The economic advantage of doing this in one hygienic laboratory rather than in forty-eight laboratories is at once apparent.

The work done under the investigative authority of the act of 1912, especially the field work, is nearly always demonstrative, and it can be utilized as public health demonstrations of all kinds.

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

In addition, Congress has given specific authority for demonstrations in rural sanitation, contingent upon partial support by state or local agencies.

Nothing compares in effectiveness with an actual demonstration of how work should be done in the individual communities. Here again the United States Public Health Service is limited only by the amount of money appropriated by Congress.

COORDINATIVE FUNCTIONS

In achieving national success against any public health problem, the coordinative function of the Public Health Service is perhaps the most important function which the service exercises. Some federal coordinating agency is necessary in order to secure a synchronous attack on any disease with uniformity of method over the entire area of the United States. To secure the maximum of improvement in our national health, we must have nation-wide programs for each problem with which health officers are confronted.

The example of our venereal disease campaign serves to show what may be accomplished in other fields by the same methods.

The coordinative function of the federal Public Health Service is but the national demonstration of the function exercised by state and local health authorities over smaller areas.

In other words, public health organization—federal, state, and local—should have this relationship:

RELATIONSHIP OF PUBLIC HEALTH ORGANIZATION

Coordinating Authority	Working Units to be Coordinated
United States Public Health Service.	State departments of health.
State department of health.	Local health departments.
Local health departments.	Individual citizens.

The coordinating authority furnishes the program in order to secure teamwork, and endeavors to have this program carried out by all the units in the area within its jurisdiction.

Outside of the limited and definite police power given by Congress to the federal Public Health Service under the constitution, all other police power is inherent in the state, except in cases in which it has been delegated specifically by the state by charter or other legislative act to the local authorities. Under this broad power as defined by the constitution, the powers of the individual states within their own borders for regulatory, investigative or coordinative health work are limited only by the will of the people as expressed by the state legislature. As indicated above, this power has been delegated by the state legislatures in large measure to local health jurisdictions.

The coordinative function of the state is entirely independent of police power, and it resembles the federal coordinative function in being the most valuable function which the state exercises. Many states have this coordinative function highly developed, securing uniform concerted action by the local health units on the problems of communicable diseases.

The large police powers delegated to municipalities and other local health units often obscure the even more valuable coordinative function which the successful local health officer must employ. This means the securing of concerted action or "team work" by the individual citizens.

The foregoing outline of official powers, functions and duties would seem to indicate that there is ample

legal authority. Experienced health officers nearly all agree that, generally speaking, there is ample legal authority if properly applied and supported by enlightened public opinion.

Police power for certain definite federal functions, such as prevention of the introduction or spread of communicable diseases, is adequate; and while police power has been given freely by states to local communities, the states retain tremendous powers for the legal prevention of the spread of disease. The tendency to overaccentuate compulsory measures is disappearing, and there is a growing tendency among health officers to secure results by education of individuals and communities.

This is logical and sensible, since a strong law may be nullified by an adverse public opinion, while substantial results are frequently secured with a weak law or without law because of the support of public opinion, expressed as respect for a fine health organization.

While it is true that the prevention of the spread of communicable disease concerns all three official health organizations, it is nevertheless, in the last analysis, a local problem.

It is the local health officer who comes into direct contact with the individual cases of the disease, and who should apply the measures to prevent its spread to other persons—in fact, a good local health organization, functioning effectively, reduces the necessity for state action to observation, keeping in touch, and lending moral support.

Adequacy of control demands effective action locally, and no activity at the state capital or at Washington can compensate for failure to apply prompt, effective measures on the spot. If the local organization is defective or nonexistent, state or federal aid may supply the temporary organization; but this should be considered as a temporary makeshift and should be used to demonstrate the necessity for a proper local organization. For these reasons, and because of the time limit on this paper, I will consider only local machinery.

Given the proper legal authority, the fundamental needs of communicable disease control come under the heads of sufficient knowledge and proper local health organization.

Sufficient knowledge of the etiology and the modes of transmission of disease is essential to enable the formulation of effective suppressive measures. Sufficient knowledge of the biologic characteristics of a causative organism makes it possible to furnish the health officers with serums, viruses or prophylactic products for combating the disease.

If sufficient knowledge is available to furnish biologic weapons, and to make possible the formulation of effective suppressive measures, there remains only one fundamental need: proper local health organization. This means the machinery, official and unofficial, for prompt notification, at the earliest possible moment, of cases of communicable disease, and the machinery, official and unofficial, for putting into prompt effect the best suppressive measures known to science.

In considering the adequacy of control of the individual diseases, these divide themselves naturally into groups.

There is a group of diseases the prevention of which constitutes the major purpose of our federal quarantine service. They are more or less exotic, and inspire terror in the lay mind out of all proportion to their

danger. In this group are Asiatic cholera, plague, yellow fever, typhus fever and leprosy.

We have sufficient knowledge to control all of these diseases, and the terror they inspire insures the support of public opinion and a feverish activity on the part of lay officials to effect their suppression. This does not mean that there is no need for further research in these diseases, but simply means that our present knowledge, backed by public opinion, makes possible what may be termed adequate control.

With the diseases which are endemic in the United States, there is quite a different story. They are of common, everyday occurrence. They inspire no terror, and public opinion is apathetic toward measures for their suppression. In some of these diseases, smallpox, typhoid and malaria, for example, we have sufficient knowledge now to effect their eradication. We have specific or biologic weapons with which to fight them, but we lack the interest and support of the individual citizen, who does not react to their presence as he would to cases of Asiatic cholera or yellow fever.

In the whole group of so-called respiratory or "sputum-borne" diseases it may be said that we lack the knowledge of the cause or the modes of transmission which would enable us to control these diseases. This is especially true of influenza and poliomyelitis. In these diseases we need specific biologic products for diagnosis, prophylaxis and treatment. We need also some practical index of susceptibility, such as the Schick test furnishes for diphtheria.

In the group of so-called communicable diseases of childhood, chiefly diphtheria, scarlet fever, measles and whooping cough, diphtheria is the only one for which we have biologic weapons which should be sufficient for its eradication. In the others, we lack definite knowledge of the cause and modes of transmission, and our practical measures for their suppression are, therefore, limited to instructions given on general principles.

Inadequate control of the communicable diseases of childhood is accentuated by certain basic defects in local health organizations. These are, chiefly, failure to coordinate and utilize unofficial volunteer agencies, and failure to develop a community spirit and to secure the hearty support of the individual citizen.

Unofficial agencies which should be the most potent auxiliaries of the health department are operating in many instances entirely independently of the officials, and often without proper knowledge of, or consideration for, their sister volunteer agencies.

The failure to secure a community spirit is related to the failure to utilize properly the unofficial agencies. If proper coordination of all volunteer auxiliaries is secured, the development of a strong community spirit is not difficult.

Once the community spirit is developed by means of real health centers, the securing of support of a large majority of the individual citizens is within reach. We have been clamoring for better reporting by physicians, and this is a justifiable demand; but even if physicians reported 100 per cent of cases seen, we should still be far from adequate control in these diseases.

A large percentage of the cases of communicable diseases of childhood are not seen by physicians, or seen so late that most of the damage is done. School inspection and the cooperation of intelligent, trained teachers will augment the number of cases brought under early control, but the great need is development of sincere public spirited support by the parents themselves.

This can never be achieved by exhibition of police power, but education and an appeal to both civic pride and individual self-respect will be ultimately successful in getting parents to report cases voluntarily.

The biggest step forward will be achieved when the parents voluntarily will isolate children and report, pending diagnosis, when the symptoms are indefinite but present a sudden deviation from normal health.

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ABSTRACT OF DISCUSSION

DR. B. FRANKLIN ROYER, Philadelphia: When you use force or go far beyond the public point of view in a community, you arouse too much opposition to succeed, except with the most frightful types of epidemics. Education must precede law enforcement. In communities in which general education is widespread—and, probably, that is best seen in New England where each town has kept zealously its autonomous organization and carries on its educational program thoroughly—you get the best coordination of effort. In the states into which Europe pours thousands, you have a very different problem from that of New England, and a different program is required. The modern health center and the activity of the Red Cross in the extension of its peace time program will do more than other influences, perhaps, to promote campaigns of public health education both in cities and in rural districts. The well directed public health nurse will probably do more effective work than will health officers or those actively engaged in administrative work. Health authorities must act as advisers and guides to those engaged in this new scheme of public health education, first, in order that the nurses may be trained properly, secondly, that the Red Cross agency may have its function properly coordinated with official agencies, and thirdly, so that their lessons may be carried out to the best advantage of the community and without friction.

In communities where state and county supervision of teachers is well coordinated, much can be done in organizing teachers in carrying on the simpler preventive methods of medicine. The health center may do a great deal to prevent sickness, by doing a little curative medicine; but first, last and most of the time its work should be educational in character. Our hope lies largely in public health education, beginning at as early a stage in life as possible.

DR. R. S. YARROS, Chicago: In the venereal disease campaign carried on by the federal government, a remarkable piece of work has been accomplished. The U. S. Public Health Service cooperated not only with the state departments of health, but also with all well established private agencies interested in this work, with epoch-making results. The federal aid to the states not only helped start the work in many states, but also stimulated and further standardized the various phases of such work. It also served, in a way, to create wholesome competition between the states as to number of clinics, kind of clinics, and educational and law enforcement work done. As each state officer had to report monthly to the venereal disease division of the Public Health Service, he was naturally, anxious to come up to the highest standard. Having learned the value of close cooperation between the federal, state and private agencies, why not apply it to other phases of public health work?

DR. A. W. COLCORD, Clareton, Pa.: For the last twelve years I have served as president of the board of health, in a rather large industrial community, including several thousand foreigners. We are grappling with this question of the education of the people of our community to help stop communicable diseases, and to improve the health of the community in general. We have Americanization classes in which we are teaching these foreigners the English language. Next year we shall begin through the school board to send trained workers into the homes to educate mothers, first in English, and then in personal hygiene, home economics and home health. We have been for three years conducting a sanitary survey of these homes through a nurse. Every time she finds something wrong in a home she tries to correct it. Then she is getting the mothers together and health classes are organized. They get weekly talks followed by the nurse going right

into their homes to see whether they are profiting by these talks. The mothers are educated about baby care and feeding. We have a clinic in each school where all subnormal children are fed. A specialist examines those children, and every physician in the town participates. We are organizing the physicians in the town to promote this health program. It can be done only by the concerted action of the physicians, the schools, the local boards of health, the state board of health and the federal government, with the cooperation of the managers of the mills. You cannot stop contagious disease with a law, a health officer and a placard. You must secure the cooperation of the people by education, persuasion, organization.

DR. J. W. LOUGHLIN, Damariscotta, Maine: In many of our own American homes we ought to teach the people how to take care of a contagious disease. There should be more cooperation between the state departments of health and the state board of education, so that the state and district health officers can go into the high schools. I don't believe in beginning with the very small children, but begin with the high school children, and teach them how the contagious diseases are contracted and how they are transmitted. Every state department of health should educate the people about spray-borne diseases and not confine itself to contagious diseases. It is in the small towns in the country that we must create interest. Once we get a health center started and people interested in their own health, it is only a short time before the local health officer is at work; the state department is not so frequently called on, the people are cooperating and better results are obtained.

DR. ALLAN J. McLAUGHLIN, Washington, D. C.: I want to bring out two points which seem to have been emphasized in the discussion. One was our failure to utilize all the methods and knowledge which we now possess, and, second, the lack of certain instruments which explains the inadequacy of our control.

IN THE TIME OF HENRY JACOB BIGELOW *

WILLIAM J. MAYO, M.D.
ROCHESTER, MINN.

To the members of the Boston Surgical Society, and to others in the audience who have grown up in the atmosphere created by Dr. Henry Jacob Bigelow, a man known to the older of you personally and to the younger of you by tradition, any attempt to portray new facts concerning his life and work would seem little short of presumptuous. But since Dr. Henry Jacob Bigelow was one of the great Americans whose work is of paramount importance and interest to the American medical profession, and since his achievements are a precious heritage of all Americans, it may be fitting at this time briefly to review certain data which without doubt greatly influenced the development of his career.

The Reverend Jacob Bigelow was the founder of the family in Massachusetts. Jacob Bigelow, M.D., LL.D., the second Bigelow, was born in 1787. He graduated from Harvard, taught in the Harvard Medical School, and later acquired renown as Rumford professor in the Department of Science, Literature and Art, of Harvard University. He was the author of many valuable papers on scientific subjects, and he held a high place in the American science of his day. Henry Jacob Bigelow, the son of Dr. Jacob Bigelow and the talented Mary Scollay Bigelow, was born, March 11, 1818. He was graduated from Harvard in 1833. At that time there were ten professors at Harvard, including the president, and 230 students.

As a boy, Henry evinced an extraordinary interest in mechanics. He was wonderfully skilled in the use of all kinds of mechanical implements, as well as in the art of making them. He was a leader in the younger social set of Boston. During his freshman year in college he organized and headed a student revolution. In reproving him for this serious offense, his father said that he himself had committed such acts in his youth, and later repented of his folly. Henry replied that his reasons were quite the same; that he also wished to learn by actual experience the folly of his ways.

After Henry had graduated from Harvard he began to study medicine with his father as preceptor, and from the first declared his intention of becoming a surgeon. He was house surgeon in the Massachusetts General Hospital from 1838 to 1839, and received his medical degree in 1841. At this time Dr. Oliver Wendell Holmes was teaching anatomy and physiology in the Medical School in Hanover, and young Dr. Bigelow went there to attend his lectures. Dr. Holmes was not only a literary genius, an anatomist and a physiologist of the highest order, but was greatly interested in clinical medicine; he was the first to point out that puerperal fever was a form of surgical sepsis.

FRANCE, THE MEDICAL CENTER

In 1842, Dr. Bigelow went to Paris, at that time the medical center of the world. To children is given the power of readily acquiring languages; later, mathematics is acquired with the same readiness; but reasoning from cause to effect is a development of adolescence and early manhood. Critical observers believe that most men have unconsciously laid the foundation for future careers at a period of life well under 30 years. Dr. Bigelow went to Paris at the most impressionable period of his scientific life.

John Hunter, in the latter part of the eighteenth century (1728 to 1793), was the first to study pathologic anatomy as a whole. Before Hunter's time, normal anatomy had reached a relatively high level of perfection by dissections on cadavers; but pathologic anatomy, while it had been highly developed in relation to certain organs or parts of the body, had by no means kept pace with progress in the study of normal anatomy. As the result of Hunter's work, England became the center of the medical sciences, a position which she held well into the nineteenth century. One needs only to view the thirteen thousand pathologic specimens in the Hunterian Museum of the Royal College of Surgeons in England, put up, labeled, and numbered in black by Hunter's own hands, to realize just what this man accomplished in the development of medical science. He was aided only by the eye and by inferior types of microscopes.

Gerard Van Swieten, while not comparable with Hunter in any way, in about the same period (1700 to 1772), under Queen Maria Theresa, was laying the foundation in medicine and pathology in the great medical school in Vienna, a foundation which gave vitality to Vienna as a medical center for more than a hundred years.

The teachings of Hunter were eagerly seized by the French, who, with characteristic Latin ingenuity, at once began to study methods whereby practical use might be made of pathologic knowledge in the cure of disease. France quickly forged to the front in the development of surgical anatomy, technic and operative surgery, and the leadership in medicine passed from

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England to France. The microscope had been greatly improved in France, thus making it possible to study in detail minute histology and pathology.

Dr. Bigelow was caught, at the most plastic period of his life, in the high tide of this flood of new knowledge. Was it any wonder that, with his creative genius for invention and mechanics, he should become so nearly French, and should flower under the guiding genius of the French people during this great period in the history of medicine?

Von Langenbeck, father of modern German surgery, was a student in France about the same time, and he carried to Germany the principles of applied art in surgery which the fundamental work of Hunter had made possible.

In 1847, Philadelphia was enriched by the coming of Mütter, who brought to America, from the great schools of Paris, a knowledge of orthopedic surgery.

Prof. David W. Cheever, who knew Dr. Bigelow well, thus evaluated the French influence on Bigelow's work:

As a surgeon, in method Bigelow was a pupil of the French school. To ingenuity he added dexterity, and to dexterity grace. He was alert, cool, practiced; whenever he appeared on the operating arena it was as a central figure. Precise in touch, supple in movement, he added the polish of the finished artist to the nonchalance of the experienced operator.

Dr. Bigelow, however, did not become quite French. One is impressed with the fact that he journeyed from Paris to England, a most disagreeable trip, once a week to see James Paget. Paget was the great philosopher of surgical science of his day. He had a rare fund of knowledge gained from others, and he had great wisdom combined with intuition, and was able to correlate knowledge with experience. I remember well that when I was a schoolboy my father, in mapping out my future medical training, gave me Paget's book on surgical pathology. This book is one of the most fascinating I have ever read; and although I read it more than forty years ago, certain passages still stand out vividly in my mind. Paget's generalizations on pathology have never been excelled and seldom equaled. For example, in writing on atrophy and hypertrophy, he says that continuous pressure produces atrophy, like bedsores, and intermittent pressure produces hypertrophy, like corns and callus. His description of the natural deterioration of age as the "calmness of decay" due either to a reduction in quantity, as in the withering of age, or to a reduction in quality, as in the obesity of age, is classic. Again, he speaks of the senile processes as age replacements of vital tissues by the introduction of earthy substances, atheroma, arteriosclerosis, and so forth, "as though man were becoming more earthy in preparation for the grave." The inspiration to Dr. Bigelow of seeing in Paget the Anglo-Saxon characteristics of soundness and sanity, with breadth of view, may be readily conjectured. Paget made generalizations that are as much a characteristic of the Anglo-Saxon mind as keen analyses and technical skill are characteristics of the Latin mind.

In Dr. Bigelow's training, therefore, the highest product of the French and English schools is exemplified. The form and method were from the French, but the principles were from Hunter and Paget, and the English school. As one reviews even sketchily the education of Bigelow, it seems difficult to improve or to equal it at the present time. Today the premedical student is overtaught. An attempt is made to give him

a memory smattering of many facts. He is required to take cultural training of little value for his future work, such as higher mathematics more calculated for the training of an engineer than a physician. Two years of time at least are lost in premedical unimportant educational drill, too often under mediocre teachers and cloistered professors.

The Oriental races mature at an early age. They excel in memory tests and reach the height of mental growth well under 40, with exceptions to prove the rule. They are brilliant medical students, but often poor practitioners. The Anglo-Saxon develops later, but he has a capacity for reasoning and for action based on reason, which does not falter with age. Where does history reveal the same number of men of other origin who were great men at 70 and 80 and even 90, with equal power of correlating and assimilating new facts?

Dr. Bigelow was not overtrained. He was allowed to think for himself in order that he might gain in wisdom that which he lacked in knowledge. Dr. Bigelow obtained his medical degree before he was 25. The average graduate in medicine today is over 27, and if he takes a three-year fellowship he is over 30 before he begins his work. An investigation of the graduates of medicine in the University of Michigan for a fifteen-year period showed that men graduating under 25 were, on the average, more successful and worth more to their communities than those who graduated over the age of 25.

While Dr. Bigelow was in Paris he had typhoid fever, and on recovering went to Italy to convalesce. He spent several months in Rome, and devoted himself to the art of drawing. The skill he acquired added greatly to his ability as a teacher later, in giving black-board illustrations to the students.

DR. BIGELOW RETURNS TO BOSTON

Dr. Bigelow returned to Boston in 1844. At that time there were about 150,000 inhabitants in Boston, 162 of whom were physicians. Dr. Bigelow's ambition was boundless, and his self confidence most remarkable. He did not hesitate to express his opinions in the presence of those high in authority, and chafed at attempts to control by authority of position rather than by ability.

Dr. Bigelow was a handsome man with engaging social qualities, and he soon became one of Boston's leading social arbiters. His sartorial expressions were extreme. He startled staid Boston by the extremes of fashions he followed. He originated the light blue coat, the brass buttons, and the radiant embroidered waistcoats. His spirited horses attached to a landaulet were driven by a coachman in livery. These and many other acts contributed to make him a marked man, and only his extraordinary ability enabled him to maintain the unusual standards he established. Yet he always searched for the truth, was always open to suggestion, even though he might dislike his informant. He was interested in general science, and when Louis Agassiz came to New England to study the rocks it was Bigelow who went with him to show him where to find the particular geologic strata for which he was searching.

In 1845, Dr. Bigelow was made president of the Boylston Medical Society, and in 1846 his presidential address, "Fragments of Medical Science and Art," was published. In this address he discussed the value of the inductive method of applying knowledge and the use of the senses, in contradistinction to the numerical method, which, he said, made men of science statis-

ticians. In 1847, he issued his famous circular announcing the formation of a charitable surgical institute for outpatients only. This created a sensation, but his graceful attitude toward the members of his profession, his ability in organization, and his popularity with his clientele, made the institution a success.

YOUTH WILL BE SERVED

In 1846, when Dr. Bigelow was only 28 years of age, he was made full surgeon in the Massachusetts General Hospital, a position which he held for forty years. In 1849, he was made professor of surgery in Harvard Medical School, a position which he held for thirty-three years. His hospital and teaching positions enabled him to have a hospital service with beds and patients during the active period of his life. Many of the world's great surgeons have had this advantage. Theodor Kocher was professor of surgery at the University of Berne at the age of 31, and held the position until his death, a period of forty-six years. Johann von Mikulicz at the age of 32 was made professor of surgery in a German university, and held this position brilliantly until his too early death in 1905. In obvious contrast to Dr. Bigelow's opportunities were those of W. H. A. Jacobson. Jacobson was assistant surgeon at Guy's Hospital, London, during his active career and did not become a full surgeon until he was 53. He arrived at the summit of his career late. He retired after but five years of full-time service. Jacobson's book on operative surgery was, in its time in my opinion, the greatest work on this subject that had ever been written. His ripe judgment, clear thinking, dignity and brevity of expression made his book a classic. I not only read Jacobson's book, but I absorbed it. He wrote largely concerning other people's work, but the critical acumen, the estimations made of the indications for operation and the type of operation were Jacobson's.

Osler's comment on the man under 40 and the man over 60 caused great merriment and newspaper comment, which has not died out in the intervening years. Osler's philosophy was, in a way, sound. Experience is the great teacher; unfortunately, experience leaves mental scars, and scar tissue contracts. Experience hobbles progress and leads to abandonment of difficult problems; it encourages the initiated to walk on the shady side of the street in the direction of experiences that have been pleasant. Youth without experience attacks the unsolved problems which maturer age with experience avoids, and from the labors of youth comes progress. Youth has dreams and visions, and will not be denied. Sound practices today were only visions the day they were born. The failure of the Germans in their great attack was due to experience. Germany's leaders were old men, most of them over 60; and some of those high in command were over 70. The discipline of German life with its military training limited the initiative of its youth, obstructed the progress of thought and invention, and made of many Germans imitators and exploiters of other people's inventions, unfortunately too often without credit when credit was due, the facts concealed by huge smoke screens of scientific pfennigs.

THE WIT OF SCIENCE

Much of the extraordinary success of Bigelow is expressed in his happy saying, "the wit of science," namely, the application of the special senses, in obtaining knowledge and in acting with wisdom. The wit of

science not only expresses but actually reveals the science and art of medicine:

In observing the present method of teaching in the medical schools, it is seen that attempts are made to teach the student a little of everything. Much of the teaching is so complex that the details cannot be carried out. There is a constant tendency to exaggerate the minute at the expense of the obvious. Not long ago I investigated my old general utility bag which I had not seen for twenty years. As I removed the articles from the bag, one by one, articles I had been taught to use, I questioned my staff of assistants with regard to their use. I found that they were familiar with the articles but had little knowledge of their practical application. They had not been taught to handle the common tools of their trade in a manner to make them depend on them, but rather to consider them as something apart, to be used by specialists. In my student days less reliance was placed on the stethoscope, that romantic instrument which is the diagnostic sheet anchor of so many men who do not attend the revelation at the operating table or at postmortem.

On the wall of an operating room in Newcastle-upon-Tyne, a room made famous by Morison and now occupied by one of his able disciples, is a legend for the attention of the students. In large letters is written "Eye," in smaller letters, "Touch," and in very small letters, "Ear." One evening, many years ago, the little folk at my house were having a party. I became very much interested in watching their games. A child was blindfolded and two coins were struck together at a distance of about two feet from his head, in different directions. I was surprised to note that the child was practically unable to tell in which direction the coins had been struck. The explanation for this lies in the development of the special cranial senses. First came the sense of taste that the primitive mouth might recognize food substances. Then came the sense of smell that the primitive mouth might be turned toward food; then the sense of hearing for the protection of the individual, and since danger might threaten from either side or from behind, the ears were placed in the middle of the head. The last of the special senses developed was the sense of sight, and with it came the extensive growth of the cerebral hemispheres, so that while the senses of hearing, taste and smell are poorly developed, the sense of sight has a direct pathway to the intellectual organization of the brain. An average man may listen to the description of a piece of machinery that has little meaning to him. If he is shown a picture he instantly obtains a conception of the mechanism, and often a correct one.

The eye, aided by the microscope and the test tube, enabled Pasteur to make his discoveries, the greatest gift ever made to humanity by man. Pasteur's work was vitalized by Lister, and the modern edifice of surgery is erected on the foundation laid by these two men. Asepsis and antisepsis came too late for Bigelow. He had reached the time of life when new principles were not readily received. This attitude was revealed also in his reception of abdominal surgery, which was making unlooked for revelations under Lawson Tait of England, Jules Pean of France, Joseph Price of Philadelphia, and sturdy, independent John Homans of Boston.

Postmortem investigations of diseases of the abdomen during this period too often showed, not the pathologic condition of the patient during life, but

rather the complication from which the patient died. Great confusion naturally resulted in attempts to correlate clinical facts with terminal conditions found at necropsy, that had not existed when the clinical facts were gathered. The return to the hunterian method of pathologic examination under the eye, made possible by means of surgical operations in the abdomen and the other great cavities of the body, and the removal of pieces of tissue for the microscopic study of pathologic conditions during life, led to great advances. Dr. Bigelow, in teaching, made free use of gross pathologic specimens, and one can imagine the effect on his students by his constant recourse to pathologic demonstrations. One may also discern the growth of interest in pathology which resulted in the application of the methods of the study of frozen sections as begun in the Massachusetts General Hospital by Whitney and Mixter, who introduced carbon dioxid as a freezing medium. The quick examination of sections of living tissue, especially since Wilson devised a method for its rapid differential staining, has enabled the microscope to guide the operating surgeon's knife for the benefit of the patient, in a manner as fundamentally different from the examination of mummified dead tissue, several days after the operation, as the work of the operating surgeon differs from the anatomist's dissection of the cadaver.

The wonders of the roentgen ray were yet come to make the eye supreme. I often think of Sir William Crookes and his untiring efforts in the interest of science. In his attempts to demonstrate a fourth state of matter, Crookes exhausted the air from a heavy glass bulb. When certain electric attachments were made, the bulb became filled with luminous matter and, as Crookes expressed it, "actually touched the borderland where matter and force seem to merge one into another." He named this luminous substance the cathode ray, composed of negative electrons, which is the fundamental conception of the roentgen ray. Crookes also pointed out that when roentgen rays come in contact with solid matter they give rise to shadows, and that the cathode rays, when outside a magnetic field, always travel in a straight line without regard to the position of the poles. Roentgen's splendid work must not blind us to the fundamental character of the work of Crookes.

ANIMAL EXPERIMENTATION, THE DOCTOR AND THE DOG

Jenner on a certain occasion presented arguments which were capable of being proved, but which he had not proved. The following day John Hunter wrote to Jenner saying, "Why submit hypotheses? Try it on a hedgehog and know." Animal experimentation has resulted in gifts of inestimable value to humanity. The pernicious activities of antivivisectionists seriously threaten the continuance of these investigations, which

are of such paramount importance to the nation's health. It is of interest to note that in the last election in California the antivivisectionists, aided by various organized cults, such as Christian science, osteopathy and chiropractic, were defeated two to one by a referendum directly to the people, a triumph of an appeal to reason. The defeat of the antivivisectionists was owing in a great measure to the sagacity of Dr. Ray Lyman Wilbur, president of Leland Stanford University. The people, the farmers in particular, were shown what animal experimentation has accomplished in the prevention of disease to farm animals, what it has accomplished for the canning industry in relation to botulism, and the possible effect on economic conditions in California if the work should be discontinued.

It is undoubtedly true that much of the opposition to animal experimentation among reasonable persons has been brought about by a few careless physicians. For at least four thousand years the dog has been man's friend and companion, and the occasional buying of stolen family pets at small prices for animal experimentation, as has been done in some laboratories, has alienated the public. The physician should not be a fence for stolen property, and his complicity cannot be glossed over by saying that he did not know the property was stolen. The physician has no more right to a stolen dog than to a stolen purse. All these difficulties could be overcome by a proper law which would turn vagrant dogs over to accredited institutions. At the present time thousands of homeless dogs, many times more than the number used in all the laboratories of the United States, are killed at the pounds of the various cities, often by methods entailing more pain than any experiment carried out in a controlled laboratory, and are an economic loss except so far as their hides and fat can be used for commercial purposes. Some methods should be devised whereby these animals, or as many as necessary, may become legally available for the use of recognized, responsible laboratories for experimental work.

Moreover, the medical profession in the past has been derelict in permitting untrained men to perform animal experimentation without supervision. It was such experimentation that roused the resentment of a great many persons. If it is the wish of the medical profession to continue this work, its members must not furnish a market for the thief and they must protect the dog from the untrained experimenter. Fortunately, the organized physicians of the country have already made considerable progress in controlling the conditions of animal experimentation from within. Regulations which place upon laboratory directors responsibility for the importance of the problems studied and for the propriety of the procedures used in the solution of these problems have been formulated and adopted by corporate vote in medical institutions



Fig. 1.—Bigelow medal, obverse.

throughout the land. By pursuing a policy of honesty and faithfulness to a trust, animal experimentation can be carried on without serious objection. Experiments on animals were performed in Bigelow's time, but today such investigation has become one of the foundation stones of progress.

THE MASSACHUSETTS GENERAL HOSPITAL

M. G. H., as it is lovingly called, was organized one hundred years ago (Sept. 3, 1821). To Dr. John C. Warren and Dr. James Jackson must be given the credit for its organization and for the high character of its service. Dr. Bigelow, during his long connection with the hospital, was ever assiduous in advancing its interests; and under his influence and that of his illustrious colleagues the institution became a great teaching hospital, and its fine traditions have always been worthily maintained. It is fitting in this connection that I acknowledge the debt of gratitude my colleagues and I owe the Massachusetts General Hospital for the kindness, sympathy and cordial help we have received from its management and staff at all times. In the beginning, the hospital was devoted to charity patients. Admitting day patients and patients who paid was a later event and met with the opposition of Dr. Bigelow, whose mind, acute as it was, did not grasp this new sociologic doctrine. The discovery of bacteria and the applications of this discovery to medicine and surgery brought about a remarkable and sudden evolution in hospitalization, and its beneficent results could not readily be comprehended in Bigelow's time.

American hospital organization in this period was modeled on that of Great Britain's. The caste system, which was the mainstay of the British social structure, was exemplified in its hospital organization and was the result of the British educational system, which was traditional and calculated to continue the caste. Slosson, speaking of the British government in relation to the universities, justly says: "So in 1874, Sir William Parkin relinquished the attempt to manufacture the dyes he had discovered because, as he said, Oxford and Cambridge refused to educate chemists or to carry on research. Their students, trained in the classics for the profession of being a gentlenian, showed a decided repugnance to the laboratory on account of its bad smells. So when Hofmann¹ went home he virtually took the infant industry along with him to Germany, where Ph.D.s were cheap and plentiful and not afraid of bad smells." Such neglect on the part of England was the fundamental basis of the great war. The dye industry gave the control of explosives and gases to Germany.

In the early days, a hospital was a place for sick persons who had no homes, and for charity patients. This

ancient conception of hospitalization did not anticipate modern conditions; it resulted in the denying of hospital care to the honest taxpayer of moderate means, and the extraordinary spectacle was presented of a premium given to inefficiency and laziness. The worthless person was given all the benefits of modern science and of group medicine, which could not be obtained by the average man at an expense he was able to bear. The Massachusetts General Hospital was one of the first hospitals in this country to recognize the rights of all the people to adequate treatment, each contributing as he might be able, the poor to receive as much as the middle class and the rich, but no more.

BIGELOW THE SURGEON AND TEACHER

Given one well trained physician of the highest type and he will do better work for a thousand people than ten specialists. One tenth of each patient would be treated better by the specialist, but the nine tenths would have little or no treatment. It is for the next generation to produce, as nearly as possible, the superman who

shall have obtained from many special workers the threads of all knowledge to be woven together and applied as a whole for the benefit of the patient. Dr. Bigelow belonged to a generation of men who developed a keen power of observation, and who with the history of a case, and their highly trained special senses accomplished wonders.

Dr. Bigelow's brilliance excelled that of all the group of striking personalities and unusual men of Boston in his day. His career was unexampled in brilliancy and success. In mental acumen, creative vision and swift, unerring and direct action he was unequalled. Probably the essence of his mental powers lay in his ability to concentrate in-

stantly on the vital factor or factors of any problem, and to disregard the unessential details. He picked the kernel of the nut and threw away the husks, to be worked over by others if they chose, or if it fitted into some less important part of the structure he was engaged in rearing. Yet in spite of his apparent disregard for details, no one ever gave greater attention to the essential. This is a characteristic of great men. We think of them as having complex mental machinery. In reality, their mental processes are simple and direct.

Dr. Bigelow's surgical work was thus described by one of his students:

He stood erect and did all his cutting at arm's length. Every stroke of the knife accomplished all and no more than he intended it to accomplish. He used the belly of the knife rather than the point, drawing it with swift strokes as a violin bow is drawn. His hands never fumbled or made uncertain motions; all were direct, unerring, firm, yet delicate. He displayed perfect coordination of mind, eye and hand. It must be remembered that in Bigelow's time surgery was almost wholly confined to the outside of the body, and thus comparatively limited in scope. However, opportunity was



Fig. 2.—Bigelow medal, reverse.

1. Slosson, E. E.: *Creative Chemistry*, Century, 1920, p. 80.

given for dramatic display, and Bigelow liked the applause of colleagues and students. His performance of a lateral lithotomy in the presence of the surgeons from some Russian war vessels was described as being more like a juggler's trick than a deliberate surgical operation. Many of his operations were performed with such swiftness and unerring strokes as to suggest legerdemain. On one occasion, with what seemed an incredibly small number of rapid strokes of knife, saw and chisel, he removed an upper jaw. In doing this a large artery was opened, a blood clot formed in the patient's larynx and trachea, and she stopped breathing. Bigelow coolly took her pulse, remarked, "She doesn't seem to be breathing, does she? Well, tracheotomy." The instrument was placed in his hands; in two strokes he entered the trachea, inserted the tube, and blew into it. The patient took a breath, whereupon Dr. Bigelow quietly picked up the jaw and described the lesion in it as though nothing unusual had occurred; his assistants meanwhile secured the wounded artery. His delicacy of touch was remarkable. Sometimes, by merely placing his fingers on a diseased or injured part a correct diagnosis was made. In one instance he passed his finger across a swelling in the sole of a foot and said "fatty tumor," a condition no one else had suspected.

As a teacher, Bigelow's special qualities were those of epigrammatic and dramatic expression and demonstration. His frequent practice of putting a subject in a nutshell was remarkable. An example worthy of note is as follows: "Gentlemen," said Dr. Bigelow, "many pages have been written describing various more or less complicated ways of treating the shoulder after a dislocation of the joint has been reduced. The whole thing consists of: pad in the axilla, elbow to the side, arm in a sling." He often arranged his amphitheater and his patients with a view to dramatic effect. He was strikingly handsome and distinguished in appearance, which added force and charm to his personal influence. He exercised on his student world the peculiar power and fascination which were the result of his personal attributes as well as of those which he brought to his teaching and to the practice of surgery.

It is to be regretted that our first and second year medical students do not have the advantage of attending the dramatic exhibitions which are the precious heritage of many of the older practicing surgeons. In the plastic period of student life, even from the back seats of a surgical amphitheater filled with a spellbound audience, the reading of a case history, the discussion by the surgeon of the details of the operation, and the report of the pathologist, stimulate the student's imagination. After all, a student will more often carry away a truth, or the essential elements of a surgical case, if it is dramatically placed before him. One of Dr. Bigelow's most distinguished students summed up Dr. Bigelow's characteristics in this forceful paragraph:

If I were to try to sum up Dr. Bigelow succinctly I might say that as a surgeon his remarkable qualities were: A keen diagnostician, an operator of unrivaled dexterity and finished style, a genius in seeing the vital point of surgical problems, possessed of great mental acumen, with the ability to extract the meat from the nut in the swiftest and most telling way, as a teacher remarkable for the power of epigrammatic and dramatic expression and demonstration, thus driving home facts in a most telling manner. These qualities embodied in a man of imposing and distinguished personality, by virtue of which fact their power was greatly enhanced.

Dr. Bigelow had many interests outside his profession, but they were only hobbies. Among these were the restoration of old pictures, soil fertilizers, fancy breeds of pigeons, gems, and the facial expression of monkeys. He dominated the Harvard Medical School and the Massachusetts General Hospital for many

years, and up to 1879 or 1880 it was within his power to make or mar the careers of the younger surgeons of Boston; a power which he exercised in many instances.

SURGEONS TRAINED BY DR. BIGELOW

Dr. Bigelow was idolized by his students and admired by his assistants. As an operator, teacher, writer, and originator of surgical procedures, he made a profound impression on the surgery of his day. Yet apparently he never tried to establish a school of surgeons to continue his work. He could not brook competition, and his aid to brilliant students depended on caprice rather than a great surgeon's fixed policy of development. In spite of this, after he retired in 1886 surgeons of his training more or less dominated surgery in Boston. Among his assistants were Dr. C. B. Porter, one of the most skilful surgeons I have ever seen operate; Dr. Richard Manning Hodges, a bold and skilful surgeon; Dr. H. H. Beach, who justly acquired fame; Dr. Arthur Cabot, a sound, honest surgeon of great learning, who made surgical contributions of a permanent character; and by no means least, the brilliant and erratic surgical genius, Dr. Francis Watson, whose contributions to urology, hourglass stomach, and so forth, have placed him permanently in the annals of surgery.

Dr. Maurice H. Richardson, the man whose surgical judgment was not exceeded by any surgeon I have ever known, was not of the Bigelow school, but it is to be noted that his early training was received in France and that he had many of the Bigelow characteristics.

In appearance and intellectual qualities, Bigelow resembled Theodor Billroth, the great Swedish surgeon who was born in Germany and lived through his contributing years in Vienna. Billroth was the father of initiative surgery, the school that attacked disease in the early stages by constructive effort, not waiting until the advanced stages rendered destructive surgery necessary. Billroth's ambition was to develop great surgeons among his students, and his ambition was realized. Von Eiselsberg, one of his students, is the first of the Teutonic surgeons today. The last time I was in Vienna, just before the great war, Hockenegg still retained in loving memory Billroth's operating rooms, inconvenient as they were. The lamented Mikulicz, Gersuny, Czerny and many others I could name called Billroth Master.

Richard Volkmann of Halle, Germany, had Billroth's characteristics. Among his assistants were Kraske, Sprengel and Schede. Volkmann's death before the great war cannot be regretted, since he was spared the pain of severing his friendly relations with the English, whom he admired greatly, even to the extent of long Dundrearyish whiskers and English clothes. Volkmann's later years were saddened by a painful affliction. The devotion of his students is exemplified in the distinguished surgeon Fedor Krause, who, during the last years of Volkmann's life, carried on most of his work and maintained his clinic.

Terrier of France was equally distinguished by his students, such as Richelot, Quénu, Broca, Hartmann, Gosset and Montprofit.

Of Joseph Lister we must say that his students are representatives of Great Britain's best and the world's best.

One of the most splendid examples of the conviction that science comes first, and of the love and devotion to a great cause which transcends the desire for personal elevation, was the Danish surgeon Christian Fen-

ger of Chicago, the Father of modern surgery in the West. Fenger in his best teaching years had only unimportant hospital and teaching connections. But among his students were the late John B. Murphy, the greatest clinical teacher of surgery of my time, M. L. Harris, A. J. Ochsner and Frank Billings, the distinguished internist whose alert mind comprehends surgical conditions as clearly as the surgeon. My brother or I used to travel each Wednesday night to Chicago to attend Fenger's Thursday clinics and demonstrations. We returned home the same evening with renewed vigor and stimulus for greater effort. Every year the students of Fenger gather together for a memorial meeting. They do not meet to eulogize, but to stimulate scientific progress, and this is as Fenger would have wished. In a like manner you who were students of Henry Jacob Bigelow, New England's Master Surgeon, propose to perpetuate his name and his work.

THE ENDURING QUALITY OF BIGELOW'S WORK

Henry Jacob Bigelow's importance in the history of medicine will not be exceeded by any American, and will be equaled by few. His recognition and advocacy of ether anesthesia permanently links his name with that of Morton and Warren. Ether was first given for general surgical anesthesia, Oct. 16, 1846, by William T. G. Morton in the clinic of Dr. John C. Warren in the Massachusetts General Hospital, who then removed a tumor from the neck of Gilbert Abbott. The operation was performed before the medical students of Harvard and many members of the medical profession. Oliver Wendell Holmes coined the words anesthetic, anesthesia and anesthetist at that time. Without the aid of Dr. Warren, Morton might not have had the chance to try out ether anesthesia. The following is quoted from *The Bigelow Memoirs*:

Dr. Bigelow was the unflinching advocate of sulphuric ether as the only safe anesthetic; and his unshaken opinion had a very wide and lasting influence. Bigelow instituted important and productive experiments in anesthesia. He inhaled new and untried anesthetic agents. He made practical and original studies of asphyxia, and thoroughly established the fact that insensibility from the inhalation of nitrous oxide gas is largely due to asphyxia. He was also the first to show that anesthesia by nitrous oxide could be accomplished with certainty only by the use of a large volume of gas; and thus made the way plain to Colton and others for its successful adoption in tooth-pulling, and in brief surgical operations.

Dr. William H. Welch, Major General Leonard Wood, my brother, and I, were the four medical members of the Electorate of 1920 for the Hall of Fame; and after mature consideration we gave support to Morton on account of the transcendent importance of his contribution of ether anesthesia. The names of Warren and Bigelow, however, must be inseparably linked with that of Morton in connection with ether anesthesia.

The eventual reputation of a man does not depend so much on the average excellence of his work as on matters that are fundamental in the way of inventions and discovery. Dr. Bigelow made two original contributions to the science and art of surgery which gave him lasting fame: the bloodless reduction of hip-joint dislocation by manipulation, and litholapaxy.

In 1861, Bigelow published a description for the bloodless reduction of hip joint dislocations by manipulation. In 1869 he published a complete monograph on

the subject. This method is still without a competitor. The greatness of this achievement can be better understood by reading the description of the pulleys and tractors and other instruments of torture which in the pre-Bigelow days, before the use of the anesthetic, were used to force the head of the femur into the acetabulum: and which were usually unsuccessful. Dr. Bigelow's classic description of the anatomy of the hip joint and its relation to the ligaments is one of the masterpieces of American surgical literature. Dr. Bigelow was greatly interested in all types of orthopedic surgery, and as the result of his initiative Boston has been the world's center of orthopedic surgery for fifty years.

Dr. Bigelow worked on a method for crushing stones in the urinary bladder for about ten years, and finally published a description of the operation in 1878. This operation remains the safe procedure for the nonsurgical removal of cystic calculi. The invention and development of the lithotrite reveals Bigelow's extraordinary inventive genius and mechanical conceptions. He made these, and scores of other instruments himself, for various original purposes. His instruments are still used in the Massachusetts General and other hospitals. His facile manipulation of instruments was that of a prestidigitator. The story is told of his comment at the Boston Museum of Fine Arts that a certain cabinet containing valuable specimens could be unlocked and the contents removed easily. The curator and others present laughed at the idea, said that the case was not only locked but under watch, and that it could not be opened without detection. A few days later Dr. Bigelow, standing with his back to the case in question, picked the lock, removed the specimens and relocked the case, talking the while to his companions, who had believed it could not be done. Bigelow carried the specimens away, and a few days later during the hue and cry resulting from the discovery of the loss, he walked into the museum and handed back the valuables to the officials.

Another medical man produced by Boston, whose name will travel into the future with that of Bigelow, is the late Reginald H. Fitz. Fitz made three monumental contributions to permanent medical literature. He showed the relation of the appendix to all the infections within the abdomen which we recognize under the general title of appendicitis and its results, the relation of acute pancreatitis to fat necrosis, and the relation of Meckel's and other diverticula to the chain of events which the presence of these congenital or acquired lesions may cause.

Dr. Bigelow, after serving greatly, died, Oct. 30, 1890, in his seventy-second year.

Death Rate Declines.—Statistics of the Metropolitan Life Insurance Company, covering 13,193,692 policyholders, show a cut of 23 per cent. in the death rate for the year to date, below that of 1920. The most marked declines are for influenza and pneumonia, tuberculosis and organic heart disease. The death rate for pneumonia for the first six months of this year was about one ninth that for the first half of 1920; likewise the death rate from pneumonia for the first half of 1921 was about one half that for the corresponding period of last year. These decreases, together with a drop of 19 per cent. in the tuberculosis rate and 9 per cent. in that for cardiac diseases, are the chief elements responsible for this year's remarkable health record. Other diseases which have registered much lower this year than last are cerebral hemorrhage and Bright's disease, measles and whooping cough. There has been a decrease in the mortality from conditions incidental to pregnancy and childbirth of 21.2 per cent.

A SIGN OCCURRING IN CASES OF
TABES COMPLICATED BY
CHARCOT JOINTS*

LEO ELOESSER, M.D.

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Occasionally one sees a tabetic with an acute Charcot joint—usually the result of a joint fracture or some other trauma—who suffers pain in or around the joint. Occasionally one meets a painful tabetic fracture. It has interested me greatly that a Charcot joint or a tabetic fracture should be painful, because a series of experiments on cats has led me to believe that most Charcot joints are caused by trauma to a limb which lacks the warning, protective and curative sense of pain.¹ If this theory be true, then a painful Charcot joint is a paradox. If a tabetic can feel pain in a joint, according to this theory he should never develop a Charcot arthropathy at all.

Closer examination of such patients has made it apparent that a painful Charcot joint is not so paradoxical as it might seem. On testing the pain sense of the affected limb more closely, I have found that the skin may retain its pain sense while the periosteum may be analgesic. If one thrusts a pin through the skin of a leg with a painful Charcot joint, the patient feels a twinge of pain; if one presses the pin farther, one may dance its point about on the tibial periosteum and prove that the bone is perfectly analgesic. The bone is analgesic, the skin is not.

Oppenheim² notes that the pain sense of the deep parts may be dulled in the early stages of tabes. He saw patients with tabetic arthropathies whose skin still retained a perfectly normal sense of pain, but who felt absolutely no pain when the affected joints were moved.

The pain of these fresh tabetic joints or fractures seems to be felt not in the bone or joint, but in the skin and soft parts, which are tightly stretched over a joint or fracture immoderately swollen with blood. That the bones are not painful, even when the skin is, is further shown by the curious silly smile that spreads over the patient's face as he listens to and feels his bones grate on one another when the surgeon elicits crepitus or makes maneuvers of reposition. This dual sensibility of skin and periosteum would indicate that cutaneous and periosteal pain fibers run through the cord in different paths: that one may be affected while the other is intact.

SUMMARY

Some tabetics have an analgesia of the bone but not of the skin. This may be tested by thrusting a pin through the skin onto the bone.

Such patients may have pain following an acute development of a Charcot joint. Their pain is felt in the distended skin and soft parts, not in the bone.

This kind of pain does not subvert the theory that Charcot joints are due to trauma plus a lack of the warning sense of pain.

Pain fibers for skin and for bone probably run through the cord in different paths.

135 Stockton Street.

UTERINE CANCER

WITH OBSERVATIONS AND RESULTS OF TREAT-
MENT WITH RADIUM IN MORE THAN
THREE HUNDRED CASES*

REX DUNCAN, M.D.

LOS ANGELES

Statistics emanating from the American Society for the Control of Cancer show that in the year 1918 there was a mortality of 11,965 from uterine cancer in the United States. Such a mortality from plague or any so-called preventable disease would cause great publicity and unlimited activity to cope with the situation. Cancer is to some extent preventable and curable in a large percentage of cases, if diagnosed and given appropriate treatment early. It is essential, therefore, to extend popular knowledge, so that women with pelvic disturbance may receive proper examination. As chronic irritation is apparently an etiologic factor in the production of cancer, the removal of all causes of chronic irritation and the extirpation of precancerous lesions would no doubt diminish the frequency of this disease. Notwithstanding the excellent work that is being done by the American Society for the Prevention of Cancer, and other agencies, there is apparently no decrease in the frequency of uterine cancer. It is important, therefore, that we give greater consideration to the earlier recognition and appropriate treatment of the large number of cases that we see.

TABLE 1.—RESULTS OF SURGICAL TREATMENT OF CAR-
CINOMA OF THE UTERUS

	Number of Cases	Opera- bility	Opera- tive Mor- tality	Cures for 5 Year Period		
				Traced Cases	Oper- ated Cases	Cases Applying for Treat- ment
Carcinoma of the cervix removed by radical ab- dominal operation.....	5,027	1,720	1,090			
Percentage.....	.....	34.21	18.23	35.41	19.32	11.72
Carcinoma of the cervix removed by vaginal route.....	1,205	654	192			
Percentage.....	.....	58.1	9.35	29.67	17.74	9.62
Carcinoma of the fundus..	.....	242				
Percentage.....	.....	87.73	8.19	.....	61.15	53.03
Accepting Wertheim's con- clusion that carcinoma of the cervix is twenty times as frequent as car- cinoma of the fundus, calculating the combined percentages for all cases the result is.....	.....	37.61	17.74	36.63	21.31	18.44

SURGICAL TREATMENT

The value of any method of therapy can only be determined from a broad and unprejudiced study of the end-results, both curative and palliative, obtained in a large number of cases observed over a period of years. Until recent years, surgery has been the accepted treatment in early cases, and in the more advanced cases only palliative measures have been employed. The most recent advance in the surgical treatment of uterine cancer followed the publication by Wertheim, in 1898, of his operation, which advocates the widest removal of tissue. Such a radical operation is attended with a high operative mortality which, in the hands of the average surgeon, makes it almost prohibitive, while a less radical

* From the Division of Surgery, Leland Stanford Junior University School of Medicine.

1. Eloesser, Leo: On the Nature of Neuropathic Affections of the Joints, *Ann. Surg.* **66**: 201 (Aug.) 1917.

2. Oppenheim: *Lehrbuch der Nervenkrankheiten*, Ed. 6, p. 179.

* From the Radium and Oncologic Institute.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

surgical procedure limits decidedly the percentage of ultimate cures. Table 1, compiled from statistics published by Janeway¹ and others, shows the results of the surgical treatment of uterine cancer, reported by a large number of surgeons in this country and in Europe. These figures require no further comment and demonstrate beyond question that the operative treatment of cancer of the uterus is, even by the most skilled surgeons, far from satisfactory.

RADIUM THERAPY

In more recent years, radium therapy has developed another and a more conservative method of treating cancer of the uterus. The fact that radium may be employed in more than 80 per cent. of cases that are inoperable and recurrent, as well as in the early cases, renders it worthy of consideration in the treatment of this disease. Numerous observers report clinical cures and marked improvement in a high percentage of cases of uterine cancer treated with radium. Many of these reports have been made by men whose cases have

TABLE 2.—RESULTS OF RADIUM THERAPY IN CARCINOMA OF THE UTERUS

Reporter and Publication	Percentage of Cures		Number of Patients Treated	Reported Only Those Patients Well After More Than
	Operable Cases	Inoperable Cases		
Werner: Arch. f. Gynäk. 106, No. 1, 1916.....	...	14	102	3 years
Döderlein: Zentralbl. f. Gynäk., 1915, p. 185.....	...	23	153	1 year
Maiolo: Ann. di Ostet. 41 : 99, 1917.....	...	38	42	1 to 2 years
Reeasens: Arch. mens. d'obst. et de gynéc. 6 : 34, 1917.....	100	57	126	1 to 2 years
Heyman: XII Versamml. Mord. Chir. Ver. Christiania, July, 1919.....	...	27	66	4 to 5 years (85 % inoperable)
Ransohoff: J. A. M. A. 74 : 163 (Jan. 17) 1920.....	...	25	...	2½ to 5½ years
Janeway: Surg., Gynec. & Obst. 29 : 242 (Sept.) 1919.....	...	70	17	6 mo. to 3½ yrs.
Vital, Asa: Med. Ibera, numero extraordinario, 1, cong. nac. de med. y cirug., p. 62.....	50	38	...	3 years
Enguerido.....	100	43	12	

been under observation only a short time and whose experiences are limited to a few cases and a small quantity of radium, rendering their reports not sufficiently complete for statistical purposes. The results of radium therapy reported by a number of observers, whose experiences extend over a considerable time are given in Table 2.

While the cases reported above are comparatively few, and the time elapsed too short to justify conclusions, the results are encouraging and gratifying when we consider the high percentage of clinical cures obtained in the earlier cases and the excellent results in the inoperable and recurrent cases that are otherwise hopeless.

Radium owes its therapeutic value to a hypersusceptibility of pathologic tissues and to a selective action on certain normal tissues. The destruction and absorption of the neoplastic elements under the influence of radium radiation have been demonstrated by ourselves and by numerous observers. Clinically, however, we find a marked variation in the susceptibility of uterine cancer to radiation, demonstrating that there are no doubt certain factors that are not yet thoroughly understood. While various physical and histologic studies furnish the basis of determination of dosage, adequate

clinical experience, together with a thorough understanding of the histologic changes produced, and sufficient knowledge of the physical properties of radium to obtain the proper screening and dosage, are essential to permit of necessary variation in the technic and

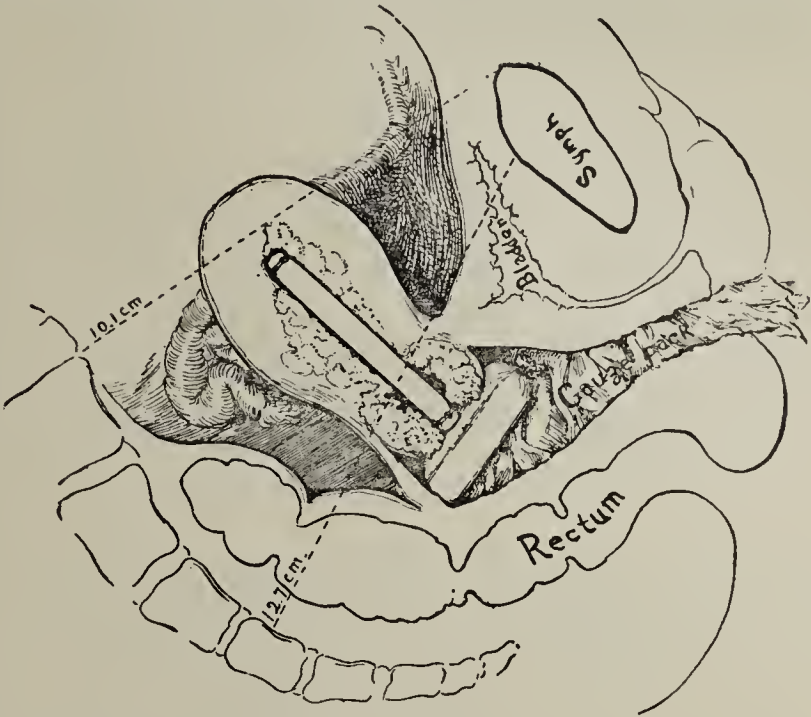


Fig. 1.—Pelvic measurements and position of the intra-uterine and vaginal applicators in place.

dosage to meet the requirements of each individual case. Tissue changes produced depend largely on the dosage and technic and the proximity of the tissue to the radium applicator. It is necessary to effect a thorough radiation of both the local area involved and of the entire pelvis without producing too great a destruction of local tissues or injury to the rectum and bladder.

Cervical carcinoma may spread by infiltration of the lymph vessels of the parametrium, by direct extension into the fundus and broad ligaments; by extension to

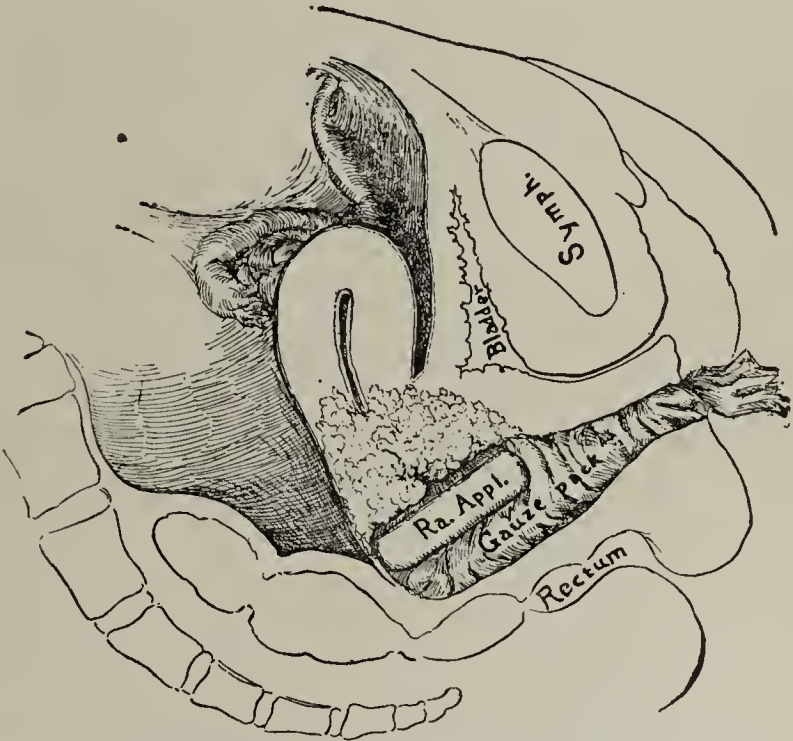


Fig. 2.—Radium applicator held in vagina by gauze pack; may be directed toward any part of the vagina or pelvis.

the vaginal walls and thence into the paravaginal tissues and through the vesicovaginal septum into the bladder or along the sacro-uterine ligaments to the pararectal tissues and rectum. These structures all lie within the pelvis, adjacent to or below the midpelvic

1. Janeway, H. H.: Surg., Gynec. & Obst. 29: 242 (Sept.) 1919.

plane, which has anteroposterior and transverse diameters of approximately 12 cm. The uterus lies in the pelvic axis; therefore, an applicator placed within the cervico-uterine canal will effect an even radiation throughout the pelvic cavity. The radiation must be sufficiently intense to destroy carcinomatous cells for

can be given in from two to four applications, made at intervals of forty-eight hours, thus requiring the patient to remain in the hospital on an average of less than one week.

TECHNIC

We have found most efficient, vaginal applicators made thus (Fig. 3):

Radium emanation tubes of the desired activity and number and screened with 0.5 mm. of platinum, and from 1 to 2 mm. of brass, as desired, are placed on a piece of lead 2 mm. thick and of the desired shape. This is all wrapped in 1 or more cm. of gauze and covered with a rubber finger cot. Such an applicator is easily sterilized and may be accurately placed in any portion of the vagina and retained in position by the usual gauze vaginal pack, which also holds at a distance from the applicator the area in which limited radiation is desired. Intra-uterine applicators consist of a sufficient number of radium emanation tubes, of the desired activity, placed end to end, to equal the length of the cervico-uterine canal and are screened with 0.5 mm. of platinum and from 1 to 2 mm. of brass, as desired, and are covered with 2 mm. of pure rubber gum tubing to absorb the secondary rays. This applicator is sterilized by boiling. Intra-uterine applications effect a thorough radiation of the entire pelvis, as previously described. The quantity employed is usually about 200 millicuries and the dosage from 4,000 to 6,000 millicurie hours, depending on the character and size of the uterus. Vaginal applicators are so placed as to effect a thorough radiation of all vaginal involvement, also the cervix and the parametrium on each side through the vaginal walls.

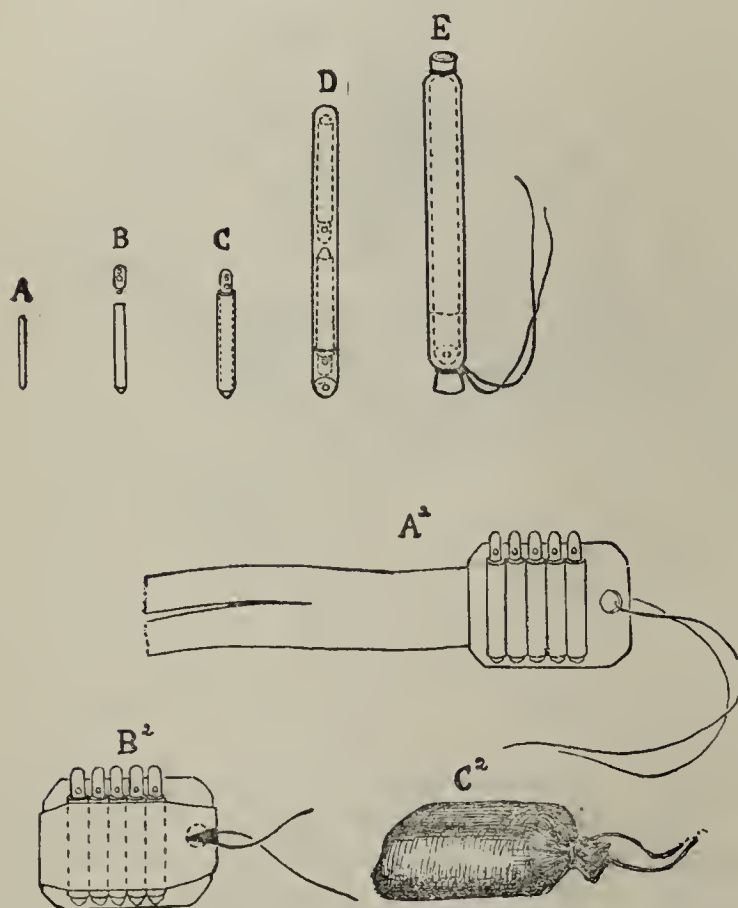


Fig. 3.—Emanation tubes and screens employed in making both intra-uterine and vaginal applicators.

a radius of 6 cm. (Fig. 1.) Involvement of the vaginal and paravaginal tissues may be accurately and adequately radiated by means of a suitable applicator placed within the vagina (Fig. 2).

Knowing quite definitely the pathology and the anatomic structures involved in uterine cancer and with a rapidly increasing knowledge of the histologic changes produced by radium, it would seem but a matter of time before we should develop an accurate dosage and technic that would prove effective in destroying the neoplastic elements and produce a high percentage of cures. There is apparently an effort to standardize and simplify the dosage and technic, based on the small quantity of radium available rather than on a scientific basis and the requirements of the individual case.

Five years ago, I began my work with 100 mg. of radium element in the form of salts. This quantity has been gradually increased until I now have at my disposal approximately 1 gm. of radium element and a thoroughly equipped emanation laboratory. My results have improved consistently with the increase in my facilities and experience. During the last three years, we have continuously employed a larger dosage with heavier screening, producing less local tissue destruction and more effective radiation of the entire pelvis, as evidenced by the clinical changes resulting. We are convinced that large quantities of radium or radium emanation are necessary, and we are employing applicators containing from 200 to 500 millicuries, which are left in situ for from ten to twenty hours, at each application. The total dosage employing both vaginal and intra-uterine applications averages from 6,000 to 10,000 millicurie hours. As a rule, the necessary treatment

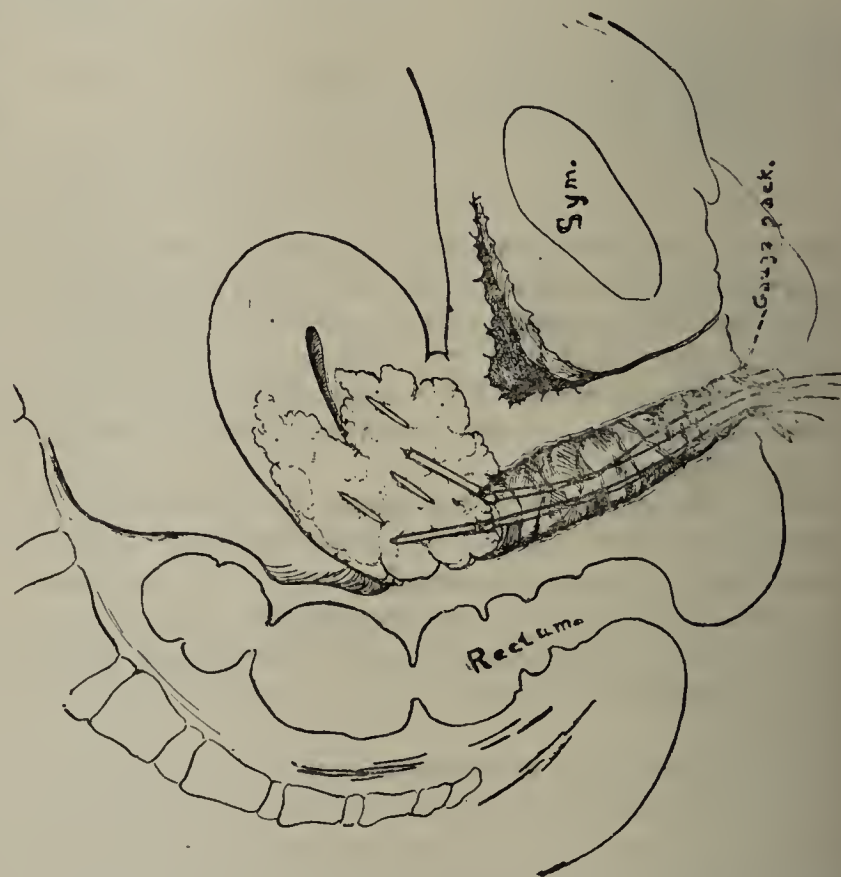


Fig. 4.—Screened emanation tubes and bare tubes buried in tumor.

In certain cases, we have found it desirable to bury within the tumor mass a number of emanation needles containing approximately 50 millicuries each, and screened with 0.5 mm. of platinum. These needles are placed at a distance of approximately 3 cm. and are allowed to remain in situ for ten hours. In certain other cases, we have buried a number of bare emana-

tion tubes of small activity which are not removed (Fig. 4). Needles may be employed alone or in conjunction with the vaginal or intra-uterine applicators mentioned above. More recently in a group of cases, we have employed, in addition to the local application of radium, massive doses of radium externally or deep roentgen-ray therapy. These external applications are, however, in my opinion, of unproved value.

Notwithstanding a rapid absorption of carcinomatous tissue in many cases, we have had little immediate constitutional disturbance from toxemia or other causes. In fact, in a majority of cases, a rapid and marked improvement in the constitutional condition and the blood picture is shown.

The elimination is carefully watched during the period of treatment, and copious vaginal douches of saline solution are given daily for a local cleansing effect.

The bladder and rectum are thoroughly emptied before each application of radium, and by use of the pack, as described above, are held well away from the vaginal application. We have had very little annoyance from bladder irritation, though in cases in which there is involvement of the posterior vaginal wall a more or less severe rectal tenesmus develops about ten days after treatment and continues for about two weeks. This is controlled by appropriate medication.

RESULTS

From the treatment, there results more or less temporary inflammatory reaction and local tissue changes. There results a gradual absorption of the cancer tissue, the vaginal ulceration and new growth disappear, the cervix shows local healing and more or less absorption where it has been extensively involved. The uterus reduces in size, and due to changes in the parametrium, becomes less fixed. Such improvement gradually progresses, resulting in a more or less complete recovery. Six or ten weeks must elapse before the reaction has entirely subsided and the effect of treatment is complete. Subsequent treatment may be given if indicated. Care is necessary in applying radium to a scar resulting from previous radiation, surgery or cauterization. Primary curettage or cauterization is not beneficial, and in certain cases, aggravates the after-treatment symptoms and sequelae. Our experience is consistent with that of Clark and others that surgery following an apparent cure from radium is not only unnecessary but frequently disastrous.

In reporting the results of treatment of uterine cancer, it is necessary to separate these cases into several groups based on the anatomic distribution of the disease. This is rather difficult because of the great variation in the character and location of the involvement. Though rather inadequate, but for the sake of comparison and brevity, it has seemed to me desirable to employ the grouping with which we are generally most familiar.

The treatment and observation of more than 300 patients have elicited many interesting experiences, some disappointments, and some very brilliant results. The majority of my patients were referred to me by surgeons, which probably accounts for the small percentage of operable cases that I have treated.

The time that must elapse after treatment and apparent recovery before a patient can be considered cured is debatable. It is quite true that the longer the lapse of time, the less is the probability of recurrence. The

recurrences following radium therapy are most frequent during the first year, and are apparently less frequent in subsequent years than following surgery.

Time will not permit of a discussion of individual cases, though in any large group there are many that would be of unusual interest and would be instructive. This is a detailed statistical report of the present status of 236 of my cases, treated previous to Feb. 1, 1920. I wish to say, however, that had there not resulted a single cure, the relief from pain, hemorrhage, odorous discharge and general improvement, with a consequent prolongation of life and comfort, would have been sufficient to justify treatment in practically every case.

Inoperable Cases.—There was a total number of 128, of which 51 are dead; 15 improved though with probable involvement; 6 not traced; 56, or 44 per cent., clinically well. The time elapsed since treatment in 4 cases is more than 4 years; in 4 cases, 3½ years; in 7 cases, 3 years; in 6 cases, 2½ years; in 6 cases, 2 years; in 9 cases, 1½ years, and in 20 cases, 1 year.

Recurrent Cases.—The total number was 76, of which 46 are dead, 9 improved, 4 not traced, and 17, or 22 per cent., are clinically well. The time elapsed since treatment in 2 cases is 4 years; in 1 case, 3½ years; in 2 cases, 3 years; in 2 cases, 2½ years; in 2 cases, 2 years, in 3 cases, 1½ years, and in 5 cases, 1 year.

Operable Cases.—The total number was 15, including 2 patients with early carcinoma of the fundus who are apparently well. Of the total number, 2 are dead, 13, or 86.6 per cent., are clinically well. The time elapsed since treatment in 1 case is more than 4 years; in 1 case, 3½ years; in 1 case, 2½ years; in 3 cases, 2 years; in 4 cases, 1½ years, and in 3 cases, 1 year.

Postoperative Prophylactic Cases.—There was a total number of 10, of which 6 are dead, 4, or 40 per cent., are clinically well. The time elapsed since treatment being 3½, 2½, 1½, and 1 year, respectively.

Special Cases.—Two cases of rectal recurrence followed six and ten months after treatment for the cervical involvement. Following a colostomy, the rectal recurrence was treated locally with radium. Both patients are apparently well; one nearly two years after treatment and one more than one year. Three patients received radium therapy promptly following a subtotal hysterectomy for suspected uterine fibroid, but which sections showed early carcinomatous changes of the endometrium extending into the cervix. These three patients are apparently well. Two patients were treated following radical cauterization operation. One is dead and one apparently well.

TABLE 3.—TABULATED RESULTS OF TWO HUNDRED AND THIRTY-SIX CASES OF UTERINE CARCINOMA TREATED PREVIOUS TO FEB. 1, 1920

	Total No.	Dead	Im- prov- ed	Not Trac- ed	Clinically Well		Years Elapsed Since Treatment							
					No.	Per Cent.	4	3½	3	2½	2	1½	1	
Inoperable...	128	51	15	6	56	44	4	4	7	6	6	9	20	
Recurrent....	72	46	9	4	17	22	2	1	2	2	2	3	5	
Operable.....	15	2	0	0	13	86.6	1	1	..	1	3	4	3	
After oper....	10	6	0	0	4	40	..	1	..	1	..	1	1	
Special.....	7	1	..	..	6	..	..	..	..	1	..	2	3
Total.....	236	106	24	10	96	40.6	7	7	9	11	11	19	32	

The summary of these figures shows a total of 236 patients, of whom 106 are dead, 24 improved, 10 not traced, 96, or 40.6 per cent., clinically well. The time elapsed since treatment is more than 4 years in 7 cases, more than 3½ years in 7 cases, more than 3 years in 9 cases, more than 2½ years in 11 cases; more than 2 years in 11 cases, more than 1½ years in 19 cases and more than 1 year in 32 cases.

CONCLUSIONS

1. Uterine cancer when given early and appropriate treatment is curable in a large percentage of cases.

2. Curative treatment depends on early diagnosis. It is necessary, therefore, to extend public knowledge so that women will consult the physician early.

3. The profession must be more keen in the early recognition of uterine cancer, and greater attention should be given to the removal of chronic irritation and the extirpation of precancerous lesions.

4. Appropriate radium therapy in recurrent and inoperable carcinoma surpasses any known therapeutic agent. Pain, hemorrhage and odorous discharges are relieved, and there frequently occurs prompt improvement in the general condition of the patient. Life is prolonged, and there results a comparatively high percentage of clinical cures.

5. Radium therapy when employed by one with adequate facilities, skill and experience is the treatment of choice in early, or so-called operable, carcinoma of the cervix. It avoids operation with the attendant suffering, invalidism, complications and high immediate mortality. Symptoms are promptly relieved and there results a higher percentage of cures than from surgery or any other method of treatment.

6. The efficacy of radium therapy depends on an adequate quantity of radium or radium emanation and appropriate facilities, together with sufficient knowledge and experience for its proper application. Proper dosage and technic are of the utmost importance.

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THE TREATMENT OF CANCER OF THE UTERUS*

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The objects of this study are to discuss the prophylaxis of uterine cancer, to review briefly the diagnosis of carcinoma of the uterus, to group correctly the various stages of the disease, and to base the indications for a correct treatment on such a grouping. Thus, we may form a common working ground to enable us to define the indications and limitations of surgical treatment as well as of radiation therapy. The proper method of the application of radiation will be briefly considered. The apparent value of the roentgen ray and gamma ray in cancer of the uterus will lastly be presented in a statistical report of 168 consecutive cases treated and followed from April 1, 1914, to Dec. 31, 1919.

The physician is frequently consulted by patients complaining either of a leukorrhea that has existed for many years, or persistent menorrhagias and metrorrhagias, or sterility, though they had given birth to an offspring within the average normal period of time after entering married life but suffer from constitutional diseases or disturbances of the endocrine glandular system. A small number of these patients may not present any visible or palpable pathologic conditions. The larger number, however, evince pathologic conditions, chiefly of either the cervix, the body of the

uterus or of the vaginal outlet, such as diastasis of the levator ani muscles with prolapse of the vagina and uterus, chronic cervicitis with hypertrophy, erosions, eversion and lacerations, chronic inflammations of the endocervix and endometrium and chronic myometritides. The pathologic states causing the enumerated symptoms are almost invariably characterized by hypertrophic processes—the result of proliferation of elementary tissue layers; hence treatment is rendered imperative. This may consist of a very thorough curettage of the endometrium and endocervix, an amputation or conical excision of the cervix, a levator ani muscle suture to close the vaginal introitus and thus prevent irritating substances from entering the canal. The removed tissues must be microscopically examined by a competent pathologist. As a matter of fact, the purpose of these surgical procedures is to obtain material to demonstrate absence or presence of malignancy. Should evidences of malignancy exist, then the classical panhysterectomy, either abdominal or vaginal, preferably with the use of the actual cautery, must follow the primarily diagnostic but also supposedly curative operative procedure. Quite a number of such patients may not show any evidences of malignancy on microscopic study of the removed tissue, yet after a brief period of an apparent recovery, the same symptoms and signs return. Such a state of affairs we should designate as clinically malignant and apply to it the treatment as advised for carcinoma.

Every gynecologist will recall a greater or less number of such instances. In my experience, almost all the patients that survived an operation for carcinoma for the customary five year limit had been either subjected to a panhysterectomy on account of unexpected microscopic findings or the recurrence and persistence of the underlying pathologic process after minor surgical procedures instituted for the correction of apparently benign diseases. Hence the treatment of cancer of the uterus comprises also prophylaxis.

SYMPTOMS

The cancer patient coming to the physician for consultation usually suffers from the well-known symptom triad: discharge, hemorrhage and pain—the discharge being the earliest, the hemorrhage the most alarming and the pain the most unfavorable symptom of cancer of the uterus. The occurrence of hemorrhage signifies an already advanced stage of the disease. The patient is willing to endure pain of quite a marked severity or to tolerate a discharge of even a marked odor, but the occurrence and persistence of hemorrhage will finally force her to seek medical advice.

The examination of a victim of uterine cancer should have for its purpose the exact answer to the following questions:

1. Is the cancer clearly localized within the uterus?
2. Has it invaded the contiguous tissues and organs?
3. Has it involved the regional lymph nodes?
4. Has it formed metastases in distant organs and structures, such as the liver and the bones?
5. Do constitutional diseases, such as Bright's disease, diabetes mellitus, decompensated heart lesions, complicate the uterine disease?

The methods to be applied are bimanual vagino-abdominal and recto-abdominal examinations, endoscopic examinations of the rectum and bladder, care-

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ful general physical and laboratory examinations. The results obtained will enable us to answer correctly the above mentioned five questions.

A clearly localized carcinoma indicates a surgical eradication. A panhysterectomy will enable the surgeon to remove absolutely all cancer cells. After having opened the abdomen, we must at once proceed to make a careful palpation and inspection of the pelvic organs. Should the regional lymph nodes be enlarged or the parametrial tissues be indurated, then the operation must be terminated, as it is unlikely that all the cancer elements can be removed by even a very careful and extended operation. Therefore operability depends on one fact: absolute localization of the malignancy within the limits of the uterus. The deplorably poor results shown in the statistics of the surgical treatment of uterine cancers are solely due to the nonobservance of this one factor and tend to discredit surgery. As a consequence, a great number of patients refuse to

treatment. Such patients should be treated symptomatically. Should radiation be used, they may succumb to radiation toxemia, as they are so weakened by the cancer that they cannot any longer activate the defensive forces necessary to carry them safely over the period of reaction. Again the rays may rapidly destroy the necrotic processes, and urinary and fecal fistulas may promptly appear, adding to the already unbearable misery the sufferings from such fistulas.

INDICATIONS FOR TREATMENT

Summarizing these facts, we may group the cases and formulate the indications for treatment thus:

Group I. Cases which are clearly localized after a physical examination—the *operable cases*—are treated with an abdominal panhysterectomy.

Group II. Cases which appear to be doubtfully localized after a physical examination—the *borderline cases*—and operable cases rendering a poor surgical risk

TABLE 1.—ROENTGEN-RAY INTENSITIES OBTAINED FOR EACH CM. BY THE USE OF TWO PORTALS OF ENTRY—SUPRA-PUBIC AND SACRAL; SIZE OF FIELD, 20 CM. DIAMETER; FOCAL DISTANCE, 32-35 CM.; MA. 5; MAX. K. V., 126; FILTER, 10 MM. ALUMINUM + 6 MM. SOLE LEATHER; FOR ANTEROPOSTERIOR DIAMETERS OF 16, 18, 20 AND 22 CM.*

I				II				III				IV			
Intensities				Intensities				Intensities				Intensities			
Dis- tance, Cm.	Anterior Field	Posterior Field	Total	Dis- tance, Cm.	Anterior Field	Posterior Field	Total	Dis- tance, Cm.	Anterior Field	Posterior Field	Total	Dis- tance, Cm.	Anterior Field	Posterior Field	Total
Surface	100	8	108	Surface	100	4	104	Surface	100	2	102	Surface	100	0	100
1	98	10	108	1	98	6	104	1	98	3	101	1	98	1	99
2	87	14	101	2	87	8	95	2	87	4	91	2	87	2	89
3	77	17	94	3	77	10	87	3	77	6	83	3	77	3	80
4	69	21	90	4	69	14	83	4	69	8	77	4	69	4	73
5	60	26	86	5	60	17	77	5	60	10	70	5	60	6	66
6	51	31	82	6	51	21	72	6	51	14	65	6	51	8	59
7	47	37	84	7	47	26	73	7	47	17	64	7	47	10	57
8	42	42	84	8	42	31	73	8	42	21	63	8	42	14	56
9	37	47	84	9	37	37	74	9	37	26	63	9	37	17	54
10	31	51†	82	10	31	42	73	10	31	31	62	10	31	21	52
11	26	60	86	11	26†	47	73	11	26	37	63	11	26	26	52
12	21	69	90	12	21	51	72	12	21†	42	63	12	21	31	52
13	17	77	94	13	17	60	77	13	17	47	64	13	17	37	54
14	14	87	101	14	14	69	83	14	14	57	65	14	14†	42	56
15	10	98	108	15	10	77	87	15	10	60	70	15	10	47	57
16	8	100	108	16	8	87	95	16	8	69	77	16	8	51	59
				17	6	98	104	17	6	77	83	17	6	60	66
				18	4	100	104	18	4	87	91	18	4	69	73
								19	3	98	101	19	3	77	80
								20	2	100	102	20	2	87	89
												21	1	98	99
												22	0	100	100

* Intensities in boldface figures require additional radiation supplied by a 50 mg. radium element capsule thus: to I add 20 hours; to II add 30 hours; to III add 40 hours, and to IV add 50 hours.
† Indicates the usual location of cervix.

submit to surgical treatment, even if indicated, being aware of the great number of failures following such a procedure.

Enlargement of the regional lymph nodes or induration of the parametrium may be the result of a secondary complicating infection. Since the greater number of carcinomas thus complicated are of an advanced stage, in which broken down and necrotic tissue form the port of entry for pathologic bacteria, it is evident that we must ascribe such findings in beginning cancer cases to malignant invasion.

Borderline cases, and those with a demonstrable beginning invasion of contiguous tissues and organs and regional lymph nodes, or clearly localized cases, occurring in patients with constitutional contraindications to operation, form the ideal group for radiation therapy. It is in these cases that roentgen ray and radium radiations caused the greatest number of local healings and apparent cures.

The advanced, desolate case, either with a "frozen pelvis," or extensive destruction of the vesicovaginal or rectovaginal septum, or marked cachexia, with general constitutional weakness, contraindicates radiation

owing to complicating constitutional diseases, form the ideal group for radiation therapy.

Group III. Cases in which a demonstrable invasion of the contiguous tissues and organs and regional lymph nodes is found on physical examination—the *clearly inoperable cases*—are subjected to an intensive radiation treatment.

Group IV. Cases so far advanced that all treatment seems hopeless—the *terminal, desolate cases*—are treated symptomatically.

Group V. Recurrent local or regional cases are treated according to the same grouping and indications as stated under Groups I to IV.

Various controversies have arisen from time to time concerning the advisability of combining surgical with radiologic procedures. Also there have been discussions concerning the choice of radiation—some assert that radium rays are more effectual in killing off the disease than roentgen rays; while others state that a combination of both radium and roentgen rays assures better results.

The object of the treatment of cancer of the uterus is the eradication or degeneration of all cancer cells

without permanent injury of the neighboring healthy organs, such as the bladder, the rectum and the small bowels. The uterus is contained within the true bony pelvis. The possible extent of the cancer in Groups I, II and III may be assumed to be confined to this space. The axis of the uterus corresponds in most cases to the

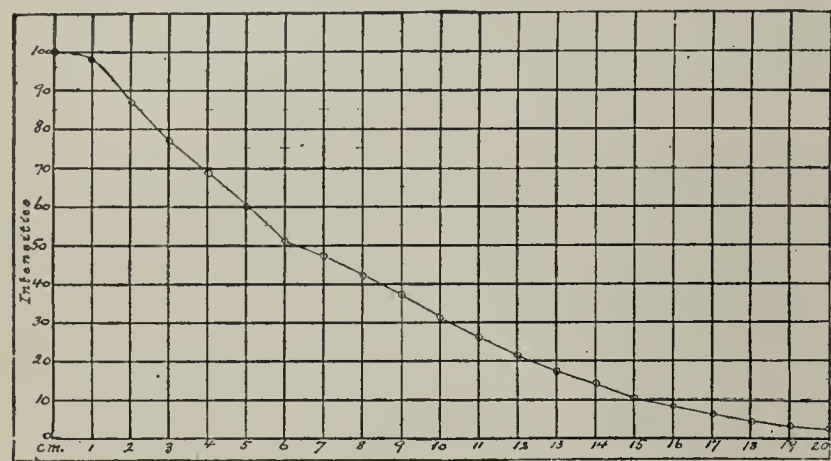


Fig. 1.—Measurements obtained with a Fürstenau intensimeter: transformer, Victor Snook; tube, Coolidge; 5 ma.; focal distance, 35 cm.; filters, 10 mm. aluminum and 6 mm. sole leather; K. V., 140 peak determined with a sphere gap; portal of entry, 20 cm. X 20 cm.

axis of the true bony pelvis. The posterior bladder mucosa and the anterior rectal mucosa are from 2 to 3 cm. distant from the cervical canal. If radium is inserted into the cervical canal, the time duration of the application depends entirely on the intensity of radiation striking the bladder or rectal mucosa. For instance, 50 mg. of radium element filtered through 1.5 mm. of brass and 3 mm. of pararubber, inserted into the cervical canal, will cause an erythema of the vesical mucosa and of the rectal mucosa within thirty hours. Since the lethal amount of radiation that the rectal mucosa will bear without any permanent injury is 130, if 100 means the intensity

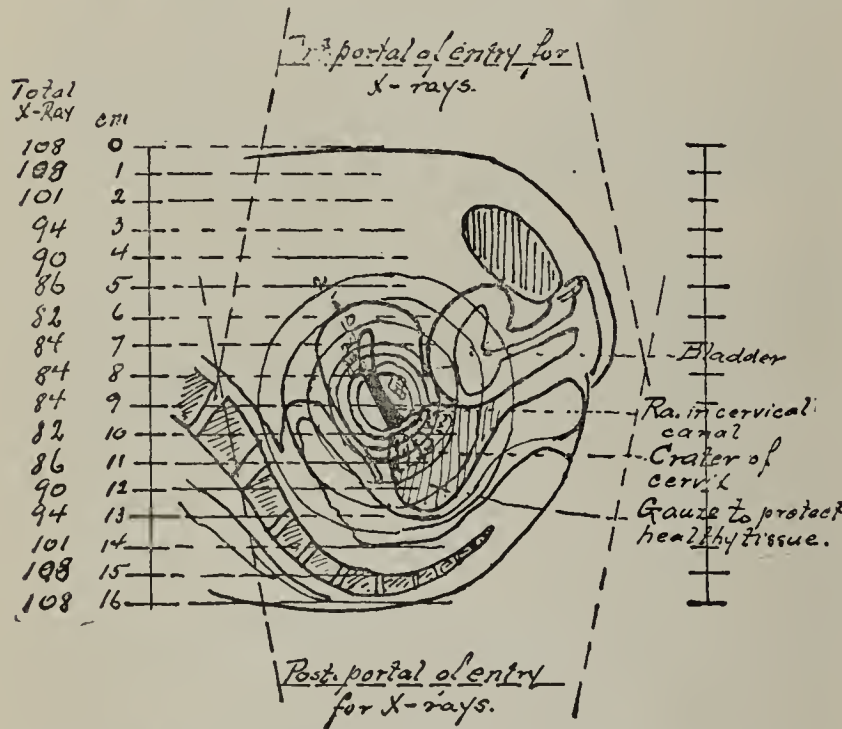


Fig. 2.—Median longitudinal section of pelvis, showing isodoses of radium capsule; column at the left gives total roentgen-ray intensities obtained for each centimeter of depth.

of the dose sufficient to produce an erythema skin dose, we cannot extend the application of 50 mg. radium element beyond thirty consecutive hours, if we wish to avoid ulcers and strictures of the rectum, and so forth. It is, therefore, seen that the extent of the action of radium rays must be limited if

we wish to avoid irreparable injury to neighboring vital pelvic organs. However, in doing this the cancer elements lying near the bony pelvic periphery are not only not degenerated but stimulated to increased activity and proliferation by the so-called "stimulating dose" of rays.

Institutions possessing large amounts of radium have recognized this fact and have attempted to treat the peripheral regions through the suprapubic abdominal wall, using packs containing upward to 1 gm. of radium element. Recently, it was reported that this plan has been abandoned, being economically inadvisable. If radiation therapy is ever going to be available to all the sufferers from uterine cancer, a technic must be evolved which can be used in every hamlet of our country. We have been working on this problem for many years and we are convinced that by a combination of radium and roentgen radiations we may solve it. We possess an instrument which enables us to measure the intensity of radiation emitted from a Coolidge roentgen-ray tube. We found that with this instrument we could measure a quantity of irradiation, which applied through only two ports of entry under like conditions sends an intensity

TABLE 2.—INTENSITIES OF GAMMA RADIATIONS OF 50 MG. RADIUM ELEMENT CAPSULE: LENGTH, 3 CM.; FILTERS, 1.5 MM. BRASS, 5 MM. CELLULOID

Surface Roentgen-Ray Dose of 100 Equals E. S. D. Equals 425 Mg. Radium Element Hours (Friedrich)					
Distance in Cm.	Percentage of Isodoses	Roentgen Ray Dose	Values in Mg. Ra. El. Hrs.		
			Values	Round Numbers	
1.5	40	100	425.0	400	
2.3	20		212.5	200	
3.4	10		106.3	100	
4.7	5		53.2	50	
5.6	2		21.3	21	

Values of Gamma Radiation Expressed in Values of Roentgen Ray Dose for Various Distances and Time durations of Applications								
Distance, Cm.	10 Hrs.	20 Hrs.	30 Hrs.	40 Hrs.	50 Hrs.	60 Hrs.	70 Hrs.	80 Hrs.
1.5	125.0	250.0	375.0	500.0	625.0	750.0	875.0	1,000
2.3	62.5	125.0	187.5	250.0	312.5	375.0	437.5	500
3.4	31.3	62.5	93.8	125.0	156.5	187.5	218.8	250
4.7	15.7	31.3	47.0	62.5	78.5	94.0	109.7	125
5.6	6.3	12.5	18.9	25.0	31.5	37.8	43.8	50

of about 75 per cent. of the surface skin intensity to the region of the cervix if the anteroposterior diameter of the pelvis is not more than 16 cm. (Fig. 1). Therefore, it is only necessary to supply the missing 25 per cent. with the use of radium radiation in order to obtain an intensity of 100 all through the pelvis. It being conceded that 100 represents the intensity of radiation necessary to produce an erythema skin dose, and it being further conceded that this intensity amply suffices to degenerate cancer cells. Fifty milligrams of radium element will accomplish this very nicely with a thirty hours' application. Patients with an anteroposterior diameter of more than 16 cm. from the anterior skin surface to the posterior skin surface require a longer continuous application, though we may cause severe injuries to the bladder and rectum with the larger doses (Tables 1 and 2).

TECHNIC

The technic of radiation treatment, therefore, consists in the combined use of roentgen and radium radiation. A solution of the problem is shown in Figure 2. It shows the intensity of measured rays at each point within the pelvis for roentgen rays, also the isodoses of gamma rays measured with a 50 mg. radium element capsule within water, thus indicating the total primary

and secondary radiations. The measured roentgen ray intensities also represent a summation of primary and secondary radiations. Table 1 indicates how unfavorably the summation of radiation becomes with an increase in the anteroposterior diameter above 18 cm. The greater diameters are found in obese and large boned women. To increase the radiation dose in such patients, we have of late applied roentgen rays through three portals of entry. The advantages thus gained are an increased roentgen ray intensity in the cancer area as demonstrated in Figure 3.

Should radiation treatment be combined with surgical procedure to increase the efficiency of either one? It has been proposed to precede panhysterectomies for cancer of the uterus with radiation therapy, obviously to degenerate the cancer first and thereby render safer the surgical procedure. To apply radiation properly, it is necessary to employ such an intensity of radiation that the periphery of the bony pelvis is struck with the same intensity as the region in the axis of the pelvis, that is, the cervix. Otherwise, the peripheral cancer cells are stimulated to increased proliferation. Such a radiation treatment always causes a decided radiation sickness. During this period the patient could not be safely subjected to the additional trauma and shock of a capital surgical procedure. The operation must be postponed for from three to six weeks, during which time the patient will have recovered from the radiation toxemia. If the operation is performed within a few days after radiation, the patient with an alarming frequency succumbs to sepsis and shock. Should the operation be postponed to a later period, the same danger is still present on account of necrosis of tissue in the cervical canal which cannot be avoided. These factors and the intense connective tissue formation in the parametrium, which renders hemostasis difficult, therefore do not let it appear advisable to resort to preoperative radiations.

RECURRENCES

Should a panhysterectomy for a clearly operable uterine carcinoma be followed by radiation to prevent recurrences? Recurrences result from carcinoma cells left behind during an operation. They are found either in the tissues surrounding the wound crater or at the periphery of the bony pelvis. The former are termed local and the latter regional recurrences. The very element rendering radium treatment of the cervical region possible without causing irreparable damage to the bladder and rectum, i. e., the uterus, has been removed by the operation. Radium rays could now be made effective only in the superficial tissues of the wound cavity and the vaginal fornix. Additional roentgen-ray radiation applied also will not enable us in conjunction with radium radiation to attain the uniform intensity all through the pelvis necessary for our purpose. Hence, I am more and more inclined to the opin-

ion that the cancer must be clearly confined within the limits of the uterus, if operation is justifiable. Under these conditions, postoperative radiations are useless. If, however, an operation has been performed, and during its progress, it is found that the cancer has invaded adjacent structures, or the probabilities are that cancer tissue has been left behind, then a combined radiation treatment must be given. It must be as intensive as if the panhysterectomy had never been performed, regardless of the consequences to the patient. If we wish to be successful, we must treat the disease and not the patient.

It has been advocated to render inoperable carcinomas operable by radiation, as the latter causes an apparent resorption of the cancer tissue. The uterus and adnexa will appear freely movable and of normal size,

X-Ray Dose Per cent. Cm.	Surface 100
1	98
2	87
3	77
4	69
5	60
6	57
7	47
8	42
9	37
10	31
11	26
12	21
13	17
14	14
15	10
16	8
17	6
18	4
19	3
20	2
21	1
22	0

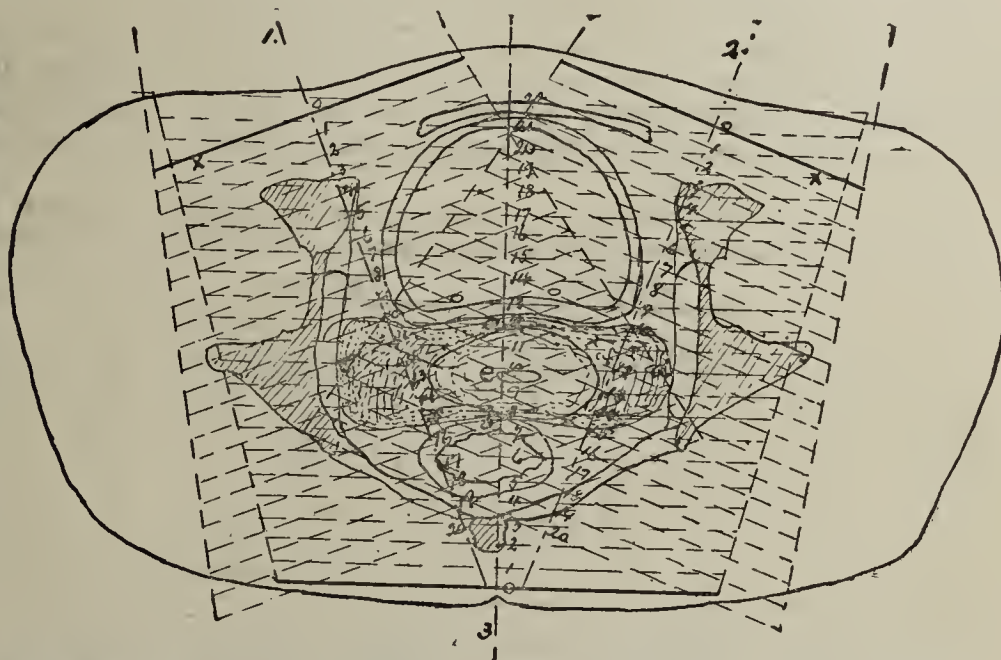


Fig. 3.—Patient with anteroposterior diameter of 25 cm. reduced by compression to 22 cm.; transverse diameter, 44.5 cm.; anterosuperior spinous processes, marked X, 28.5 cm. Radiation beams 1 and 2 should be applied at an angle of about 55 degrees, so that axis is centered on cervix.

$$\text{Dose at a: } 21 + 21 + 21 = 63.$$

$$\text{Dose at b: } 42 + 8 + 8 = 58.$$

$$\text{Dose at c: } 31 + 26 + 8 = 65.$$

$$\text{Dose at d: } 31 + 8 + 26 = 65.$$

$$\text{Dose at e: } 31 + 14 + 14 = 59.$$

$$\text{Dose at 18: } 4 + 41* + 41* = 86.$$

$$\text{Dose at 19: } 3 + 48* + 48* = 96.$$

$$\text{Dose at 20: } 2 + 55* + 55* = 112.$$

$$\text{Dose at 21: } 1 + 55* + 55* = 111.$$

Dose if only one anterior median and one posterior median field is used:

$$\text{At a: } 21 + 31 = 52.$$

$$\text{At b: } 42 + 14 = 56.$$

$$\text{At c: } 31 + 21 = 52.$$

$$\text{At d: } 31 + 21 = 52.$$

$$\text{At e: } 31 + 21 = 52.$$

* Peripheral intensities are 20 per cent. less than those within a radius of 6 cm. Technic: Coolidge tube; 140 peak kilovolts; 5 ma.; 35 cm. focal distance; 10 mm. aluminum + 6 mm. sole leather filters.

shape, form and consistency. A panhysterectomy could be easily performed, though necrosis might still be present in the cervical canal and hemostasis be difficult of execution. Again it has been proposed to excochleate and cauterize the tumor bed. Radiation would then become more effective. However, my experience leads me to state that preradiation curettage and cauterization or postradiation panhysterectomy in the clearly inoperable cases render the patient's chances for even a temporary improvement in health decidedly worse. As a matter of fact, the rule is that patients of the borderline and inoperable groups, treated with a combination of radiation and surgery, quickly succumb either to sepsis or to a recurrence, in spite of the most carefully executed radiation treatment.

An active immunization is produced by the action of radium on malignant cells. If radium or roentgen rays would simply kill the cells, then they would not be superior to the knife or any cauterizing agent. But the cancer cells under the influence of rays are stimulated to produce a specific antibody for other similar cancer

cells in the tissues of the patient being treated. Morson, Wedd and Russ, Blumenthal and Behne have proved this contention in experiments carried on in animals as well as man. Hence, if living malignant cells are necessary for the production of an autogenous vaccine or antibody, a preradiation removal of cancer cells would not be advisable. The ray therapist also must prevent a too extensive destruction of normal and malignant tissues, and an insufficient modification or degeneration of malignant cells. If the treatment is too radical, antibodies necessary for the complete removal of all cancer cells are not produced. If too small, the action may arrest the growth for the time, but recurrences must be expected.

RESULTS OF TREATMENT

From April, 1914, to Dec. 31, 1919, 168 patients with cancer of the uterus were treated with radiation. In some cases treatment was preceded by surgical procedures, such as hysterectomy or cauterization; and in others, radiation was followed by hysterectomy. How-

centage of apparent cures in 168 cases is 19 +. It also implies that the earlier a patient with carcinoma of the uterus is treated with radiations, the better will be the prognosis for an apparent or ultimate cure.

CONCLUSIONS

- The conclusions drawn from this study are:
1. Prophylaxis plays an important factor in the treatment of cancer.
 2. Classification of uterine carcinomas is of paramount importance to separate localized from the more advanced cases.
 3. Localized carcinomas must be treated by surgical methods, preferably with the use of the actual cautery, while the borderline and advanced cases should be referred to ray therapy.
 4. A combination of surgery with radiotherapy is not advisable. However, a combination treatment of gamma and roentgen rays assures better results than the application of either agent alone. The radium must be inserted into the cervical canal, while the roentgen

TABLE 3.—END-RESULTS OF UTERINE CANCER TREATED WITH RADIUM

Year	Operable			Borderline			Inoperable			Terminal			Recurrent		
	Total No.	Living	Died or No Report	Total No.	Living	Died or No Report	Total No.	Living	Died or No Report	Total No.	Living	Died or No Report	Total No.	Living	Died or No Report
1914.....	2	1	1	2	1	1	12	..	12	1	..	1	4	..	4
1915.....	..	..	..	2	1	1	9	..	9	6	..	6	9	..	9
1916.....	1	1	..	1	..	1	8	..	8	6	..	6	7	..	7
1917.....	..	..	..	1	1	..	8	4	4	4	..	4	3	..	3
1918.....	2	1	1	3	2	1	9	6	3	8	..	8	8	..	8
1919.....	2	2	..	2	1	1	22	9	13	11	1	10	15	1	14
Total.....	7	5	2	11	6	5	68	19	49	36	1	35	46	1	45

Percentages of Apparent Cures for 2, 3 and 5 Year Periods

1914 to 1919 incl. ...	Operable.... 7	Borderline... 11	Inoperable... 68	Terminal.... 36	Recurrent... 46
	Living..... 5 = 71.4%	Living..... 6 = 54.5%	Living..... 19 = 27.9%	Living..... 1 = 2.5%	Living..... 1 = 2.2%
1914 to 1918 incl. ...	Operable.... 5	Borderline... 9	Inoperable... 46	Terminal.... 25	Recurrent... 31
	Living..... 3 = 60.0%	Living..... 5 = 55.6%	Living..... 10 = 21.7%	Living..... 0 = 0.0%	Living..... 0 = 0.0%
1914 to 1916 incl. ...	Operable.... 3	Borderline... 5	Inoperable... 29	Terminal.... 13	Recurrent... 20
	Living..... 2 = 66.6%	Living..... 2 = 40.0%	Living..... 0 = 0.0%	Living..... 0 = 0.0%	Living..... 0 = 0.0%

ever, since 1918, radiations were used exclusively. We also must state that the technic of application of rays underwent a continuous evolution until the last two years when a technic had been evolved which has been described in this paper. I believe that with the development of larger Coolidge tubes which will stand higher voltages and of transformers which will furnish voltages up to 200,000, we will overcome the difficulties that exist in patients having a greater anteroposterior diameter than 18 cm.

Table 4 shows the number of patients treated each year, also the numbers surviving today and the number of those that have died or did not report. From the table it is seen that in Group I of a total of seven patients treated, five are living and well (71.4 per cent.). In Group II, of eleven patients, six are alive and well (54.5 per cent.). In Group III, of sixty-eight patients, nineteen are alive and well (27.9 per cent.). In Group IV, of thirty-six patients, one is alive (2.5 per cent.). And in Group V, of forty-six patients, one is alive (2.2 per cent.).

Surgery alone probably would have produced the same good results shown in Group I. We must, however, credit ray therapy for all permanent and even temporary benefits in the other groups. That implies that of 161 patients in these groups, twenty-seven are well today that otherwise would probably have succumbed to the disease (16.8 per cent.). The total per-

centage of apparent cures in 168 cases is 19 +. It also implies that the earlier a patient with carcinoma of the uterus is treated with radiations, the better will be the prognosis for an apparent or ultimate cure.

5. It is hoped that with an improvement in the technic, permanent recoveries will become more numerous.

25 East Washington Street.

Sex Education in Educational Institutions.—The returns from 65 per cent. of the normal schools in the United States show that 75 per cent. are doing some work in sex education and that 92 per cent. of the principals think that work should be given. The opposition seems at least in some cases to be due to wrong interpretations of the work. Our boards of education have done comparatively little, though three states are giving some organized work and five states are considering more. New England educators, as represented by normal school principals, are more opposed to than in favor of this work. The rest of the United States is more in favor than opposed, the degree varying. The western states favor it most; the southern states in a slighter degree than the central and middle Atlantic states. That sex education will be organized is inevitable. Why delay it for years, when with a thorough study of a method of instruction it might be introduced into the curriculum of our training schools? With the teachers prepared in this work, the boards of education could consider more seriously the question of sex education in the public and high schools. In the meantime, there is need for the training of teachers in the subject and the extensive education of the public to the need of sex instruction.—V. H. Harris, *Social Hygiene* 7:180, 1921.

IRRADIATION IN CANCER OF THE
FEMALE GENITO-URINARY
ORGANS

RESULTS IN THREE HUNDRED AND THIRTEEN
CASES *

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From time to time during the last five years we have recorded in the current medical periodicals our results from the treatment of cancer of the pelvic organs with radium, particularly of the uterus, and in these articles we have dwelt especially on the palliative effect of irradiation rather than to hazard a discussion as to the possibilities of ultimate cures, notwithstanding the justifiable hopes as to this outcome. We have maintained this position because of the skepticism which the world holds as to the settlement of this age-long quest for a dependable remedy for cancer. Today we may assert with positive assurance that even in the inoperable case of cancer of the cervix a surprising number, as reckoned by the quinquennial test, have survived and are quite free from any demonstrable or symptomatic evidence of cancer. Those patients that are alive and well were registered in our clinic in the first years of our use of radium, while methods were largely in the proving ground, for we then knew little of the dangers and range of action of this occult force. In view of the fact that these cruder attempts have yielded a definite percentage of cures, we feel greatly encouraged; for with improvements in application and with a consequent lessening of bad sequelae, a decidedly better outcome may be forecast as these later series come up for review. In order that there should be no conflict in our report between the more recent and the older cases, we have included only those treated before August, 1920, thus leaving out of count the clinical product of the past year. Our report deals with a total of 313 cases; 112 of the patients are living and 201 dead.

TABLE 1.—DIAGNOSIS

	Patients Living	Patients Dead
Carcinoma of cervix.....	66	148
Carcinoma of fundus.....	12	11
Chorio-epithelioma.....	2	..
Carcinoma of cervical stump.....	4	..
Recurrent carcinoma of vagina after hysterectomy..	7	14
Epithelioma of vagina.....	4	13
Carcinoma of urethra.....	2	4
Carcinoma of bladder.....	1	2
Operation and radium.....	10	4
Miscellaneous.....	4	5
Total.....	112	201

METHOD OF TREATMENT

All of our patients have been subjected uniformly to 100 mg. of radium for twenty-four hours at the first application, and this dosage may therefore be considered as the standard to which we have adhered, with only an occasional exception in more than 400 cases treated up to date. We have purposely held to this standard because the primary results in our first 100 cases appeared to be so satisfactory in promoting

relief of the chief symptoms of cancer that it seemed injudicious to change it radically. As several workers in irradiation have used different dosages, both as to quantity, duration of application, and repetitions of treatments, and since we are all in accord as to the primary palliative results, it seemed best for us to pursue in our clinic this course so that when we all assemble our reports in critical review, we may judge as to the best way of synchronizing methods and arriving at a uniform plan of action among those clinics in which the larger and smaller quantities are respectively available.

TABLE 2.—CARCINOMA OF CERVIX

	Patients Living	Patients Dead	
Hemorrhage:			
Complete relief	51	84	
Temporary relief	4	13	
Not stated	2	49	
Not traced	9	2	
No effect .....	..	..
Total	66	148	
Leukorrhea:			
Complete relief	37	46	
Temporary relief	3	..	
No effect	5	19	
Increased .....	..	2
Not stated	12	81	
Not traced	9	..	
Total	66	148	
Pain:			
Relieved	21	40	
Unrelieved	3	30	
Pain caused by radium.....	3	..	
Pain not present.....	30	..	
Not traced	9	..	
Not stated .....	..	78
Total	66	148	
Bladder irritability after irradiation.....	4	8	
Rectal irritability after irradiation.....	2	7	
Both .....	..	1
Fistulas:			
Vesicovaginal	2	5	
Rectovaginal	1	7	
Both	3	7	
Local healing	42	51	
Alive:		Died:	
1 year	7	Under 6 months.....	44
1 to 1½ years.....	9	6 months to 1 year.....	42
1½ to 2 years.....	4	1 to 1½ years.....	21
2 to 2½ years.....	9	1½ to 2 years.....	10
3 to 4 years.....	10	2 to 2½ years.....	11
4 to 5 years.....	6	2½ to 3 years.....	5
5 to 6 years.....	7	3 to 4 years.....	3
6 to 7 years.....	2	4 to 5 years.....	3
Traced less than one year... 3		5 to 6 years.....	1
Not traced	9	Not stated	8
Total	66	Total	148

Our plan through at least 150 cases was to apply 100 mg., contained within a glass capsule and this in a platinum tube, and this in turn enclosed in black rubber tubing, for twenty-four hours in immediate contact with the cervix, the healthy adjacent tissues being shielded from undue injury with lead protectors. After a six weeks' interval, this procedure was repeated. As to the results, we found that several patients sustained burns of sufficient intensity to cause much irritability of the bladder, or an acute proctitis occasionally causing pain varying from a mild and fleeting character to that of severe and persistent intensity. While this was by no means a uniform sequel, it occurred with sufficient frequency to be a decided disadvantage and a trying and discouraging ordeal for the patient. Added to this immediate effect came the later and much graver complication, an occasional vesical or rectal fistula, and these are always obstinate or even intractable to healing either by operation or through the expectant policy.

Among our living patients, 112 cases, thirteen have had fistulas; of the 201 dead, twenty-one were noted sooner or later before death. As to the living patients,

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Scssion of the American Medical Association, Boston, June, 1921.

we attribute practically all to the effects of irradiation, but this acknowledgment does not constitute a condemnation but a warning, to which we shall refer later. Among the 201 dead patients, we consider only twenty-one fistulas, approximately 10 per cent., as a definite triumph for irradiation; for among those who ultimately succumbed there were sixty in whom the local healing was maintained to the end, the patients dying

TABLE 3.—CARCINOMA OF FUNDUS

	Patients Living	Patients Dead	
Hemorrhage:			
Complete relief	7	5	
No effect	1	..	
Temporary relief	1	..	
Not stated	2	..	
Not traced	1	..	
Total	12	5	
Leukorrhœa:			
Complete relief	5	..	
No effect	1	..	
Not stated	5	..	
Not traced	1	..	
Total	12	3	
Pain:			
Relieved	2	..	
Unrelieved .....	..	1
Not stated	9	..	
Not traced	1	..	
Total	12	1	
Alive:		Died:	
1 year	2	Under 6 months.....	1
1 to 1½ years.....	3	6 months to 1 year.....	5
2 to 2½ years.....	1	1½ to 2 years.....	1
2½ to 3 years.....	1	2 to 2½ years.....	1
3 to 4 years.....	1	No date	3
4 to 5 years.....	1	Total	11
5 to 6 years.....	1		
Not traced	1		
1½ to 2 years.....	1		
Total	12		

of metastases. The assertion that had the same number of inoperable cases reached the end without irradiation, fistulas in a considerably larger percentage should have been a natural incident of the cancerous invasion of the bladder or rectum, does not appear as questionable but rather the statement of a fact. Our position, therefore, is that while radium actually does produce fistulas in a small percentage of patients, on the whole it actually defends a much larger ratio against this complication.

TABLE 4.—CHORIO EPITHELIOMA (Patients Living)

Hemorrhage (complete cessation).....	2
Local healing	2
Alive 6 to 7 years.....	2

To remain contented with this adjustment of equations is, however, not our desire, and to obviate this very disabling accident, we have completely discarded all metal protectors in vaginal applications, and instead use gauze packing (Fig. 1). For this suggestion, we are indebted to Dr. Burnam. By far the larger number of fistulas date back to the period of lead protectors; but with our present plan we have much less apprehension as to this possible complication. Thus we mark as a first departure from our original standard of application the casting into the discard of metal protectors. A second, and we believe a very important conviction, we have arrived at through our experience. Here, as in all other successful therapeutic methods, the rule of thumb is hazardous. By no acuteness of perception on our part, but through the apparent stupidity of a few patients who, regardless of grave warnings as to the dangers of procrastination, delayed reporting for a second treatment, we have discovered that in a considerable proportion of cases the lethal

blow to cancer of the cervix is given by the first impact of the radium, and the question has arisen, Do repeated applications make assurance doubly sure, or may they not occasionally jeopardize a successful issue?

We are not fully prepared to answer this query, but we are convinced that the routine repetition of treatments is injudicious without taking into full account the results of the first treatment. For instance, in one class of cases, in which the patients reported six weeks after the initial application, we find remarkable local healing in process of completion; in another the ulceration appears to be in statu quo, while in a third no apparent beneficial effect is evident; on the

TABLE 5.—CARCINOMA OF CERVICAL STUMP (Patients Living)

Hemorrhage (complete cessation).....	2
Not stated	2
Leukorrhea:	
Complete relief	2
Not stated	2
Total	4
Bladder irritability after irradiation.....	2
Local healing	2
Alive:	
1½ to 2 years.....	2
3 to 4 years.....	2
Total	4

contrary, a definite failure to hold in check the ulceration is obvious. In the occasional case, we believe that there is an actual acceleration of the growth. Thus, of the 201 dead patients, fifty-nine had reached the end within six months after the application of radium, a frequent experience after radical operations.

To utilize this observation as a proof of actual acceleration of the malignant growth depends, not on the failure of radium to destroy at least a portion of the

TABLE 6.—RECURRENT CARCINOMA OF VAGINA AFTER HYSTERECTOMY

	Patients Living	Patient Dead	
Hemorrhage:			
Complete cessation	7	7	
No effect .....	..	2
Not stated .....	..	5
Total	7	14	
Leukorrhea:			
Complete relief	5	3	
No effect	1	6	
Not stated	1	5	
Total	7	14	
Bladder irritability after irradiation.....	1	..	
Rectal irritability after irradiation.....	1	..	
Pain:			
Relieved .....	..	2
Unrelieved .....	..	6
Not stated .....	..	6
Total .....	..	14
Fistulas:			
Vesicovaginal	1	1	
Rectovaginal	1	2	
Local healing	3	3	
Alive:		Died:	
1 year	1	Under 6 months.....	8
1½ years to 2 years.....	1	6 months to 1 year.....	3
2 to 2½ years.....	1	1 to 1½ years.....	3
2½ to 3 years.....	2	Total	14
3 to 4 years.....	1		
4 to 5 years.....	1		
Total	7		

cancer, for this it invariably does, but on the fact that the growth is so widespread that cancer cells outside the zone of effective action may actually be stimulated to a more rapid proliferation and thus quickly obscure any possible beneficial effect at the point of intensive contact. We are, therefore under the impression that a certain number of patients receive no beneficial effect from irradiation, and hence we are inclined to limit its

employment to those cases in which there is a visible or palpable localization of the gross changes.

When there is a deep crater occupying the site of the lower uterine segment and extending out to the pelvic walls and backward and forward to the vesical and rectal walls, with grave cachexia and other evidence of metastasis, we may by this treatment actually render more wretched the few remaining weeks of existence of these patients. Also, when there are fixed pelvic masses extending out to the iliac walls, very seldom can anything be accomplished, for the destructive changes are too far removed from the focus of irradiation for even palliative measures. As we are not employing the emanations, we cannot speak as to results in these cases when the glass tubes are embedded in the malignant mass.

In those cases in which a progressive favorable action is noted six weeks after the initial treatment, not infrequently the patient is advised to return again in six weeks, and if then we find a white hyaline cicatrix fully covering the site of the ulcer, we further delay action and may not see the patient again for six months.

In the second class of cases in which no progress is noted, we usually make one more application and await the turn of events at the end of another six weeks' interval. At that time should no progress be noted, further irradiation is abandoned, for we class such cases as hopeless.

Within our knowledge, no favorable turn has been noted from a third application if the first two are unsuccessful. To repeat the treatments only adds to the patient's distress. Here, as is observed with any operation in the hopeless case, the remedy may be severely condemned, thus generating a prejudice among the friends or family of the patient which may subsequently block its use in some other favorable case.

Another modification in our method of application deserves especial mention. In the first three years of our experience, we were content to make the application without the aid of an anesthetic. A bit of tissue was snipped off or gently curetted away for confirmative diagnostic purposes, and the radium was then applied, usually with the patient in the knee-breast or Sims posture. Under these conditions, it was frequently difficult to adjust the radium tube accurately to the affected area. In applying the metallic vaginal shields, or as in later cases, the gauze pack, the tube might shift and thus cause trouble. To obviate these dangers and to be certain of a complete orientation at the first sitting, nitrous oxid anesthesia is administered. If there is a large cauliflower mass it is excised by the cautery. By this procedure, radium may be brought one or more inches nearer the crucial area, thus securing full contact and avoiding the rapidly lessening effect of the intensive irradiation as the distance is increased (Fig. 2).

Further, when possible we always insert a 50 mg. tube within the cervix and a cross contact tube of

equal quantity in the cervical crater or vaginal vault. Not infrequently a superficial conelike incision is made with the cautery, avoiding a deep penetration into healthy tissues, and the radium tubes are enclosed within this cup with fine catgut sutures (Fig. 3). At a six weeks' interval a second contact application of 100 mg. is made in the vaginal vault. As to the use of radium needles, our experience is as yet too limited to warrant any positive assertion as to their value in cervical cases, but we anticipate a betterment of statistics from this source of deeper irradiation. Since cancer extends by the broad and uterosacral ligaments, we not infrequently insert four needles of about 13 mg. each into these structures (Figs. 4 and 5). Obviously, the danger of injuring the rectum or perforating Douglas' culdesac attends the penetration of the utero-

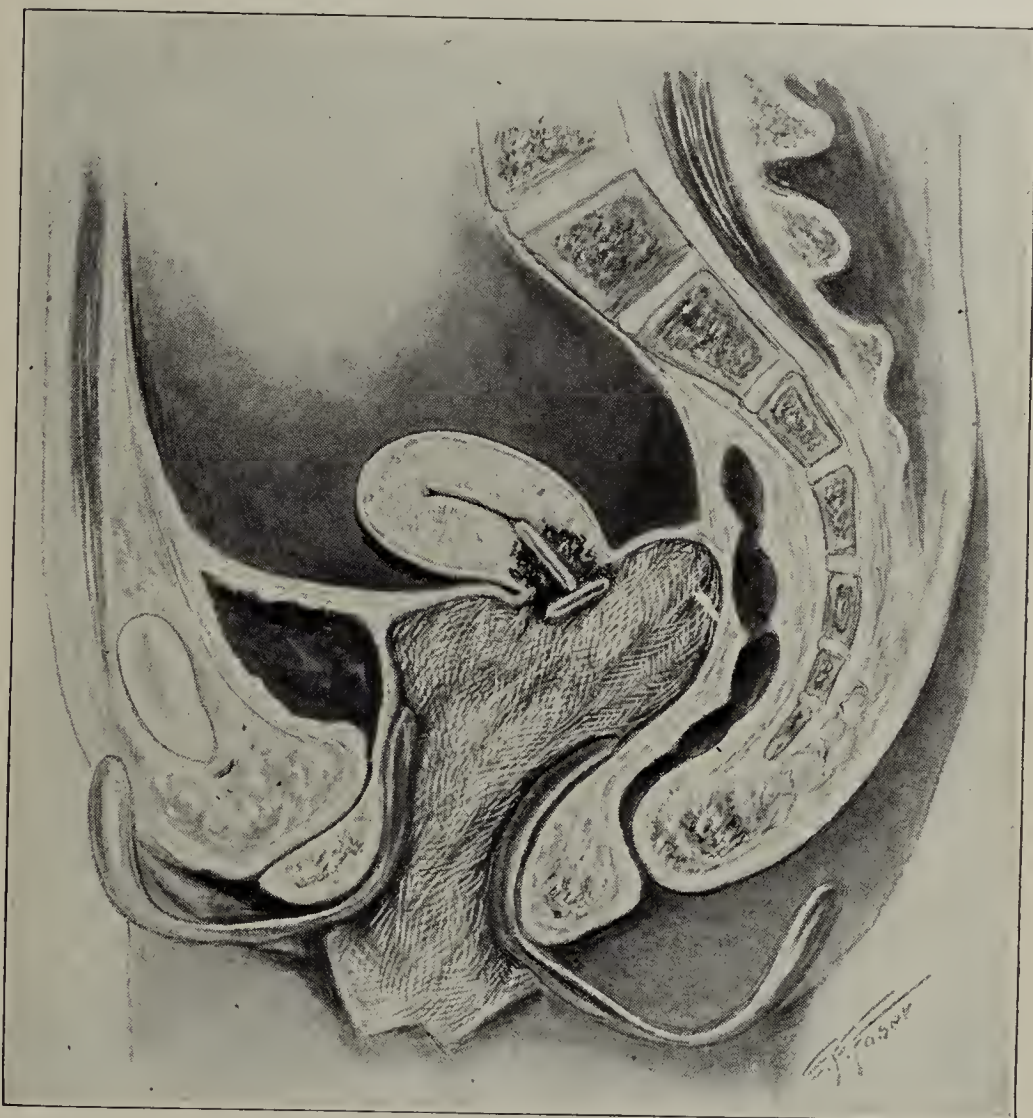


Fig. 1.—Voluminous gauze packing placed with the aid of Sims' specula in such a way as to press the rectovaginal wall backward and the vesicovaginal wall forward out of harmful contact.

sacral ligaments, while the ureters or uterine vessels are jeopardized in the broad ligaments. Through the guidance of the needle with one finger in the rectum, and directing the needle slightly posteriorly and outward in the broad ligaments, these dangers may largely be obviated. At least, thus far we have had no unhappy encounters of this nature.

TECHNIC OF APPLICATION

Patients are prepared as usual for gas anesthesia, a hypodermic of morphin, one-fourth grain, and atropin sulphate, $\frac{1}{150}$ preceding the operation by one-half hour. The patient is prepared as for a plastic operation on the cervix, care being observed not to traumatize unduly the carcinomatous area in the cleansing process. Then a complete examination by vagina and rectum is made in order to determine the extent and

character of the growth. If there is a cauliflower mass, it is removed with the cautery and not the curet. Too much stress cannot be laid on the dangers of harsh manipulative use of the curet, or excision of tissue with the scalpel in the advanced cases. When there is a crater, we never use the curet or even the cautery.

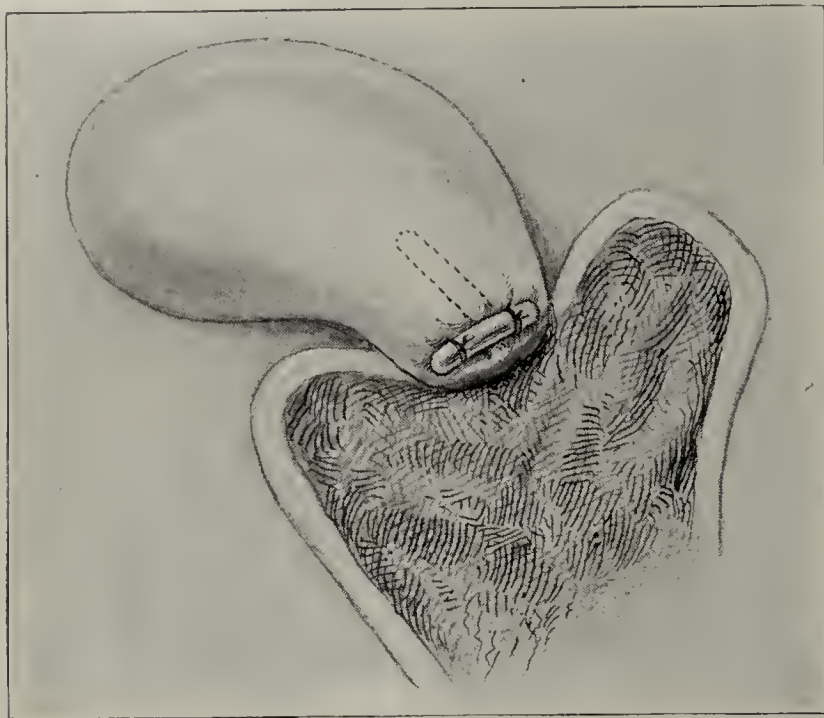


Fig. 2.—In the usual case without cauliflower excrescence, one tube is inserted within the canal and a second held in crosswise contact held with a fine catgut suture.

When the case is of the cauliflower type, the superficial mass is removed only down to the cancer base in order to reduce the distance to the frontier zone of infiltration. The cervical canal is dilated if it is discoverable, and the first tube of 50 mg. of radium salt in black rubber tubing is inserted into the uterus. On the vaginal portion of the cervix or within the crater a similar tube is held by fine catgut sutures. If it is desirable to employ the needles, they are inserted into the appropriate areas, as described above, not more than 1 inch in the broad ligaments and approximately $1\frac{1}{2}$ inches in the uterosacral ligaments. It is necessary to make this maneuver more or less blindly, the sense of touch being our only guide. The Lee type of needle is used, screwed to a staff of about 3 inches in length. The posterior vaginal wall is retracted well back from the cancerous area with a long Sims speculum, likewise the anterior vaginal wall toward the symphysis. Thus the posterior vaginal wall and rectum may be pushed 1 inch or more back toward the hollow of the sacrum, and the vesical wall is removed almost as far from harmful effects. This we consider a capital method for preventing an irradiation proctitis or cystitis, with the attendant hazards of fistulas.

In cancer of the fundus, we always incline even in advanced cases to operation. In this connection, we simply reiterate what has been said in previous articles: "In cancer of the cervix, when in doubt always irradiate; in cancer of the fundus, when in doubt operate." However, in cancer of the fundus, when there are grave contraindications to surgical intervention, we turn to radium with great hope when the case is within reasonable limits. In our list of 313 cases, there have been only twenty-three cases of cancer of the fundus. Of these, twelve patients survive from three to six years without objective symptoms or demonstrable

lesions. The remainder are below a three-year limitation but are in excellent health. In eleven cases which were far advanced when treatment was given, the patients are dead, but there were none of these within the potentialities of the most daring surgeon.

How does healing take place in cases of cancer treated by radium? As we see the factors in this process, we summarize them as follows: First, local destruction, then a considerable fibrous tissue formation with an ultimate condensation cicatrix followed by more or less hyalization. To the latter processes, we attribute the chief possibilities of a cure. To thrive, cancer requires vascularization on its frontier zone. A hyaline or fibrous barrier is, therefore, an effective block against the invasion of new blood vessels and serves excellently in the process of incarceration or segregation of malignant cells.

In McCarty's discussion before the last meeting of the Southern Surgical Society, he laid special emphasis on the beneficence of the latter processes in the retardation or starving out of cancerous growths. To this theory we offer hearty support. A very telling instance to sustain this point is found in one of our cases of carcinoma of the vagina in which there was almost a complete atresia at the time of the first treatment, and yet the patient is alive and well after nearly five years. When first seen we considered the case hopeless. One hundred milligrams of radium divided between two tubes were inserted tandem fashion into the narrow vagina and were left in place twenty-four hours. One year later, on the patient's return, there was a complete cicatricial occlusion of the vagina. At the introitus there was a slight carcinomatous ulcer surrounded by a hyaline fibrous circle. We were so fearful of breaking down this area by further irradiation, with resultant



Fig. 3.—Area of excision with the cautery knife marked with triangular converging lines. After this cervical cone is removed, one 50 mg. tube is inserted in the cervix and a second is placed crosswise within the crater. The two flaps may then be closed with fine catgut sutures, thus holding the tubes in a secure place where their maximum force may safely be expended.

rectal and vesical fistulas, that we removed a small bit of tissue for confirmative diagnosis and advised against any further treatment. One year later all traces of the

cancer had disappeared, and the patient is now nearing the completion of her five-year period quite free from any trace of cancer.

This is but one instance of many which sustain our argument against operation after successful irradiation in a previously inoperable case. Logically, a surgeon

three to four years on to six and seven years is 24 per cent. Without doubt, no other method of treatment attended with so little danger can show such excellent results. In all of our series of cases, now more than 400, only two deaths occurred shortly after irradiation alone. A few years ago one of us reviewed the final results in fifty-nine cases of radical operation for cancer of the cervix, and the yield of quinquennial cures was about 33 per cent.

In comparing the vast outlay of surgical effort put forth in the latter class of cases with the great dangers attending the radical operation, as to both mortality and disabling results, we feel convinced that the time has about, if not quite, arrived when we shall cease to speak of any operable cases of cancer of the cervix but shall submit them all to irradiation. Certainly our results have led us very convincingly in this direction. As the palliative results have been so excellent and, as our statistics now appear, the actual cures have been so relatively large in the hopeless cases, it would appear illogical to submit the early, operable case to the great dangers of surgical intervention and reserve only the inoperable case for irradiation. While we still discuss operability, we are indeed turning to this method of procedure in such a small minority of cases in our clinic as to carry our statistics in this line almost to the vanishing point.

In two other classes of cases we have employed irradiation with great reluctance; and yet, as our sta-

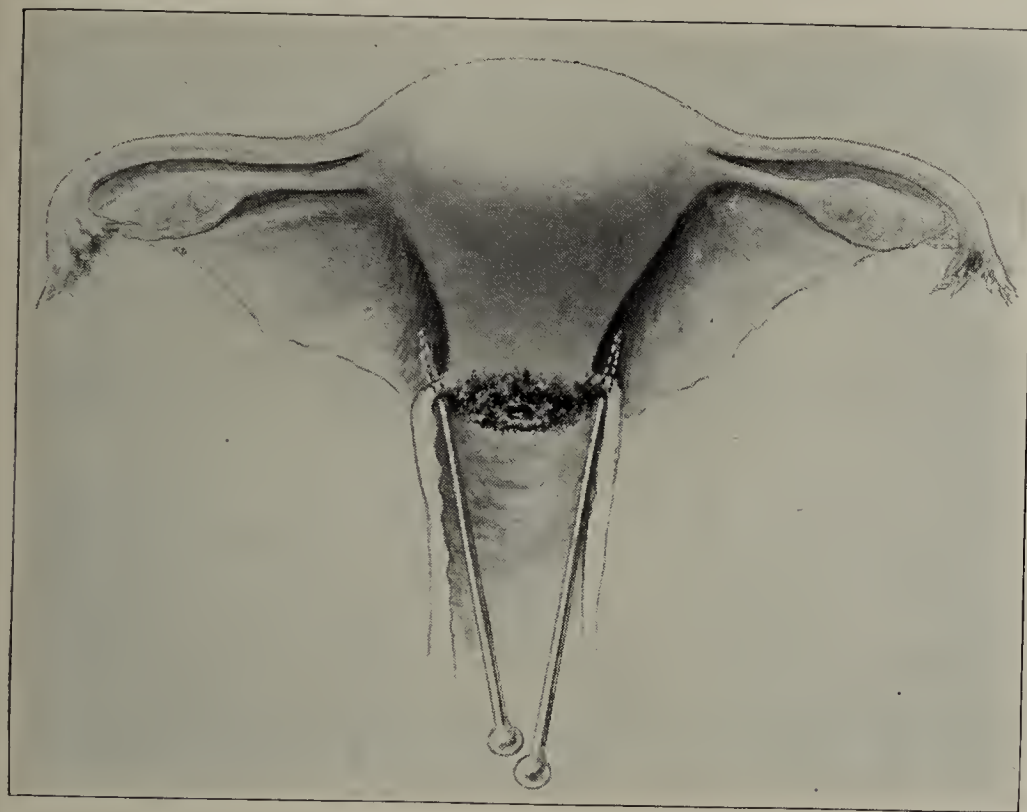


Fig. 4.—Radium needles inserted about 1 inch into the parametrium. In introducing these needles a point is selected lateral to the cervix and slightly posterior to a midtransverse line of the cervix. By observing this precaution the ureters and uterine blood vessels are in less hazard.

cannot remove tissue outside the operable area, and to break down these barriers and open up fresh tissue with the possible release of imprisoned cells may actually lead to the worst results. We have found no evidence whatever to incline us toward surgical intervention after successful irradiation, but quite positively in the contrary direction. Finally, what is, our attitude concerning immediate anteoperative irradiation? From dire experience we have definitely discarded this plan, and while this decision is based on a very limited experience, it was, nevertheless, an alarming one.

The bad results occurred in two cases of high amputation of the cervix a day or two subsequent to a twenty-four hour irradiation. For a few days, a splendid convalescence followed; then an ugly infection with widespread disintegration developed in the operative area. One patient died of a slow but progressive pyemia; the other passed through a stormy convalescence, but finally recovered. To devitalize tissues invaded with septic bacteria, which are not destroyed before surgical intervention, makes indeed a bad outlook for the surgeon. Possibly a very evanescent irradiation of from four to six hours in order to blight only the superficial areas and not the deep tissues might be effective in reducing implantation possibilities. Beyond this, however, we enter a zone of deepening shadow. In the event of a hysterectomy being performed, we prefer to irradiate from fourteen to twenty-one days later, after the surgical cicatrix in the vagina is fixed, and then under careful protection and only for twelve hours.

As will appear in our statistical tables, the percentage of patients suffering from inoperable carcinoma of the cervix and yet living without evidence of cancer from



Fig. 5.—Lateral view of needles inserted in the sacral and broad ligaments.

tistics will show, this pessimism is unjustifiable. From the anatomic standpoint, the hazards of fistulas are much greater when radium is employed in cases of recurrence in the vaginal vault after hysterectomy. Of this class there have been twenty-one cases, in seven of

which the patients are living, five being alive over two years. Of these, one has passed the three to four year period. Of the seven living, two have fistulas. Among the fourteen fatal cases, there were three fistulas.

TABLE 7.—EPITHELIOMA OF VAGINA

	Patients Living	Patients Dead
Hemorrhage:		
Complete relief	4	4
No effect .....	..	1
Temporary relief .....	..	3
Not stated .....	..	4
Total	4	13
Leukorrhea:		
Complete relief	3	2
No effect .....	..	3
Increased	1	1
Not stated .....	..	7
Total	4	13
Pain:		
Relieved	1	..
Unrelieved .....	..	2
Not stated	3	11
Total	4	13
Rectal irritability after radium.....	..	1
Fistulas:		
Rectovaginal .....	..	3
Local healing .....	..	4
Total .....	..	7
Alive:		Died:
1 to 1½ years..... 1		Under 6 months..... 5
1½ to 2 years..... 1		6 months to 1 year..... 3
3 to 4 years..... 1		1 to 1½ years..... 3
4 to 5 years..... 1		1½ to 2 years..... 1
—		2½ to 3 years..... 1
Total 4		Total 13

TABLE 8.—CARCINOMA OF URETHRA

	Patients Living	Patients Dead
Hemorrhage:		
Complete relief	2	3
No effect .....	..	1
Total	2	4
Leukorrhea:		
Complete relief .....	..	2
Increased	2	..
Not stated .....	..	2
Total	2	4
Pain:		
Unrelieved .....	..	2
Not stated .....	..	2
Total .....	..	4
Fistulas:		
Rectovaginal	1	..
Vesicovaginal .....	..	1
Vesicorectovaginal .....	..	1
Total	1	2
Alive:		Died:
1 to 1½ years..... 1		6 months to 1 year..... 1
5 to 6 years..... 1		1 year to 1½ years..... 3
—		—
Total 2		Total 4
Local healing .....	..	2

From these observations our apprehension as to fistulas is confirmed, for this class of case will undoubtedly be followed by a larger percentage of fistulas, another very telling argument against a hysterectomy in the borderline case if irradiation is subsequently to be resorted to. This brings up the question, Should the surgeon resort to an operation in the questionable case, and then depend on irradiation to aid him? To act in the affirmative, we believe, is not only an unwise but a positively dangerous course. While an irradiation subsequent to a hysterectomy may save the day, it may leave in its train a distressing and possibly hopeless fistula. We cannot too urgently advise against this course. When the uterus remains as a broad wedge of tissue keeping the bladder and rectum well apart and the domelike vault of the vagina preserved, with the car-

cinoma held centrally between the broad ligaments, the opportunity for successful work by the radiologist is greatly enhanced. When a hysterectomy is performed, these elastic tissues may retract to the iliac walls and thus remove the cancer outside the zone of safe irradiation.

A second class of cases in which cancer of a cervical stump has occurred, either by an oversight at the first operation or possibly by a subsequent invasion of the stump. Four such cases appear in our series, and all the patients are alive, two one and one-half to two years, and two three to four years after treatment. Is it likely that an excision of such an invaded stump could give as good or better results? Several other obvious facts will appear in our statistical tables which we will not refer to here.

To the energy of Mr. Ramsey, a junior medical student in the University of Pennsylvania, we are indebted

TABLE 9.—CARCINOMA OF BLADDER

	Patients Living	Patients Dead
Hemorrhage:		
Complete relief	1	1
Not stated .....	..	1
Pain:		
Relieved .....	..	1
Not stated .....	..	1
Fistula (vesicovaginal)	1	..
Alive:		Died:
4 to 5 years..... 1		Under 6 months..... 1
—		6 months to 1 year..... 1

TABLE 10.—SUMMARY, LIVING PATIENTS

Hemorrhage:	
Complete relief	78
Temporary relief	5
Not stated	3
Not traced	11
No effect	1
—	98
Leukorrhea:	
Complete relief	54
Temporary relief	4
No effect	7
Not traced	11
Not stated	22
—	98
Pain:	
Relieved	24
Unrelieved	3
Pain caused by radium.....	3
Pain not present.....	30
Not traced	11
Not stated	27
—	98
Bladder irritability after irradiation.....	7
Rectal irritability after irradiation.....	4
Fistulas:	
Vesicovaginal	4
Rectovaginal	3
Both	3
—	10
Local healing	49
—	98
ALIVE	
1 year	10
1 to 1½ years.....	14
1½ to 2 years.....	8
2 years to 2½ years.....	11
2½ to 3 years.....	3
3 to 4 years.....	15
4 to 5 years.....	10
5 to 6 years.....	9
6 to 7 years.....	4
Traced less than one year.....	3
Not traced	11
—	98
LIVING	
Traced	87
Not traced	11
Miscellaneous	4
Operation and radium.....	10
—	112

for tracing out the lost cases which did not return in response to our follow-up appeals. In his conversations with some of these patients, who are now quite well, he found that one asserted that she had been cured by Christian science, one by divine healing, and one by

cancer medicine. Now that they are well, we yield them reluctantly to their delusions. Such cases point also to the fallacy of statistics. It is our custom, when we are unable to follow our cases, to throw the history into the discard, leaving these cases out of court as to a final judgment as to results. Through carelessness or indifference or because a patient may have sworn allegiance to strange gods antagonistic to medicine, some of the most favorable cases may appear in the lost column. By the system of personal investigation and interview, our ratio of living patients has been raised materially.

CONCLUSIONS

1. Radium in 100 mg. amounts will yield most gratifying results if properly applied.
2. To pursue a set course without variation in the frequency of treatments regardless of the progress of the healing is hazardous.

TABLE 11.—SUMMARY (Patients Dead)

Hemorrhage:		
Complete relief	104	
No effect	6	
Temporary relief	16	
Not stated	66	
Miscellaneous	5	
Operation and radium.....	4	
	201	
Leukorrhea:		
Complete cessation	56	
No effect	28	
Increased	3	
Not stated	105	
Miscellaneous	5	
Operation and radium.....	4	
	201	
Pain:		
Relieved	43	
Unrelieved	41	
Not stated	108	
Miscellaneous	5	
Operation and radium.....	4	
	201	
Bladder irritability after radium.....	8	
Rectal irritability after radium.....	10	
Fistulas:		
Vesicovaginal	7	
Rectovaginal	12	
Both	2	
	21	
Died:		
Under 6 months.....	59	
6 months to 1 year.....	55	
1 to 1½ years.....	30	
1½ to 2 years.....	12	
2 to 2½ years.....	12	
2½ to 3 years.....	6	
3 to 4 years.....	3	
4 to 5 years.....	3	
5 to 6 years.....	1	
Date not stated.....	11	
	201	
Local healing	60	

3. To attain the best results, the first irradiation should be done under nitrous oxid anesthesia, as a more careful examination may be made, and the radium more advantageously brought in contact with the malignant areas either through radium tubes or by radium needles. Gauze packing instead of metal shields should be used for protective purposes.

4. The process of cure passes through three stages: local destruction, connective tissue formation, and hyalinization.

5. A hysterectomy after successful irradiation of an otherwise inoperable case is hazardous and does not promote the best interests of the patient.

6. Results of irradiation in cancer of the cervix practically remove this class of cases from the surgical field, although we have not yet completely yielded this point.

7. Cases of cancer of the fundus, unless too far advanced, or unless there is a critical surgical contra-indication, should be submitted to hysterectomy, fol-

lowed from fourteen to twenty-one days later by a light irradiation of the vaginal fornix.

8. Irradiation is dangerous immediately before or soon after an operation, or when employed in fresh operative fields.

9. Frequent repetitions of irradiation are probably unnecessary and possibly hazardous, as the foregoing observations point to the fact that the chief blow is struck at the first application.

10. The frequency of irradiation fistulas may be reduced to a minimum or almost completely avoided by the application of a well placed vaginal pack which removes the healthy tissues from the zone of intensive emanations.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DUNCAN, SCHMITZ, AND CLARK
AND KEENE

DR. WILLIAM P. GRAVES, Boston: The propaganda of general public education, though still inadequately organized, has been noticeably successful in teaching women to consult their physicians earlier in the course of the disease, while the country practitioners and family physicians are recognizing sooner symptoms which formerly many of them advised their patients to disregard. A source of encouragement is the wonderful good that radium is doing in the palliative treatment of incurable cases. If radium had never cured a case of cancer, and if it should never cure a case, its value in alleviating the suffering of cancer has already been an inestimable boon to the human race. I rarely see a case so bad that we cannot greatly help the patient, often for long periods of time. The only problem now is that which relates to the proper treatment of operable cases, and in this connection it is necessary to define what we mean by the term operable. Formerly an operable case might be defined as one in which it was possible to extirpate the uterus and diseased cervix without killing the patient and without causing injury to the neighboring organs. With the advent of radium, even the most enthusiastic operators have modified their definition of the word operability. In deciding the question of operation in a given case, the query that the surgeon puts to himself is not, "Can I take that uterus out and not injure the patient?" but rather, "Can I cure the patient by an operation?" We should, therefore, perhaps give up the word operability in estimating our cases of cervical cancer and use the expression curability by operation. The problem in which we are at present most interested is whether to operate in a case curable by operation or whether it is justifiable to rely on the simple method of applying radium. I have been a supporter of operation in these cases. Our results in this community at least do not warrant the severe condemnation that has recently been vented on the operative treatment of cervical cancer.

DR. A. J. OCHSNER, Chicago: For many years I used the actual cautery in cases of carcinoma of the cervix, using a cautery iron of large size because it would carry the heat far beyond the point of cauterization. During the last four years since Dr. Schmitz began to treat my cases of cancer of the uterus with radium, I have reduced the number of operations. This year I have not operated in a single case of carcinoma of the cervix. The patients have all been treated with radium. The reason for doing this is this: We found among our cauterization cases many in which there was glandular involvement far beyond the reach of heat; in cases that seemed incurable the patients remained well for many years—some as long as twenty years. Undoubtedly the reason for this lay in the fact that the carcinoma in the distant glands was destroyed by the natural ability of human tissue to destroy the cancer microbe. In all probability many of the cancer microbes which are located in the glands at a considerable distance from the original cancer are destroyed directly by the radium. Dr. Schmitz advises the removal of portions of the cancer for microscopic examination. My experience has been that when portions of tissue were removed for diagnostic

purposes the patients died of metastatic cancer. There is a great difference between involvement of the glands from cancer microbes which start from the cancer substance itself and those that are set free by the knife. Portions set free by the knife are put directly in the lymphatic circulation, and they will travel much farther than those that are set free by themselves in the growth of cancer, because the incision removes the barrier that nature has placed for the protection of the patient. Consequently, if one removes portions for microscopic examination this should be done in a manner to seal the lymphatics, namely, preferably by means of the electric cautery. The application of radium in sensitive patients can be done comfortably and safely under spinal anesthesia with procain. It does not frighten the patient, as a general anesthesia will, and it makes the patient perfectly comfortable for several hours after the application of the radium. I am sure that radium has come to stay. I have mentioned the cancer microbe several times. I wish to state that Dr. John Nuzum has isolated the cancer microbe and has produced cancer from pure cultures of a specific micro-organism in many cases.

DR. FRED J. TAUSSIG, St. Louis: The interesting statistics of Drs. Clark and Keene might perhaps give the impression that there is such a thing as a routine method of application in these cases of cancer of the cervix. I hope that none of you will have that impression, because radium treatment of cancer of the cervix is just as manifold and difficult as a plastic operation. In every instance there must be a different method of application, a different filtration and a different total dosage. However, certain principles should be maintained. The treatment should be concentrated at the first application. The unfiltered radium should be applied within the cervical canal, and our efforts should be to attack the involvement of the broad ligament by filtered radiation. The pictures Dr. Keene showed of needles applied to the broad ligament rather terrify me. I would hesitate very much to make an application of unfiltered radium in the broad ligament for fear of necrosis of the ureter. As to the use of anesthesia in these cases: When there is a large mass to cauterize, anesthesia is a wise thing. When such a procedure is not necessary, we can obtain better results by morphin-scopolamin anesthesia, putting the patient in the knee-chest posture. The only way in which we can properly apply a gauze tampon to the vagina is to have the patient in the knee-chest posture, and that posture is better maintained if the patient is not under a deep anesthetic.

DR. HENRY O. MARCY, Boston: I am glad to hear from Dr. Ochsner of his demonstration of bacteria in cancer. In my investigations of cancer, we cultivated through for several generations a micro-organism which bred true and we reproduced cancer in animals. In order to disseminate the heat and the destruction through the surrounding tissues, using the thermocautery in cancer of the cervix, I packed the uterine cavity with wet cotton and then transposing the heat through the applicator conveyed in the wet cotton. One of my assistants said, "Marcy, we think that is splendid. It is like very much the way we cook our clams at the seaside, just stewing them in seaweed."

DR. HENRY SCHMITZ, Chicago: The technic of radium depends on the extent and also the irradiation required. This is limited by the bladder anteriorly and the rectum posteriorly. It will be impossible by any means at our command now to apply it beyond 3 cm. The question arises, What is going to happen to the tissue beyond the 3 cm.? We may use large amounts if we have them. Even this proposition has been stopped on account of the questions arising. For this reason we have combined effective roentgen-ray irradiation with radium therapy. I cannot agree with Dr. Taussig that the method should be applied to the individual case. As soon as we individualize the treatment of carcinoma we begin to treat the patient and not the disease, and the results will not be so good as if we treat the disease, absolutely. There is one way, and that is by the extended radical operation; though in irradiation treatment, only by extensive irradiation can we eradicate the cancer from the pelvis.

DR. FLOYD E. KEENE, Philadelphia: The point taken by Dr. Taussig in regard to the treatment of these various types

of cancer certainly has merit. I tried to bring out that in the treatment of these various cases it was hazardous to proceed by rule of thumb. We give anesthesia with the definite idea of determining exactly what the conditions are, and we are governed by the conditions we find as to what type of treatment we shall use. The methods I showed were merely principles we try to apply. The details of treatment are brought out in my paper. As regards the use of the needles, Dr. Taussig has good grounds for his fears. I can only say that, in the treatment of a considerable number of cases in which we have used the needles, we have thus far had no bad results.

DR. REX DUNCAN, Los Angeles: I am convinced that if we do not get a single cure, the palliative results of radium are superior to anything else we have. I am confident, from my experience, if we can obtain the excellent results we apparently do in inoperable cases and the small number of operable cases treated, that radium should be given a more fair and general trial in the treatment of early cervical carcinoma. I believe that cervical carcinoma, at least, is not surgical and should be treated with radium.

I cannot agree with Dr. Schmitz. I do believe that while it is true we are treating a disease, we are also treating a human being. Many factors must be considered, and we cannot kill our patient in order to cure the cancer. Therefore, we have to modify our technic and dosage to meet the general condition of the individual patient, and also to meet the great variations in the distribution of the disease as it occurs in different patients.

Clinical Notes, Suggestions, and New Instruments

PSEUDOCYST OF PANCREAS APPARENTLY DUE TO HEMORRHAGIC NECROSIS OCCURRING DURING THE COURSE OF A GENERAL SEPSIS

W. B. RUSS, M.D., SAN ANTONIO, TEXAS

History.—A married woman, aged 21, had never been ill until at the birth of a baby, Dec. 26, 1919. A few days after confinement she developed puerperal sepsis followed by septic phlebitis. Ten days after the birth of the baby she became severely ill with agonizing pain in the epigastrium, radiating to the back and the left shoulder; vomiting occurred, and there were abdominal rigidity, rigors and a very rapid pulse. Her condition gradually improved, but she continued to vomit and to suffer severe pain. Early in March, while still confined to bed, a tumor was discovered just above the umbilicus. The roentgenogram, March 24, revealed marked deformity of the gastric antrum (Fig. 1). March 25, on account of the presence of the tumor and increasing signs of obstruction, an anterior gastro-enterostomy was performed. There is no available history of this operation or of the after-treatment, except that the patient was able to retain some food but continued to suffer severe pain, requiring a large amount of morphin, and that the tumor continued to grow. She lost weight rapidly and finally had to be fed by rectum. I first saw the patient, May 25, at which time she was bedridden, pale and evidently suffering great pain; her temperature was subnormal and her pulse rapid and weak. She was taking about 5 grains of morphin a day. She was getting small quantities of liquid food and was also being fed by rectum. She had a negative Wassermann reaction, her hemoglobin was about 45 per cent., and her white blood cell count was 11,000, with 70 per cent. polymorphonuclears. There was some albumin in the urine, with hyaline casts and kidney epithelium. She was slightly jaundiced. Her weight was 85 pounds. She had a smooth, fixed, tense, fluctuating tumor the size of a large coconut with the maximum prominence just above the umbilicus in the median line. There was no pulsation and no edema of the lower extremities. She had pain in the upper abdomen and lower dorsal region radiating to the left subscapular

region. The pain was increased by taking food and somewhat relieved by vomiting. A diagnosis of pancreatic cyst was made.

Operation and Result.—Incision was made down the left rectus from the costal margin. The gastro-enterostomy was intact; the afferent loop, including the mesentery, was firmly adherent to the right border of the great omentum; both afferent and efferent loops were adherent to the old incision scar; the afferent loop was somewhat dilated. I found a fluctuating, smooth, dark tumor, the size of a large coconut, pushing forward the gastro-colic omentum. The lesser peritoneal cavity was filled by the tumor, the foramen of Winslow being closed. I aspirated 34 ounces of dark brownish, alkaline fluid containing bile, blood, necrotic tissue and pancreatic enzymes and having a specific gravity of 1.015. The patient made an easy recovery, the fistula closing in eight weeks. For sixteen weeks she suffered from frequent recurrences of diarrhea, during which the stools contained undigested food particles with soap and unchanged fats. The administration of pancreas extract seemed to control the diarrhea. There was no sugar in the urine. Morphine was discontinued after the third day. At present, seven months after the operation, the patient is apparently well and weighs 135 pounds. Her color is good,

and filling the lesser peritoneal cavity with blood and necrotic tissue.

2. There was evidently sufficient pressure on the duodenum and pyloric end of the stomach to produce partial obstruction.

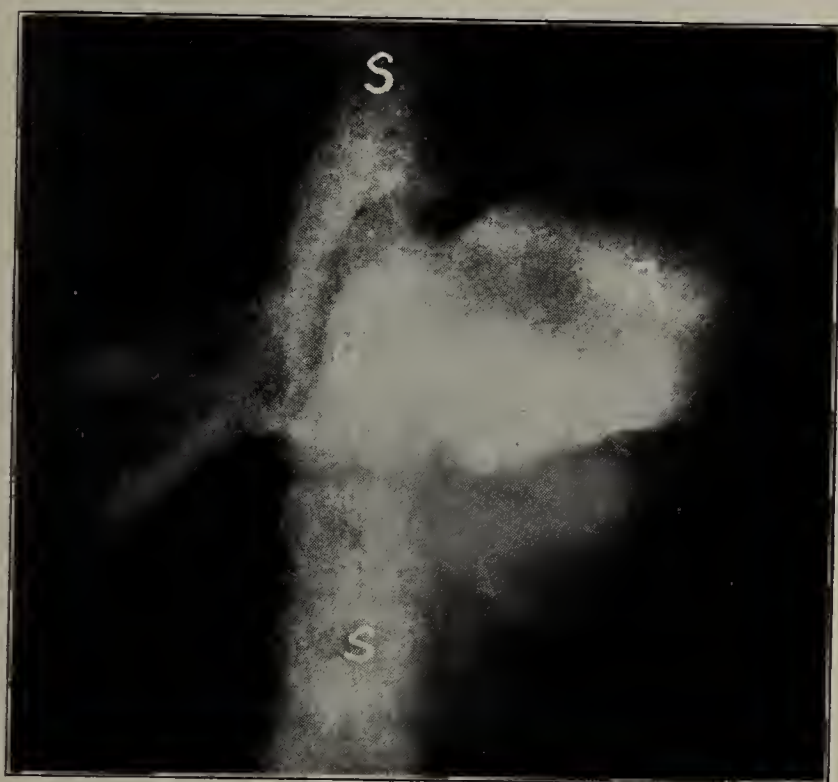


Fig. 1.—A, cardia; B, B, deformity of antrum; S, spine.

her digestive functions are apparently normal, and she seems well in every way. Roentgenoscopy (Figs. 2 and 3) disclosed that the stomach emptied through the stoma rapidly. Figure 2 shows the stomach almost empty at the end of fifteen minutes.

COMMENT

Cysts of the pancreas have been divided into:

1. Retention cysts, due to chronic partial obstruction of the ducts, and usually associated with stones.
2. Proliferation cysts, simple or malignant.
3. Congenital cystic disease, similar to polycystic disease of the kidneys; this is very rare.
4. Hydatid cysts (very rare).

5. Pseudocysts, which are collections of fluid in close proximity to or in direct connection with the pancreas. These are usually due to traumatism, but may result from acute hemorrhagic necrosis associated with acute pancreatitis.

In our case we evidently had a pseudocyst filling the lesser peritoneal cavity and due to a septic embolus occurring during the course of a general sepsis and resulting in a hemorrhagic necrosis with rupture of the pancreas.

The history of this case presents many points of interest:

1. Ten days after childbirth, during the progress of a severe puerperal sepsis, there evidently lodged in the head of the pancreas a septic embolus followed by hemorrhagic necrosis

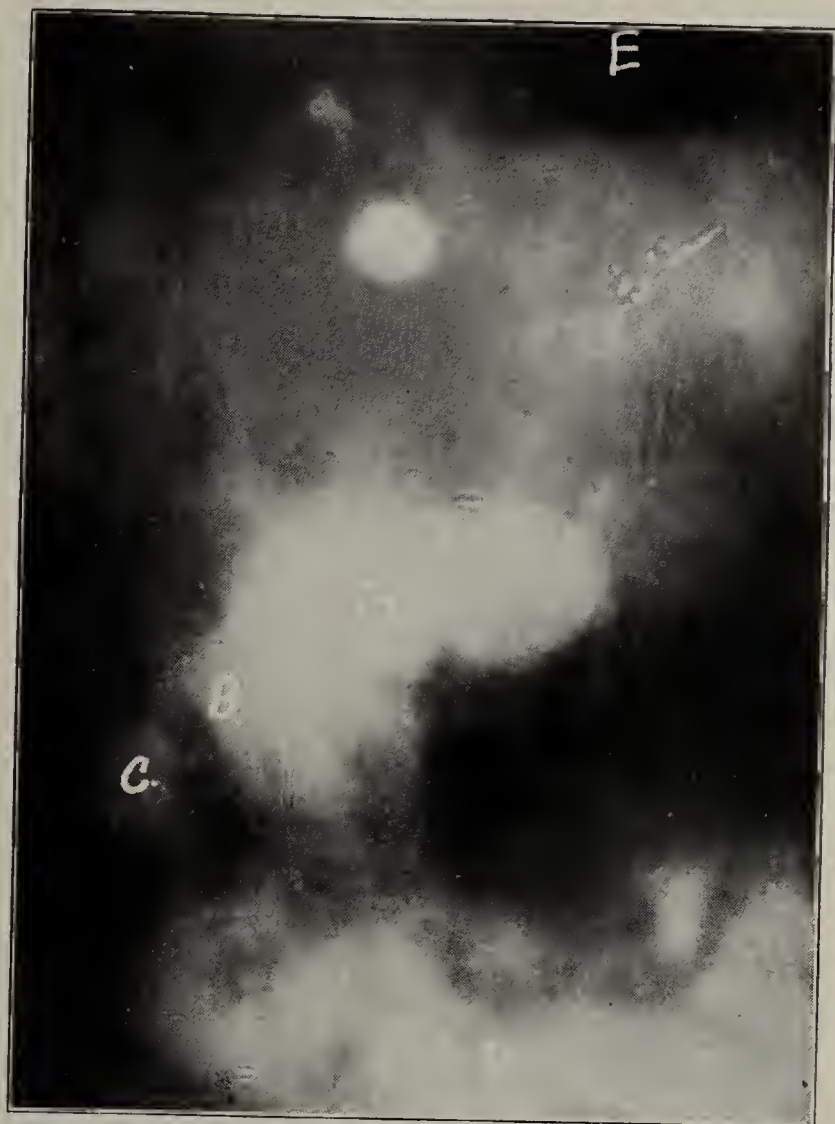


Fig. 2.—Fifteen minutes after opaque meal: A, stomach; B, point on stomach of anastomosis; C, jejunum; D, small intestine; E, magenblase; B-C, functioning stoma.

The patient's rapid emaciation, severe pain and symptoms of obstruction suggested the gastro-enterostomy, which was performed, March 25.

3. The anterior anastomosis was evidently done because of the impossibility of bringing the stomach wall through the mesocolon.

7. During convalescence there was evidence of marked pancreatic deficiency, temporarily relieved by administration of pancreas extract and later followed by complete recovery.

5. In spite of the apparently ill-advised anterior gastro-enterostomy, which eight weeks after was found to show dilatation of the afferent loop and fixation of both loops by dense adhesions to the right border of the great omentum and old incision scar, and the further fact that nine months after the anastomosis was made the stomach almost completely emptied the usual opaque meal in less than twenty minutes, the patient is clinically well and free from any digestive disturbance whatever.

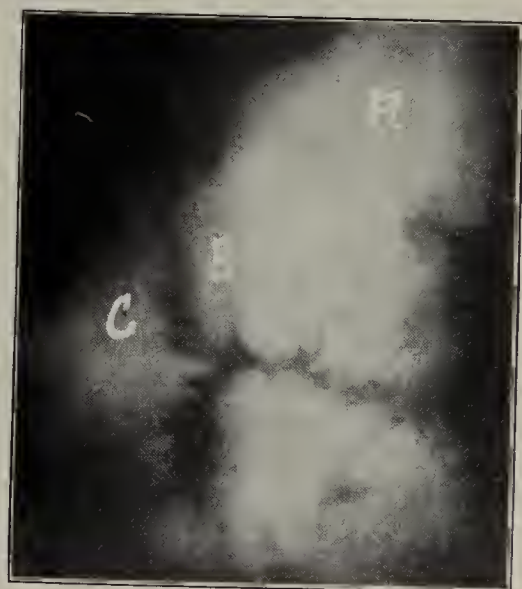


Fig. 3.—Series same as Figure 2: A, stomach; B-C, functioning anterior gastro-enterostomy.

1524 Main Avenue.

AN UNUSUAL MONSTER DELIVERED BY CESAREAN SECTION

L. F. LICHT, M.D., AND D. J. CALICCHIO, M.D., JAMAICA, N. Y.

History.—B., a woman, aged 32, was admitted to the hospital, Jan. 26, 1921. She had always been strong and in good health. Menstruation had begun at 16 and had been regular, occurring every twenty-eight days. She had preferred carnivorous food rather than herbivorous.

She was married at 31. The last menstruation had occurred July 19, 1920. Her appetite had always been good and she had always slept well until she became pregnant, when insomnia became frequent. Fetal movements were never felt on the left side, but were very vigorous on the right. Her husband was living and in good health. Neither husband nor wife gave any history of syphilitic infection.

Examination.—The abdomen was very pendulous and bulky. The right side presented the configuration of a large pumpkin. The pelvic measurements were: true conjugate, 7.75 cm.; diagonal conjugate, 9.25 cm.; interspinal, 25 cm.; intercrystal, 27.5 cm.; bitrochanteric, 29.75 cm., and external conjugate, 19 cm. Vaginal examination revealed a left occipito-anterior position with a vertex presentation.

Course.—The membranes ruptured spontaneously at 6:45 p. m. Only one fetal heart beat was detected. At 7:30 p. m. a premature female baby was born. It gave one weak cry and died.

The abdomen was still large, and labor pains were in progress. Since the presence of twins was suspected, another vaginal examination was made, even though no fetal heart sounds were heard. A strangely shaped mass in the uterine cavity was discovered. Later a footling appeared, and several attempts to extract it proved futile. A cesarean section was



Fig. 1.—Acephalus thorax which required a cesarean section for its extraction.

performed, and a monster, the shape of an inverted cone, was delivered.

It was 12 inches long. The upper third was $6\frac{1}{2}$ inches wide, and $6\frac{1}{4}$ inches thick. The lower third was 4 inches wide; the body was 2 inches thick. On the right foot, the first and second toes were separated; on the left foot, the first and second toes were fused.

One opening was found, three fourths of an inch below the cord, which apparently had been its point of attachment.

Underneath it was a second opening, probably the urachus. On section, the upper third exuded a pale cystic fluid. The left kidney was situated in its normal position; the right kidney was located in the median line, but under the umbilicus. The vertebral column began at the middle of the upper third of the monster. The intestines were rudimentary in type. Heart and lungs were absent. No upper extremities nor head was formed, but the lower extremities were present. The monster was a female.



Fig. 2.—Acephalus thorax.

Roentgen-Ray Examination.—There were no cervical vertebrae. On the right side there appeared to be a beginning formation of the acromion process. Development of the right clavicle was also seen, but the left clavicle was absent. Seven ribs on each side were made clear. The vertebral column was clear from the neck downward. It had a very rudimentary coccyx, a dorsal curve, with convexity posteriorly. Both ilia were formed. There were no ischia but the beginning formation of the pubes was apparent. Both femurs were well formed, as well as the bones of the legs. There were only two metatarsals on each foot. Slight ossification of the os calcis and astragalus had also started. Four phalanges of each foot were seen.

The roentgenogram of the fetus revealed no irregularities of the skull. The vertebral column was straight, and the ribs gave no evidences of any underdevelopment. All of the bones were normally developed.

Examination of Fetus.—The fetus weighed $4\frac{1}{2}$ pounds and appeared almost perfect in form, except that the abdomen was barrel shaped, with very narrow ends. There was a protrusion in the right hypochondriac region as if some object from the inside were pressing it outward.

The general nutrition of the baby was very poor. The head was abundantly covered with hair. Lanugo covered the body, with an almost total absence of vernix caseosa.

The placenta weighed $1\frac{1}{2}$ pounds. Both cords were 20 cm. long. The cord attached to the baby was thicker and healthier than the one attached to the monster.

The patient developed a rise of temperature, which for a time caused a little anxiety, but it responded to quinin administration. Evidently this temperature was due to an old malarial infection, as the history reports. The patient was discharged, Feb. 15, 1921, in good condition.

Shelton Avenue and Ray Street.

AN INTERESTING CASE OF COMPLETE SEVERANCE OF THE CERVICAL CORD

C. C. HIGHTOWER, M.D., HATTIESBURG, MISS.

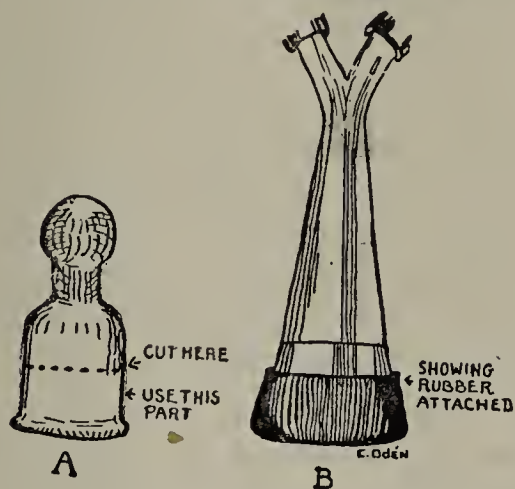
A woman, aged 32, six months pregnant, was shot in the neck with a 0.44 caliber revolver, May 26. I saw her ten minutes later. She was conscious but completely paralyzed, and had no sensation below the point of injury. A roentgenogram disclosed that the bullet had passed through and fractured the fifth cervical vertebra. An operation was not undertaken because the immediate onset of the symptoms indicated a complete severance of the cord. The pulse dropped to 50 but soon returned to normal. There was retention of urine, involuntary action of the bowels, total loss of the reflexes with the exception of the plantar, and only diaphragmatic respiration. The temperature ran an irregular course throughout, ranging from 99 to 105.5. On the eleventh day after the injury, the condition remaining the same and the outlook absolutely hopeless, an operation was performed with the faint hope that compression of the cord by fragments of bone could be removed. The cord was found to be completely severed and the ends separated for the distance of an inch. The patient stood the operation well and soon reacted from the effects of the anesthetic. The condition continued the same, the pregnancy not being disturbed. She died six days later.

Carter Building.

A SOFT RUBBER TIP FOR THE BELL TYPE OF STETHOSCOPE

CONSTANTINE L. A. ODÉN, M.S., M.D., NEW YORK

The value of a positive contact of the stethoscope with the patient is directly in proportion to the accuracy of the sounds heard. Many stethoscopes are uncomfortable to the patient: the bell type of scope having the aluminum tip is nearly always



Soft rubber tip for bell type of stethoscope.

cold, the hard rubber tips are painful when pressed too firmly against the thorax, as is the case in lean patients. These objections can readily be overcome by the use of a simple and easily obtainable device:

A soft rubber nipple of good quality is cut with a pair of scissors, as indicated by the dotted line in A. This portion which has been cut from the nipple is slipped over the end of the bell as in B. Those who use the Bowles attachment will only have to retract this rubber tip up over the bell and replace it when necessary.

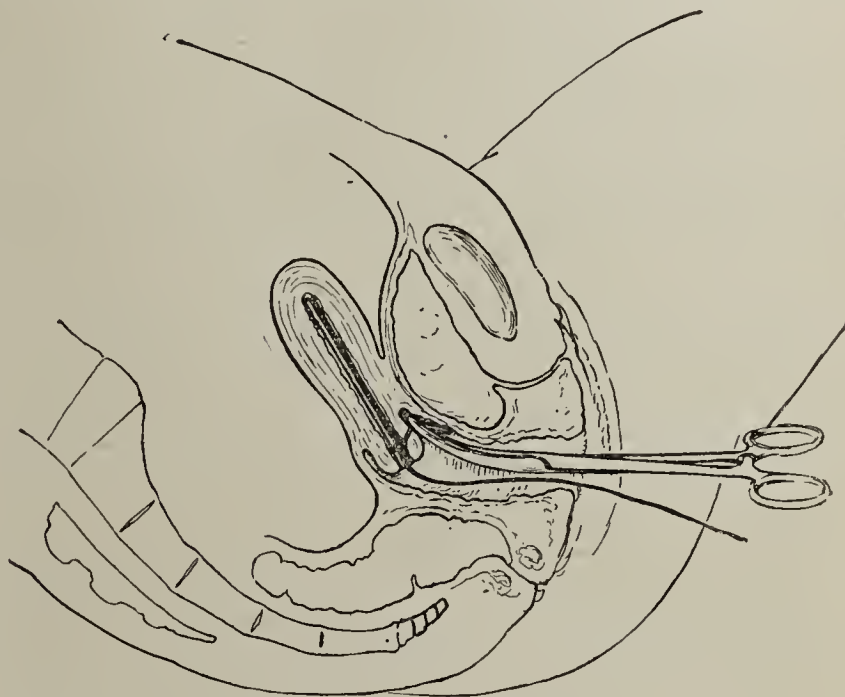
The advantages of this simple modification are many. It forms a perfect contact with the patient; it is comfortable by being neither cold nor sharp; it eliminates all external sounds; it can be used over hairy surfaces; it is excellent for hearing fetal heart sounds, and it is especially useful in the examination of infants and children.

I make no claim as to the originality of this modification. Bellevue Hospital.

SIMPLE METHOD TO RETAIN RADIUM IN CERVIX AND UTERUS

H. DAWSON FURNISS, M.D., NEW YORK

This method was devised because of the uncertainty of accurate retention of the radium tube in the cervix and uterus by gauze packing, and of the difficulty of removal when sutured in place in the usual manner.



One end of suture is passed through anterior lip, clamped with forceps and cut short. The long end is passed out of the vagina. To remove tube, clamp is released and withdrawn by traction on the long end. The usual gauze packing is purposely omitted in the drawing.

The radium tube is placed in a 1 mm. black rubber tube, and the tube tightly tied with linen thread above and below the radium. After the location desired has been determined, a long linen ligature is tied around the tube at the proper point, both ends being left long. One is threaded on a surgical needle and passed through the anterior lip of the cervix, from within outward. A straight artery clamp is then applied to the suture at the point where it comes through the lip of the cervix, and this ligature cut short on the distal side. The other end of the suture hangs over the vulva. The vagina is packed with gauze to prevent pressure and to furnish proper protection from the radium. To remove the radium, the gauze packing is extracted, the clamp released, and the uncut end of the ligature pulled.

54 East Forty-Eighth Street.

Diploma in Tuberculosis.—I have frequently urged the institution of a diploma in tuberculosis which would strengthen the tuberculosis officer's hands, both by being evidence of wide acquaintance with all aspects of antituberculosis activity and by elevating his outlook. But who would devote the time, labor and expense required to such an end if it offered no personal or material benefit? The tuberculosis officer is usually so inadequately remunerated, has so little prospect of professional advancement, is in most cases not even on a plane such as that enjoyed by the postman and policeman, or other public servant, by the inducement of a pension on retirement, that recruits for the service would be almost unobtainable if the possession of a diploma were a necessary antecedent to employment.—H. Gauvain, *Brit. J. Tuberc.* 15:4, 1921.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 20, 1921

EXPLANATIONS OF CREATINURIA

In contrast with creatinin, a nitrogenous product of metabolism always present in the blood and excreted in the urine, the closely related substance creatin is only casually found there. On the other hand, creatin is a constant component of skeletal muscle, in which it was discovered by Liebig many years ago. Strangely enough, creatin is usually found in the urine of children, where it may occur in quantities equal to that of the urinary creatinin. Aside from this occurrence in the secretion of the kidneys in early life, creatin may be found in the urine of adults only under special conditions of sickness or diet.

Various theories have been formulated at different times to account for these peculiar facts. It is needless to refer to them here, since none of the hypotheses are entirely convincing in the light of what is known about metabolism. There is a widespread belief, which is not yet entirely capable of rigorous experimental proof, that when creatin is introduced into the body or formed there it readily undergoes conversion to creatinin, which is thereupon eliminated. This fact, however, will not suffice to account for the origin of the creatin omnipresent in muscle or for the strange occasional excretion of creatin as such.

Of late there have been frequent intimations that creatin excretion may follow the ingestion of large amounts of protein. Such a result is by no means always obtained, so that some investigators have even scouted the probability of any relationship between the plane of protein metabolism and creatinuria. Nevertheless there are sufficient positive data, notably those secured by feeding experiments with women as subjects, to raise the question as to whether creatin is not a more or less direct derivative of some fragment of the protein molecule. One species, the pig, has proved to be peculiarly susceptible to creatinuria when considerable amounts of protein are fed to it. Hence Gross and Steenbock¹ of the University of Wisconsin have employed this animal in a search for possible precursors of creatin among the amino-acids derived from proteins. They have, indeed, found that arginin, which

is obtainable from all proteins examined, augments creatin excretion when it is administered orally in sufficient amounts. The chemist will at once be reminded that, of all the known amino-acid derivatives of proteins, arginin alone contains the guanidin nucleus $H_2N.C(NH).NH$ — which is characteristic of creatin. In this case, however, an explanation must be sought in other factors. Cystin feeding causes creatinuria only when the sulphuric acid formed by the oxidation of its sulphur is left unneutralized; when neutralized, the creatinuria promptly disappears, though this is not the case after feeding a protein or arginin. Acidosis thus may also be a factor responsible for creatinuria.

Some time ago, Denis² reported the production of creatinuria by protein feeding in a man with exophthalmic goiter, in which oxidative processes are markedly accelerated. Feeding with thyroid has produced the same result in pigs, according to Gross and Steenbock.³ They formulate the view that augmented breakdown of protein, whether of food or endogenous origin, liberates arginin, the creatin precursor in unusual amounts. Creatin arises when oxidation is augmented. Creatinuria is looked on as the result of the accumulation of creatin up to and beyond the threshold of its excretion. Usually, Gross and Steenbock add, this is prevented by the prevalent rate of conversion of creatin into creatinin, which appears to be an invariable reaction.

THE INTERPRETATION OF METABOLISM DATA

Whenever a science becomes more exact it is likely to make substantial progress; its usefulness in applied fields is also usually destined to be greatly enhanced. Thus the ophthalmologist is able to render invaluable service to innumerable persons because he can measure their eye defects with considerable accuracy and arrange corresponding corrections for them. By the application of careful measurements, a variety of standards or constants are becoming established in connection with practical medicine. We speak of normal temperature and normal pulse rate; on them in part are based diagnostic and therapeutic considerations of febrile states or of bradycardia and tachycardia, respectively. More recently, so-called normal excretory rates for the kidney function and standards for the alkali reserve for the blood have become established, while facts of normal blood sugar concentration and blood cell count preceded this information.

The latest of the "standards" fixed by accurate measurement is the basal metabolic rate. This concerns the heat which represents the energy exchange per hour and unit of surface area in a person at complete rest without food. Important as such factors are already

2. Denis, W.: *J. Biol. Chem.* **30**: 47 (May) 1917.

1. Gross, E. G., and Steenbock, H.: Creatinuria, II, Arginine and Cystine as Precursors of Creatine, *J. Biol. Chem.* **47**: 33 (June) 1921.

3. Gross, E. G., and Steenbock, H.: Creatinuria, III, The Effect of Thyroid Feeding upon Creatinuria, *J. Biol. Chem.* **47**: 45 (June) 1921.

destined to become, they must not be permitted to assume an unwarranted significance in the mind of the less experienced practitioner who is quite naturally and justifiably eager to have a standard by which otherwise indefinite states of well-being can be gaged. Means¹ has recently well pointed out that none of the physiologic constants are constant in an absolute sense. The body temperature has a normal range of variation in the course of the day. In a lesser degree this is true of the pulse rate; yet the limits are understood well enough to permit a useful estimate of what constitute pathologic conditions. The same reasoning, Means argues, may be applied to the basal metabolism. Only here, he adds, the normal range of variation is distinctly less than in the case of the pulse. It is more nearly constant than is the pulse, and is therefore a more accurate index of disturbed function than is the pulse, at least as between different individuals. Yet in interpreting the significance of metabolism findings in patients, Means warns further, we must correlate them with clinical findings and weigh their probable importance in comparison with every other sort of evidence in any given case, exactly as we should do in interpreting any other laboratory or special finding, such as roentgen-ray, phenolsulphonephthalein tests, blood sugar data, and the like. Simplified technic cannot absolve the clinician from the duty of thoughtful interpretation of figures presented to him by a mechanical laboratory worker. We must take to heart the criticism of one who has been most instrumental in securing metabolism data for the medical profession. Even the most skilled and most experienced clinicians, he said publicly at the Boston session of the American Medical Association, make at times sorry exhibits of their use of apparatus. The latter is easy to use. No effort of the inventors can, however, make up for the deficiency of theoretical consideration of the significance of basal metabolism measurement on the part of the user of readily acquired statistics.²

Among the factors which alter metabolism is the peculiar effect of ingested food. This increased heat production, which is greatest after the intake of proteins but not wanting in the case of fats and carbohydrates also, was designated "specific dynamic action" by Rubner, who first described it in detail. It is now known that thyroid extracts, the hormone thyroxin and epinephrin also give a specific stimulus to metabolism. Following the advice of a number of American investigators, it is proposed to reserve the expression "specific dynamic action" to foods alone, as it was originally employed, and to apply the term "calorigenic" action to the effect of special substances, such as have been indicated. Thus, the calorigenic action of thyroxin is one of the newer facts clearly demonstrated by the study of basal metabolism.

HARD WATERS AS A PHYSIOLOGIC SOURCE OF CALCIUM IN THE BODY

The human body contains about 1 per cent. of the element calcium, or a total of nearly 2 pounds (about 1 kg.), most of which is represented by calcium phosphate deposited in the skeletal structures. This is assuredly a very large supply of an inorganic material for physiologic purposes. How adequate this seeming abundance really is, however, will depend on the extent to which drafts are made on it in the every-day performances of the living body. The daily "waste" has been estimated to exceed 0.5 gm., so that the normal supply would not be exhausted in less than two or three years if it were entirely available for physiologic uses. Obviously, a growing deficit cannot be tolerated indefinitely; hence one is led to inquire whether the daily losses are ordinarily made good by the majority of mankind in their usual regimen, or, if not, to what extent deprivation of lime can continue before untoward evidences manifest themselves.

Pregnancy and lactation have long been recognized as conditions in which there is an unusual need of lime for the growth of the fetus, on the one hand, and, on the other, for the production of the lime-bearing milk of the mother. The daily requirement for the development of the fetus at four months, for example, is at least 150 mg. of calcium; 1 liter of milk includes approximately 200 mg. of this element. It is quite conceivable, therefore, as has been pointed out more than once in *THE JOURNAL*, that shortage of calcium may become a reality if the diet is not well selected; for meats and cereals, fats and sugars—all of which enter so largely into present day rations in this country—are at best very inadequate sources of lime.

Lime salts are found in certain waters which are designated as "hard" when the content of calcium exceeds a minimum. Whether hard waters actually represent any noteworthy source of calcium for human needs is not clearly established. Recently the pharmacologist H. H. Meyer¹ of Vienna, a careful scientific observer, has presented statistics regarding the military fitness of young men from different regions in Europe considered in relation to the quality of the water supplies at their homes. His data are interpreted to indicate a smaller incidence of diseased teeth and a larger proportion of persons with healthy teeth in areas where harder potable waters are used. Meyer even ventures the statement that, in general, the percentage of young men fit for service in the armies was larger in calcareous regions than in those in which other formations prevail. He also cites specific instances of a "deterioration" in the quality of the recruits at Gotha after the population was compelled to change its supply of drinking water from one of hard quality to softened water.

1. Means, J. H.: Determination of the Basal Metabolism, *J. A. M. A.* **77**: 347 (July 30) 1921.

2. Benedict, F. G.: The Measurement and Standards of Basal Metabolism, *J. A. M. A.* **77**: 247 (July 23) 1921.

1. Meyer, H. H.: Ueber Kalktherapie, *Oesterreich. Ztschr. f. Stomatol.* **18**, No. 11, 1920.

It is admittedly unwise to place undue stress on limited statistics; nevertheless, the suggestions embodied in the preceding comments need not be passed without some attention to their possible wider significance. The teeth are only a small part of the bodily structures that may suffer from inadequate supply of calcium, although defects or deficiencies may be more conspicuous in the mouth than elsewhere. Experience has shown that it is not easy to enrich the body suddenly by therapeutically prescribed lime compounds. We must therefore learn the "natural" ways in which the calcium equilibrium is ordinarily prevented from showing a negative balance in man.

SIMPLIFICATION OF THE INTESTINAL FLORA

At birth the alimentary tract and its contents are sterile; within only a few hours, however, they are invaded by bacteria which gain entrance from the environment of the infant through the mouth and anus. Thenceforth a succession of conditions representing bacterial invasions and development of varied types furnish the data for the story of alimentary bacteriology. Those chapters which deal with baneful micro-organisms, such as are responsible for dysentery and typhoid fever, have been extensively elaborated; but, as a recent writer has reminded us, "the more subtle bacterial processes which take place in the intestine, and the laws which govern the preponderance of one type of bacteria over another, have as yet been but little understood."¹

It has, of course, long been recognized that alimentary changes which can be brought about by dietary factors may influence the character of the intestinal flora. The problems which this aspect of the subject presents offer large difficulties of solution because of the fact that in the feces, which ordinarily are the only alimentary contents available for examination, a large proportion of the intestinal bacteria are found dead. MacNeal, Latzer and Kerr² have estimated the relative number of viable bacteria in human feces, as compared with the total bacterial count, at only about 1 to 3,000. Obviously, it is not easy to conclude from the character of the few survivors what the true conditions of bacterial life may have been in the upper reaches of the bowel. Nevertheless, in view of the indisputable changes in the intestinal flora which have been noted to follow radical changes in diet, one is impelled to admit some relationship between the chemical character of the ingested food and the activities of the intestinal micro-organisms. The consensus is probably expressed by the statement that "a proteolytic or putrefactive flora results from high protein feeding and a carbohydrate or fermentative active flora develops when the protein intake is low and the diet

consists largely of carbohydrates." Accordingly, it ought to be possible to vary the micro-organisms to some degree at will.

Metchnikoff adopted what he believes to be a different scheme, namely, that of introducing cultures of viable bacteria as such. This is his well known project of bacterial implantation. Believing that poisons of putrefactive origin are detrimental to human well-being, he proposed, as it has been fancifully expressed, to fight the proteolytic bacteria on their own battlefield by the introduction of an antagonistic microbic army, the lactic acid bacilli. The best scientific evidence of the present day indicates, however, that Metchnikoff's favored bacillus, *B. bulgaricus*, of which great therapeutic results have been expected, is incapable of accommodating itself to intestinal conditions. The latest records of such failures have come from Rettger and Cheplin³ of Yale University. They have shown, however, that a related micro-organism, *B. acidophilus*, which is actually of intestinal derivation and not originally foreign to the alimentary tract, as is the Bulgarian bacillus, lends itself readily to implantation in the intestinal canal. Although such results can be attained through ingestion of living cultures, they are far more readily secured by special alterations in the composition of the diet, foremost of which is the administration of two carbohydrates which promote growth of this type of micro-organism, namely, lactose and dextrans. Other common carbohydrates are not equally successful.

The most plausible explanation of the uniquely favorable influence of lactose or dextrin feeding on the implantation of *B. acidophilus* is one which, according to the Yale bacteriologists, rests upon the fact that these foods persist as such farther along the alimentary tract so that they are not entirely absorbed or destroyed before reaching the large intestine. There they establish an optimum environment, if we accept Rettger and Cheplin's interpretation, by serving as a readily available source of energy for *B. acidophilus*. The reason diet alone succeeds in fostering this predominance of an organism to the practical exclusion at times of the other bacterial inhabitants of the lower gastro-enteric tract lies in the fact that *B. acidophilus* is normally present in the intestine, though in small numbers, and needs merely the stimulus of a favorable medium to thrive. Milk promotes this result because it is a solution of lactose.

Whether there are special conditions under which the implantation of *B. acidophilus* and the repression of the proteolytic intestinal bacterial invaders are undeniably beneficial remains to be learned. The present uncertainty of the clinical aspects of the subject need not detract from the deserts of the scientific findings respecting *B. acidophilus*; nor should the latter be too hastily translated into a new sour milk cult. Kendall³

1. Rettger, L. F., and Cheplin, H. A.: A Treatise on the Transformation of the Intestinal Flora, with Special Reference to the Implantation of *Bacillus Acidophilus*, New Haven, Yale University Press, 1921.
2. MacNeal, W. J.; Latzer, L. L., and Kerr, J. E.: The Fecal Bacteria of Healthy Men, *J. Infect. Dis.* **6**: 123-169; 571-609, 1909.

3. Kendall, A. I.: Certain Fundamental Principles Relating to the Activity of Bacteria in the Intestinal Tract: Their Relation to Therapeutics, *J. M. Res.* **25**: 117-187, 1911.

suggested some time ago that feeding liberal amounts of lactose to infants might lead to excessive development of *B. welchii*, an inhabitant of the alimentary tract and by no means a desirable one. This is denied by Rettger and Cheplin, who have repeatedly found that "there was always a marked reduction, and at times a complete elimination, of not only *B. welchii*, but of *B. coli* as well." The nearest competitor of *B. acidophilus* is *B. bifidus* of Tissier, which is dominant in the stools of infants; but it is not so easily cultivated and has a higher energy requirement. The possibility of simplifying the fecal flora in these comparatively harmless ways deserves further earnest attention.

Current Comment

CONGRESS PROHIBITS PRESCRIPTION OF BEER

House Bill 7294, passed by the House of Representatives, June 27, and by the Senate, August 8, amends the Volstead act by specifically providing in Section 2 that "only spirituous and vinous liquor may be prescribed for medicinal purposes." It also provides that "permits to prescribe and prescriptions for any other liquor shall be void. No physician shall prescribe nor shall any person sell or furnish on any prescription, any vinous liquor that contains more than 24 per centum of alcohol." Physicians are not permitted to prescribe more than one fourth of a gallon of vinous liquor, or any liquor that contains more than one-half pint of alcohol, for use by any person within any period of ten days. Physicians are limited to 100 prescription blanks for every ninety days. Any physician desiring to issue any more prescriptions must prove to the commissioner of internal revenue that for some extraordinary reason a larger number of prescriptions is necessary. The law also contains a number of changes in the other provisions of the Volstead act which are not of special importance to physicians. While the prohibition of beer as a medicine will undoubtedly clarify and improve the relations of physicians to the internal revenue bureau, the limitation of the number of prescriptions to 100 in ninety days, or a little more than one a day, is of still greater importance. This will permit latitude to those physicians who are desirous of prescribing whisky under conditions which they believe justify it, but will put a stop to the practice of a few physicians who have written an unlimited number of prescriptions for one-half pint of whisky.

SWEET LAW REORGANIZES VETERAN RELIEF

The passage of the Sweet Bill by both Houses of Congress and its approval by the President on August 9 completely reorganizes the machinery for veteran relief. It establishes an independent bureau under the direct control of the President, to be known as the Veterans' Bureau, the director of which shall be

appointed by the President and subject to confirmation by the Senate. The powers and duties of the director of the Bureau of War Risk Insurance in the Treasury Department are transferred to the new bureau and the office of the director of the Bureau of War Risk Insurance is abolished. All the personnel, facilities, property and equipment of the United States Public Health Service transferred to the Bureau of War Risk Insurance by order of the Secretary of the Treasury on April 19, 1921, and all the Rehabilitation Division of the Federal Board of Vocational Education are transferred to the Veterans' Bureau and put under the control of the director, with the provision that the commissioned personnel of the United States Public Health Service detailed to the Veterans' Bureau shall hold the same rank, receive the same pay and be subject to the same rules for promotion as in the Public Health Service. The director is instructed to establish a central office in the District of Columbia, and not more than fourteen regional offices nor more than one hundred and forty suboffices for administering the act. The director, subject to the instructions of the President, is to be responsible for the proper examination, medical care, treatment, hospitalization, convalescence and after care, welfare, nursing, and vocational training, and such other services as may be necessary for the beneficiaries of the Bureau of War Risk Insurance. He is authorized to utilize the facilities of the Public Health Service, the War, the Navy, and the Interior departments, the Soldiers' Home, and such other governmental facilities as may be made available. He is also authorized to maintain an inspection service and to standardize methods of examination, medical care, treatment, hospitalization and convalescent care, and to provide special hospital facilities for the proper medical care and treatment of the beneficiaries. The passage of this act takes the entire problem of medical and hospital care of War Risk Insurance men out from under the Treasury Department and puts it under a director appointed by the President, and responsible to him alone. With practically unlimited authority there should be no question as to the responsibility either for the success or failure of efforts for veterans' relief.

A SERVICE RENDERED BY CHIROPRACTORS

Good frequently results from opposition and it seems that actual benefit may result from the attacks on scientific medical practice made by chiropractors in their attempts to secure exemption from medical practice laws. Most states have excellent laws regulating the practice of medicine, but the constitutionality of many of these laws has not been tested in the courts. Thanks to the chiropractors, not only are these tests being applied, but the decisions rendered are tending to show more clearly what constitutes the practice of medicine. The decisions also serve to emphasize the necessity of a basic scientific training for the practice of the healing art. A more vigorous enforcement of medical practice laws will naturally be vigorously contested in some instances. Those interested in scientific medi-

cine, however, need not fear the final outcome of these tests. Chiropractors have been unhindered in their practice for so long that they have come to consider themselves immune from medical practice laws, as well as exempt from the educational qualifications recognized as necessary for the safe and efficient practice of the healing art. Any law which restricts them, therefore, is declared to be "a discrimination," and on that claim they undertake to have the law declared unconstitutional. In fact, the available evidence indicates a nation-wide campaign to invalidate medical practice laws. Supreme court decisions have recently been handed down in two states. In Illinois, a faulty wording of the law was found and the practice act was held¹ to be invalid. In Ohio, however, the decision not only upheld the constitutionality of the practice act, but also clearly set forth the principles underlying the practice of medicine and threw an important light on faulty decisions by other courts. The sooner the various questions pertaining to the regulation of the practice of medicine are tested out in the courts, the better. If the phraseology in any practice act is faulty, that fact should be promptly pointed out. The tests should be applied also to the laws establishing separate boards for certain groups of practitioners and lower educational standards than are required of physicians. These laws are clearly class legislation and discriminate against physicians. Just as soon as the basic and essential needs are presented to the judiciary, an outcome favorable to education and common sense will be assured. So far as medical practice laws have been carried to the national supreme court, the decisions² have swept aside false theories and revealed the necessity of a scientific training for those who undertake to practice the healing art.

TRANSITORY FEVER IN THE NEW-BORN

In 1895, Holt³ of New York described the occasional occurrence of a rise of body temperature, independent of any evident infectious process or localized disturbance, in infants during the first few days of life. His interpretation of the condition encountered during the characteristic period of weight loss in the new-born is indicated by the expression "inanition fever" which was used in the early accounts. Since then the phenomenon has repeatedly been described by pediatricians both in this country and abroad. The available statistics show an incidence of increased temperature in 4 per cent. and upward of the infants examined, aside from those exhibiting febrile reactions attributable to recognized pathologic causes. There is no justification for ascribing a septic origin to the so-called inanition temperature. Several observers have been inclined to connect the febrile state directly with the loss of body weight, or in ultimate analysis with the effect of products of tissue destruction that must occur before the infant begins its normal gains in weight. The higher temperatures are by no means always coincident with the largest declines; and, conversely, con-

siderable decreases in weight frequently continue without any of the abnormal temperature symptoms. Again, it has been alleged, particularly by German writers, that the loss of water attending the decrease in weight of the new-born occasionally causes an interference with temperature regulation analogous to the so-called "salt fever." In this sense the condition might be represented as a thirst fever, the result of interference with the usual physiologic heat dissipation. This hypothesis also rests on a rather slender basis. Grulee and Bonar⁴ of Chicago, who also have rejected the theories of a regular relationship between the transitory fever of the new-born and either the percentage of weight loss or the quantity of fluid ingested, have concluded that the temperature elevation at this early period may most likely be due to absorption of some protein products, bacterial or other, from the intestines of the infants. The meconium is rich in protein material prone to putrefactive change as soon as bacteria reach the lower bowel. According to Grulee and Bonar, the subsidence or transitory character of the fever may be accounted for by the addition of breast milk to the diet whereby the putrefactive processes in the intestine become diminished. "Inanition fever" would therefore be a misnomer for the phenomenon described.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Meeting of County Health Officers.—Outstanding features of the meeting of the county health officers of Alabama, held at Montgomery, July 25-26, were the discussion of the new plan of doing malarial control work through the county health officers, on a county-wide basis, and the announcement of a plan of cooperation, between the state board of health and the state board of education, for school sanitation and the establishment of courses in hygiene in the schools. Dr. Samuel W. Welch, state health officer, presided at the meeting, and Dr. C. W. Cheyney, director of the Alabama State Board of Health Laboratory, gave a demonstration of the proper method of preparing specimens to be sent to the laboratory for examination.

CALIFORNIA

Personal.—Robert A. Millikan, Ph.D., professor of physics, University of Chicago, has been appointed as chairman of the executive council of the California Institute of Technology and director of the Norman Bridge Laboratory of Physics. Approximately \$100,000 has been guaranteed for the annual support of the laboratory, and in addition the institute has been recently promised \$200,000 for an extension of the laboratory, and \$50,000 for a library. It has also been announced that the Southern California Edison Company will erect a high-tension laboratory, representing an investment of \$75,000, on the campus of the institute. With the coming of Mr. Millikan to the institute in October, a large project of research work will be undertaken, which will involve the close cooperation of the Mount Wilson Observatory, the Norman Bridge Laboratory of Physics, and the Gates Chemical Laboratory of the Institute.

1. Illinois Practice Act of 1917 Declared Void, this issue, 639.

2. The United States Supreme Court and Medical Cults, Current Comment, J. A. M. A. 64: 1431 (April 24) 1915.

3. Holt, L. E.: Arch. Pediat. 12: 560, 1895.

4. Grulee, C. G., and Bonar, B. E.: Some Observations on the So-Called Inanition Temperature of the New-Born, Am. J. Dis. Child. 22: 44 (July) 1921.

ILLINOIS

Personal.—Dr. Ira C. Copelan, Springfield, has been appointed as chief of the division of social hygiene to succeed Dr. George G. Taylor, who recently resigned to accept full-time duty with the U. S. Public Health Service.

Institution for Crippled Children Filled.—Quarters for crippled children, that were recently opened in connection with the St. John's Sanatorium, located at Riverton, have been filled to capacity. In all there are forty-two children who are now under treatment there.

Poliomyelitis Increases.—The state department of public health, July 15, issued a statement regarding a rather unusual increase in the number of cases of poliomyelitis. During July, there were ninety-eight cases reported, as against nine cases for the same month last year. While the situation is not alarming, the department has urged health officers and physicians to be on the alert for suspicious cases and to report them promptly.

Entries for Better Babies Conference Reach Maximum.—The maximum limit of 1,000 entries for the sixth annual Better Babies Conference, to be conducted by the state department of public health in connection with the state fair at Springfield, was reached by noon Friday, August 12, the last day of the period set for receiving applications. This represents the greatest number of entries ever filed by the department and indicates the phenomenal growth of the better baby conference movement in Illinois.

Typhoid on Dairy Farms.—Prompt action on the part of state and local health officials doubtless prevented an epidemic of typhoid fever in Decatur, recently, by cutting off the sale of milk from two dairy farms where several cases of typhoid fever were located. An investigation brought to light the usual situation found under such circumstances. Carriers were located on both farms. The individual in each case gave a history of typhoid fever during the past five years, and a laboratory test showed positive reactions for both.

INDIANA

Personal.—Dr. Rollin H. Bunch, Muncie, was nominated for mayor of Muncie on the Democratic ticket in the city primary held there recently.

Vital Statistics of Miners.—Dr. H. R. O'Brien of the U. S. Public Health Service arrived in Indianapolis recently from Washington, D. C., to begin the collection of vital statistics pertaining to the life and health of miners and quarrymen in Indiana.

IOWA

Hospital News.—The new Dubuque County Hospital for the treatment of tuberculosis was opened, August 13.

Personal.—Dr. Frank T. Launder, Garwin, has been made president of the state board of health, to succeed Dr. Walter L. Biering, Des Moines, who retired from the board.

Precautions Against Epidemic.—Because of deaths from infantile paralysis in Iowa City, the board of health suspended Sunday schools and closed all public gatherings except at churches and moving picture shows, where persons under 18 were not admitted, on August 7, as a precaution against an epidemic.

MAINE

Clinic at Fairfield Sanatorium.—The second annual clinic for physicians was held at Fairfield, August 1-5, under the auspices of the trustees of the tuberculosis association, in cooperation with the Maine Medical Association, the Maine Public Health Sanatorium, and the state department of health. These meetings constitute the first attempt at graduate medical instruction in Maine and, since the closing of Bowdoin Medical School, furnish the only opportunity for medical study in the state. Dr. Edward O. Otis, professor of pulmonary diseases and climatology, at Tufts Medical School, Boston, and Dr. Samuel Ellsworth, roentgenologist, Boston City Hospital, directed the morning and afternoon work. Evening lectures were given by Dr. James A. Miller, New York; Dr. Fred T. Lord, Massachusetts General Hospital; Dr. Robert Greenough, Harvard Medical School and Brigham Hospital for Chronic Diseases, and Dr. Otto Lowy of the U. S. Public Health Service, Newark, N. J.

MASSACHUSETTS

Service for Tropical Diseases.—The trustees of the Boston City Hospital have authorized the organization of a service for the diagnosis and treatment of cases of tropical diseases,

including certain parasitic and infectious diseases, rarely seen here and more common in foreign countries. The work of the service has been undertaken by Dr. George C. Shattuck, who will also assume the duties of assistant professor of tropical medicine, at the Harvard Medical School, September 1.

NEW JERSEY

Rehabilitation Clinic.—The commissioner of labor has authorized the establishment of a rehabilitation clinic at Trenton, for the physically handicapped in industry. The labor department will establish an employment service for men and women, in connection with the bureau.

NEW YORK

Personal.—Dr. Charles W. Selover, Canandaigua, has been appointed superintendent of the Ontario County Tuberculosis Hospital to succeed Dr. William A. Bing, retired.

Division of Sanitation Supersedes Division of Sanitary Engineering.—By recent legislative amendments to the public health law the division of sanitary engineering of the New York State Department of Health was changed to a division of sanitation and the work of passing upon plans for sewerage and sewage disposal transferred to the state engineer.

Tribute to Dr. Trudeau.—On the morning of August 7 a memorial window in the Episcopal Church of St. John's in the Wilderness, at Paul Smiths, N. Y., the gift of William Rockefeller, was dedicated to the memory of the late Dr. Edward Livingston Trudeau. Dr. Trudeau started the building of this church four years after his first visit to the Adirondacks.

Farmers' Sanitary League Protects Vacationists.—Dr. Edward Goodwin, sanitary supervisor of the Jewish Agricultural Aid Society, has organized what is known as the Farmers' Sanitary League in a district of many miles around Ellenville, N. Y. Under the rules of the league no farmer or boarding-house keeper can obtain membership in the organization unless he subscribes to and rigidly observes the sanitary code which the league has adopted. This code regulates the disposal of garbage and other refuse, sewage disposal, fly prevention, and water supply. The code must be conspicuously posted in the farmhouse, and periodic visits are made by Dr. Goodwin to insure compliance with this self-imposed code. Officers of the state health department are cooperating in this activity and every farmer who complies with all the requirements receives a certificate good for one year. This is the first movement of the kind in the state and gives assurance to vacationists and travelers that an effort is being made to insure them from communicable disease in such communities.

New York City

Jury Acquits Physician.—Dr. Fred Van Vliet, who was recently tried before Judge Rozalsky on a charge of having attempted an illegal operation, was acquitted by the jury.

Plans for New Bronx Hospital.—Plans are being drawn for a new \$2,000,000 city hospital which will be erected in the Bronx. The building will be located on Walton Avenue, between One Hundred and Sixty-Sixth and One Hundred and Sixty-Seventh streets, and will contain 500 beds. The contract will be let in the fall, and it is expected that the building will be ready for occupancy by spring.

Bronx Physicians' Club.—To promote good fellowship and the betterment of economic conditions for physicians, to obtain legislation for the welfare and improvement in the health of the people and to secure uniform medical education, the Bronx Physicians' Club has been organized and incorporated. It is planned to erect a public building at a cost of about \$500,000 which will be open to physicians of New York and neighboring states.

Fraudulent Tuberculosis Cure Promoter Prosecuted.—The *Bulletin* of the New York City Health Department, August 6, states that Dr. Benjamin Block, against whom the department brought action, some time ago, for violation of Section 118 of the Sanitary Code, has been successfully prosecuted. Evidence was presented at the trial which showed conclusively that Dr. Block claimed that a preparation made by him was a specific cure for tuberculosis. These claims were proved to be fraudulent and, as a result, a \$500 fine was imposed by the court. An analysis of the preparation showed it to be a shotgun mixture of many well known pharmaceuticals.

Instruction for Ship Doctors.—The Broad Street Hospital will open a graduate school of medicine, October 15, which

will provide instruction for ship doctors and out-of-town physicians in the advancements made in medicine and surgery. An opportunity will be given to study the methods of treatment and prevention of tropical diseases, as the hospital gets cases of malaria, leprosy, typhus fever and other tropical diseases. Dr. Charles E. Sibley, who has had eight years' experience with tropical diseases in the Philippines, will head this department. Each course will last one month, and arrangements will be made by which ships' surgeons in port for a week can get the entire course in weekly sections. The new school expects to be able to take care of from 100 to 200 students. The officers of the graduate school are: director, Dr. A. J. Barker-Savage; president, Dr. William H. Dieffenbach; first vice president, Dr. Robert T. Morris; second vice president, Dr. Lefferts A. McClelland; third vice president, Dr. Walter Gray Crump; secretary, Dr. Maximilian Stern.

NORTH CAROLINA

Hospital News.—The president and board of trustees have announced to physicians of the state the opening of the North Carolina Orthopaedic Hospital at Gastonia. Charity service will be rendered to children who are unable to pay, and a moderate charge will be made to others.

OHIO

Public Health Conference.—The second annual conference of health commissioners with the state department of health will be held, September 12-16, at Columbus. The annual meetings of the Mississippi Valley conference on tuberculosis and of the Ohio Public Health Association will be held in Columbus at the same time.

OREGON

Personal.—Dr. Ross H. Skillern, Philadelphia, was the guest of the Portland Oto-Ophthalmological Society for the first week of August, during which time he gave an intensive clinical and didactic course on the accessory nasal sinuses.

PENNSYLVANIA

Philadelphia

Personal.—Dr. Louis Brody sustained a fractured elbow when he was knocked down by a twisting hose at a fire.

Campaign to Guard Motherhood.—A campaign for better protection of mothers before and immediately after childbirth has been started by the department of public welfare. This step was decided on because investigation of records showed 1,635 deaths in this city during the last six years among mothers, due directly to accidents or disease incident to childbirth.

TEXAS

Personal.—Dr. Sarah Rudnick, Houston, after a year with the American Commission in Serbia, is acting as house physician, for the summer, at the American Memorial Hospital, Rheims, France. Dr. Rudnick will return to America in October.

UTAH

Cooperation for Health Work.—Representatives of the Utah Public Health Association, the state board of health, and the U. S. Public Health Service met with the Webber County Medical Association, August 3, at Ogden, for the discussion of a program for investigation of tuberculosis and child hygiene work, on a state-wide basis. A traveling clinic has been equipped for the purpose, and Surg. Carlisle P. Knight, Jefferson City, Mo., has been detailed to take charge of it.

WISCONSIN

Personal.—Dr. Eduard Miloslavich, formerly director of pathology, Institute of the Vienna (Austria) Military Hospital, has been appointed a full-time professor of pathology and bacteriology at the Marquette University School of Medicine, Milwaukee.

"Home-Coming" Meeting.—The State Medical Society of Wisconsin will celebrate its seventy-fifth birthday by a "home-coming" meeting to be held, September 7-9, in Milwaukee. All former Wisconsin physicians are invited to return to the Badger state at this time; and they will confer a favor by sending their names and present addresses to Dr. Rock Sleyster, secretary, Wauwatosa.

CANADA

New Building for Anatomy.—A new anatomic building for the University of Toronto is to be erected on the west side of Queen's Park, and is to be ready for the session of 1922-1923.

Dominion Medical Council.—Dr. Robert G. Brett, lieutenant-governor of Alberta, has been elected president of the Dominion Medical Council; Dr. Louis P. Normand, Thre Rivers, Quebec, vice president, and Dr. Robert W. Powell, Ottawa, secretary (reelected).

Personal.—Dr. William A. Young, Toronto, has returned from spending several weeks at Asbury Park, N. Y.—Dr. Jessie A. McBean, Toronto, has left for China.—Dr. John W. Shaw, Clinton, Ont., has been elected president of the Ontario Health Association, and Dr. J. J. Middleton, Toronto, secretary.

Hospital News.—The west end of the city of Toronto is to have a new hospital by the conversion of the Sacred Heart Orphanage, owned by the Sisters of St. Joseph. It will have grounds of 9 acres and is situated at Sunnyside, immediately overlooking the extensive board walk and driveway along the Lake Ontario front.

Reorganized Medical Alumni Association.—The medical college alumni of Manitoba at Winnipeg has been reorganized with Dr. Neil J. Maclean as president; vice president, Dr. William W. Musgrove, and secretary-treasurer, Dr. Ross Mitchell, at 811 Boyd Building, Winnipeg. Dr. Samuel Prowse, the dean of the medical college, states that the requirements for securing the \$500,000 of the Rockefeller Foundation will be fully met and another new building will be erected on the college grounds. Dr. Harry J. Watson, Winnipeg, has been elected convener of a special committee of the Alumni Association to raise \$15,000 for this purpose.

GENERAL

Congress on Otology.—An international congress on otology has been planned to meet in Paris in the latter part of July, 1922.

American Roentgen-Ray Society.—The twenty-second annual meeting of the society will be held, September 27-31, at Washington, D. C.

Uniform Endorsement Certificates Adopted.—The Board of Medical Examiners of North Carolina, June 23, adopted the uniform reciprocating endorsement certificate prepared last March by a special committee of the Federation of State Medical Boards. The licensing boards of the District of Columbia, Georgia and Idaho have signified their intention of adopting a similar form of certificate.

Western Society of Psychologists.—The society, meeting as a part of the convention of the American Society for the Advancement of Science, held at Berkeley, Calif., August 5, elected Dr. Lewis M. Terman, Leland Stanford Junior University, San Francisco, as president of the Western Society of Psychologists. Dr. E. C. Coleman, University of California, was made vice president, and Dr. Edmund Conklin, University of Oregon, secretary-treasurer.

American Gastro-Enterological Association.—At the twenty-fourth annual meeting of the association, held at Boston, June 6-7, the following officers were elected for the coming year: president, Dr. Allen Jones, Buffalo; vice presidents, Drs. George B. Eusterman, Rochester, Minn., and R. Walter Mills, St. Louis; secretary, Dr. Arthur F. Chace, New York; treasurer, Dr. Clement R. Jones, Pittsburgh, and recorder, Dr. Ernest Gaither, Baltimore.

Personal.—Dr. Olof Larsell, former associate professor of zoology at Northwestern University Medical School, Chicago, has been appointed professor of anatomy at the University of Oregon Medical School and assumes his new duties, July 28.—Dr. P. H. Aaser, director of the Norwegian State Hygienic Laboratory, Christiania, is visiting prominent laboratories in the United States for the purpose of studying their organization, equipment and functions.—Dr. Murayama of Japan is visiting various medical institutions in this country.

Willis-Campbell Prohibition Bill Goes to Conference.—The Willis-Campbell bill prohibiting the sale of beer for medicinal purposes passed the Senate by a vote of 39 to 20. It had previously been adopted by the House of Representatives and now goes to conference. The prohibition of physicians prescribing beer to patients remained virtually the same in the measure as it was passed by the House. Wine prescriptions were also limited to one-fourth of a gallon and

spirituous beverages to one-half pint to an individual in ten days. No change was made in the House clause fixing 100 prescriptions as the maximum for a physician in ninety days except under special order from the prohibition commissioner. An amendment made by the Senate not dealing with the medical feature of the bill prohibits searches or any attempts at searching of private property and premises without a search warrant.

United States Public Health Service Officers on Duty in England.—Congestion in the ports of the United Kingdom and the recent outbreak of typhus in Russia and the Balkans has caused the U. S. Public Health Service to send American surgeons to England to take charge of inspection and handling of emigrants to America and the fumigation of ships for rats and vermin. No sailing permits are issued to second and third class passengers for the United States until they have submitted to medical inspection. Dr. William J. Pettus, Charleston, former assistant surgeon-general of the United States, is in general charge. Dr. Burr Ferguson, Fairfield, Ala., has charge of the ports at London and Southampton, and Dr. N. B. Robinson, Carter, Tenn., at Liverpool.

National Health Council Issues Biweekly Reports on National Health Legislation.—The National Health Council has been issuing biweekly summaries of national legislation on public health since last March. These summaries abstract all health bills when introduced and report progress on these bills. The first eight statements, covering the period from March 4 to July 7, 1921, have listed about eighty bills, dealing with some phases of public health. Forty-four of these have been discussed at length and their progress carefully followed. These reports were intended primarily for members of the council but the demand for them has been so great that arrangements have been made to supply copies to others interested in keeping track of pending legislation. Further information regarding these bulletins can be secured by addressing the Washington office of the National Health Council, 411 Eighteenth Street N.W., Washington, D. C.

Resolutions of the Medical Board of the Johns Hopkins Hospital.—The resolutions limiting the fees of surgeons operating at the Johns Hopkins Hospital and the fees for hospital visits made by physicians recently passed by the trustees on the recommendation of the Medical Board, are reported to be:

WHEREAS, The trustees of the Johns Hopkins Hospital desire that all patients may leave the hospital feeling that they have received not only proper professional, nursing and administrative service, but also that they have been dealt with fairly in every particular, including charges for medical and surgical service; and

WHEREAS, The trustees believe that the members of the staff likewise desire this result and will continue to cooperate in carrying out the policy of the hospital as considered for the best interest of the patients and the hospital; therefore, be it

Resolved, That the following regulations be adopted:

1. That members of the staff shall bring promptly to the attention of the director of the hospital any conditions or circumstances which they feel justify criticism and should be corrected, also any just complaints uttered by their patients or the friends and relatives of patients, applying either to the professional service or to the management.

2. That all fees to be charged for services rendered any patients in the private rooms of the hospital shall be subject to the jurisdiction of the committee on fees, and shall in no case exceed the amounts stated below, except where the consent of said committee shall have been obtained; it being understood, however, that all fees charged shall in no case impose a hardship upon those responsible for their payment and shall be arranged in advance of admission wherever possible, or as soon thereafter as possible.

(a) Professional service by physicians, \$35 per week, which includes at least three visits by the patient's physician.

(b) Consultation fees, \$25.

(c) Maximum fee for major operation, \$1,000.

(d) No consultation fee shall be charged patients entering the public wards when the examination has been made anywhere in the hospital.

3. That not more than 10 rooms shall be at the disposal of any one member of the staff at one time if the private rooms are in demand by other members of the staff having the same privilege.

Further Opposition to Sheppard-Towner Bill.—Continuing her opposition to the Sheppard-Towner Maternity Bill, Miss Alice Robertson, the only woman member of Congress, has declared in a signed statement that this bill in "its salient feature is not tangible help of the kind the general public infers would be given, but the establishment of an autocratic, undefined, practically uncontrolled, yet federally authorized center of propaganda." Miss Robertson challenges the accuracy of statistics presented by the advocates of the bill, saying that "they might find difficulty in passing the Ananias test. Because of the inexplicable failure of the majority of states to keep an official record of infant birth and mortality, necessary data for the required work could not be obtained. Registration gives the new-born a national and a state entity. . . . Because of lack of registration, the United States can only infer and conjecture

without facts." Miss Robertson attacks Senator Sheppard of Texas, one of the authors of the bill, and points out that in Texas there is no birth registration law and no accurate information on the subject of infant mortality. The same statement is made by her also with reference to Iowa, the home of Congressman Towner, co-author of the bill. She said in part:

We can only conjecture that the mortality of mothers and infants in this nonregistered state is probably much greater than is dreamed by its splendid citizenry, and it might not be presumptuous to suggest that the women of Iowa, led and enthused by corresponding efforts of Messrs. Kenyon and Towner, would demand, through state action, this right of the new born.

In the meantime, throughout the land, wherever at the supreme hour there is need, the good Samaritan neighbor woman is ready to help as best she may, though her willingness may be unskilled. In due time, the Federal Children's Bureau, purveyor of "instruction," will possibly arrive and give "instruction" to the effect that medical attention should be secured and proper food, bedding, baby clothes and a trained nurse be provided, for none of which appropriations are authorized in the Maternity Bill.

Were the pitiless light of real publicity turned upon the methods which have brought the "Maternity Bill" thus far toward enactment, its most ardent proponents, in my belief, would in all fairness be compelled to allow time for the, as yet, unheard majority of women who know nothing of its proposed legislation to learn the facts and speak for themselves.

LATIN AMERICA

Tropical Disease Prize.—The *Revista Médico-Quirúrgica de Tegucigalpa*, Honduras, announces that prizes will be granted on September 15, for the best works submitted on tropical diseases and other medical and surgical subjects. The first prize will be a gold medal. The contest is limited to Central Americans.

Professor Labbé to Lecture at Buenos Aires.—The *Presse Médicale* states that Prof. M. Labbé of Paris is on the point of leaving for Buenos Aires where he has been invited by the medical faculty to deliver a series of lectures on biology as applied to the clinic. Professor Brumpt is to follow him next year to lecture on parasitology.

Child Welfare Congress in Central America.—The first Central American Child Welfare Conference will be held at San José, Costa Rica, beginning September 15. Among the most important subjects to be discussed are: children's diseases, milk hygiene, open-air schools, wards for tuberculous children, infant mortality, establishment of children's hospitals, dietetics, child culture and house sanitation.

FOREIGN

International Hygiene Exposition.—Amsterdam is planning an international hygiene exposition to open Oct. 15, 1921, which is to include practical demonstrations of prophylaxis against malaria, tuberculosis, venereal disease, and repression of quackery, etc. Dr. M. de Hartogh is secretary; his address is Plantage Middenlaan 1, Amsterdam.

Psychanalysis Prize.—The *Nederlandsch Tijdschrift* relates that the prize founded by Prof. S. Freud in 1918, with an endowment given by A. von Freund, was awarded first to Dr. C. Abraham and Dr. E. Simmel, both of Berlin. The prize is given for the best scientific work on medical psychanalysis. The latest award was to Dr. A. Stärcke, the physician in charge of an asylum at den Dolder, the Netherlands.

Conference on Index of Nutrition.—At the request of the Quaker commission providing supplementary food for Berlin schoolchildren and students, a conference was summoned to discuss ways and means to select from the candidates those most in need of nourishing food. The conference was presided over by Mr. Scattergood, the president of the German central committee of the Quaker organization, and Professor Czerny was the spokesman for the medical profession. The decision as to the most instructive standard index was left to a special committee of seven members and three additional experienced medical school inspectors.

Deaths in Other Countries

Dr. E. Pfeiffer of Wiesbaden, a prominent internist and writer on deranged metabolism, aged 75.—Dr. W. W. Contris, a dentist of Mexico City, fatally burned while working in his laboratory.—Dr. Reville of Cannes.—Dr. H. Leguizamón of Buenos Aires, a well known writer on medical and political topics and general literature, and on measures to raise the standard of medical education.—Dr. E. Allende and Dr. R. N. Bonora, both also of Buenos Aires, the latter chief of the Flores dispensary.—Dr. K. Edel, a psychiatrist of Berlin, aged 84.

Government Services

Distinguished Service Medal

Lieut.-Com. Ralph W. McDowell, M. C., U. S. Navy, has been awarded a distinguished service medal for exceptionally meritorious and distinguished service as sanitary inspector and surgeon of the arrondissement of Tours, France.

Transferred from Bureau

Lieut.-Com. Harry H. Lane, M. C., U. S. Navy, who has been in charge of the hospital corps division of the Bureau of Medicine and Surgery, has been detached from the bureau, and after a short tour of duty and observation at the Mayo Clinic, Rochester, Minn., will be assigned as operating surgeon to the hospital at the Naval Academy, Annapolis, Md.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 25, 1921.

Annual Meeting of the British Medical Association

The eighty-ninth annual meeting of the British Medical Association was held at Newcastle-on-Tyne. Though successful in every other way, the attendance of members was below the average, numbering only some 800. This small number is to be ascribed to the depressed financial condition of the country which is the result of the war and the great industrial unrest following it, culminating in the disastrous coal strike, the most prolonged stoppage of work in the great industries on record.

PROFESSIONAL SECRECY

As shown in previous letters, the refusal of courts to recognize any right of the physician to professional secrecy has aroused considerable hostility in the profession. The subject came before the representative meeting of the association in the form of the motion: "That when a physician refuses to divulge information which he has obtained in the exercise of his duties in such circumstances as the following: (a) where a court has ruled that information so obtained must be disclosed; (b) when it is already provided by law that he must do so, for instance in the notification of infectious diseases, such action must be taken entirely on his own responsibility, and the association cannot be expected to protect him from the consequences. That if attempts be made to add additional exceptions to the general rule of the profession as regards secrecy, the association recognizes that it will be necessary after consideration (1) to resist by all lawful means any such encroachment, and (2) where such encroachment is attempted to accord support by any means in the power of the association." This resolution had been adopted by the Central Ethical Committee of the association. It fell short of the wishes of the meeting which, after a prolonged discussion, carried the following amendment by a large majority: "That the association use all its power to support a member who refuses to divulge, without the patient's consent, information obtained in the exercise of his profession, except when it is already provided by law that he must do so."

FEDERATION OF OVERSEAS BRANCHES

A representative of the Australian Federal Committee explained that the Australian branches had to deal with the governments of independent states of the commonwealth and could not conduct business through the central office of the association in London. They had thus to do more for their members than branches in the United Kingdom. They had

their own journal, their own libraries and their own buildings. They found that they could best serve their purposes by becoming corporate bodies registered under the companies acts of their respective states, exactly in the same way as the association in the United Kingdom is registered. But this had given rise to certain legal and administrative difficulties in dealing with the parent body. A resolution recommending the council to make provision in the regulations, if possible, to allow the overseas branches to retain the character and status of branches, although incorporated, was carried unanimously.

AFFILIATION WITH MEDICAL AND NONMEDICAL BODIES

The subject of affiliation with medical and nonmedical bodies was discussed at the representative meeting last year, when it was agreed that the association should take steps to obtain further powers to be able to federate with other medical bodies. Much doubt was now expressed as to the advantage of this course. It was pointed out there were only four medical societies, with a membership of 2,900, of whom 1,500 were already members of the association, likely to federate. Moreover, another body, the Federation of Medical and Allied Societies, was trying to bring about such federation. By a large majority it was decided to rescind the contemplated federation with other bodies.

THE PRESIDENTIAL ADDRESS

The president, Dr. David Drummond, took for his subject "The Medical Profession" and indicated the need for progress in certain directions. In many cases diagnosis was only a matter of opinion until cleared up by a necropsy. He regarded greater facilities for making necropsies as the most important step toward a rational scheme of postgraduate training. He had little doubt that the opposition of the public would soon vanish were the incalculable service to the science of medicine made sufficiently clear. The diagnosis of incipient disease was at once the most difficult and the most important problem the physician had to face, and yet but little attention had been given to it. Comparatively few physicians were familiar with the range of the limits of health as signified by signs evident to the trained senses; for instance, failure to recognize the fact that our stethoscopes in the examination of chests detected the widest possible differences in normal individuals had been the source of much error. During the war thousands of perfectly healthy young men were graded low or rejected on account of the erroneous interpretation of some physical sign. In the same way, assurance problems were settled incorrectly on similar grounds. When we recognized that a comprehensive knowledge of the functions of man with the indications of their working were necessary to detect abnormalities, it was plain that the normal state demanded very special attention, for we were dealing with what was at once the most perfect and the most faulty machine of creation.

VISCERAL SYPHILIS

In the Section of Medicine, Sir Clifford Allbutt emphasized the rapidity of generalization of the virus by way of the lymphatics; a syphilitic septicemia was soon set up associated with fever, rashes, anemia and leukopenia. In 70 per cent. of cases the aorta showed histologic evidence of infection, and it might be at a very early stage. Angina pectoris might be an early symptom. In the ventricles, syphilitic disease was not common, but there might be an atrophic fibrosis as the result of coronary disease. In the lungs, fibrosis and bronchiectasis might result. The alimentary canal below the esophagus escaped as far as the rectum. Gumma of the kidney was rare. The central nervous system might be infected very early, often in those cases with little "secondary" manifestation. A periarteritis was essential; the Wassermann reaction might be positive in the cerebrospinal

fluid and negative in the blood, and a positive test might be found in the absence of nervous symptoms. Lumbar puncture should be performed at every stage, and if necessary treatment by intraspinal as well as intravenous injection.

Professor Reynolds considered that in any disease which did not run a typical course, syphilis should be suspected. The Wassermann reaction was to be regarded as a piece of evidence and not as a verdict, and if physicians were better educated, lumbar puncture would not be so often required; a positive Wassermann reaction in the cerebrospinal fluid did not necessarily mean that the patient's trouble was syphilitic.

ACUTE PLEURAL EMPYEMA

In the Section of Surgery, Mr. Henry Wade opened a discussion on acute pleural empyema. He said that before the war it had been found that in acute peritoneal infections the less drainage and the more rapid closure of the cavity, the better the results. In the thoracic and knee-joint surgery the same held. A combined cytologic and bacteriologic examination of the fluid withdrawn should be more widely employed as affording fuller and more accurate data on which to found operative treatment. Suppuration within the pleural cavity was specially suitable for treatment by methods which obviated the necessity for opening that cavity, or by methods whereby an immediate or early closure after it had been opened was carried out. The value of aspiration alone should again be carefully reviewed, and consideration be given to the methods introducing antiseptics, such as Murphy's 2 per cent. dilution of liquor formaldehydi in glycerin, into the emptied cavity. Aspiration would require to be frequently performed. If simple drainage was practiced, the ideal opening was one which both allowed free escape of the pus at the time and permitted ready closure after the tube was withdrawn. The benefits to be derived from a free opening of the pleural cavity by major intercostal thoracotomy warranted its employment in cases which gave promise of developing into chronic and persistent cases. The value of disinfection and immediate closure in the latter cases should be more fully tested. He recommended the Rutherford Morison technic employing "bipp."

BORDERLAND CASES

In the Section of Neurology and Psychiatry, Prof. G. M. Robertson opened the discussion on borderland cases. He pointed out the difficulty of drawing a hard and fast borderline between cases of neurosis and those which had progressed to definite mental disease. The type of case which he discussed particularly was that whose chief symptom was mental depression. Every melancholic was at one stage or another a potential suicide, and the risk was greatest when the patient was least deranged—that is, in the early stage or in convalescence. Melancholia was the commonest form of psychosis, and the form most often treated outside a mental hospital. He advised every physician not a psychiatrist to call in consultation, if only for his own sake, some expert in mental disease, when he was responsible for the treatment of a depressed person.

EVOLUTIONARY WOUNDS

The popular lecture on this subject was delivered by Sir Arthur Keith to the equal delight of the lay and medical elements of a large audience. In his usual luminous and philosophic vein he likened the clefts in the upper lip of the human embryo to wounds, and showed that they were closed by the same process. He took for comparison a wound in the cornea, as here the healing was not masked by bleeding or vascular reaction. It was mended by a threefold process: (1) A temporary fibrinous bond united the cut edges; (2) into this bond grew connective tissue elements from each margin of the wound until they met and filled the gap; (3) fluid collected on each side of the wound which had the mechanical advantage of pressing the edges together. In the healing of

the embryonic cleft there was the same threefold process: A temporary bond was formed by fusion of the epithelium which covered the edges of the cleft; across this bond the opposite connective tissue elements pressed and united under the influence of homotactic attraction; the edges of the cleft were pressed together by fluid which collected in the spaces of the adjacent connective tissue. On a grander scale the operation of healing was observed in the closing in of the neural plates to form the brain and spinal cord, which occupied the fourth week of development. A section showed the epithelial neural plate being folded in, carrying at its lateral and rising margins the ectoderm or embryonic skin. The raising up and bringing together of the lateral margins of the neural plate depended on the new swarm of neuroblasts migrating to and becoming packed in the deeper or circumferential margin of the plate. The margin of the neural tube came together just where the skin epithelium became continuous with the nerve epithelium. No sooner had contact been established than by homotaxis the skin epithelium on each side of the embryologic wound broke its connections with the nerve plate and effected union across the site of the median fissure. The neuroblasts also adhered and regrouped themselves to form the roof plate of the neural tube. Thus, in less than forty-eight hours after the lateral margins of the neural folds came into contact at any point, all traces of the great evolutionary wound had been obliterated. No sooner had these epithelial unions taken place than connective tissue elements lying on either side of the median tube began to spread upward to meet and unite across the median dorsal line where only a short time before existed an open wound. Out of the bridge of tissue which thus came to lie between the skin and roof of the nerve tube were fashioned the membranes of the cord and brain and all the bony and fascial tissue which helped to roof over the great central nervous system. Failure of the healing of the great dorsal median evolutionary wound meant spina bifida. The orderly series of peritoneal adhesions which took place in the fetus in adaptation of the plantigrade posture of man was another example of evolutionary healing. It seemed to be accomplished without the forming of any exudate. A similar process was observed in the closure of the opening between the peritoneal and pleural cavities. The fashioning of the heart involved similar closures and was an unsurpassed feat in plastic surgery.

PARIS

(From Our Regular Correspondent)

July 29, 1921.

Campaign Against Cocainomania

Dr. Marcel Briand, physician to the Sainte-Anne Hospital, and Professor Cazeneuve, member of the Academy of Medicine, presented at the last session of the administrative council of the Ligue d'hygiène mentale a plan of campaign against cocainomania. In view of their presentation of the situation, the Ligue d'hygiène mentale decided to ask the minister of justice, the prefect of police and the director of the secret service for a more efficient repression of the criminal actions of traffickers in narcotics, and especially in cocain. This campaign seems all the more justified because the traffic in cocain has increased to a considerable extent of late, and recently Dr. Courtois-Suffit, physician to the Paris hospitals and medical expert to the courts, submitted to the Academy of Medicine, in collaboration with René Gizoux, intern of the Paris hospitals, an interesting report, based on judicial documents, in which they showed how inadequate was the repression of the traffic in cocain. The present general conditions have greatly facilitated the extension of this vice. Besides professional traffickers, our troops of occupation have, since the armistice, contributed markedly to the spread of the drug. French and allied soldiers became traffickers, tempted by the

immense profits that the Germans held out to them. They have been bringing back to their abodes in France large quantities of toxic drugs. Here they dispose of their stock to agents or visit well known bars, where steady customers come to purchase the powder so much sought after and for which such high prices are paid. The favorable rate of exchange between France and Germany has added to their already handsome profits. Cocain addicts deprived of their excitant are ready to make any sacrifice in order to obtain a supply, and the most exorbitant prices are paid. When they have no money with which to purchase their drug, they do not hesitate to sell anything they may possess rather than live without their poison. Thus it is not rare to see members of the demi-monde, reduced to a state of frenzy, exchange their jewels and furs for the "powder that incbrates"; or they may become professional traffickers. A more strict vigilance in Paris has forced the traffickers to carry their stocks to other towns; especially in the south, in Nice, Monte Carlo, Toulon, Biarritz, Marseilles, Cannes, etc. As the result of observations made by certain magistrates, the government has decided to draft a law that will give added force to present legislation, which is manifestly inadequate. This bill is aimed principally at the opium dens, but it is probable that the text that will be submitted to parliament will include traffickers in all narcotic drugs.

Death of Gabriel Lipmann

Prof. Gabriel Lipmann, one of the most famous French physicists, to whom we owe the discovery of color photography, died recently at the age of 73. This famous scientist died on board the steamship *La France*, during the return voyage of the mission headed by Marshal Fayolle, which was organized by the Franco-American committee to express to Canada and the United States the gratitude of France. Professor Lipmann was a member of this mission. He was born at Hollerich, near Luxemburg, in 1845, of French parents. He studied in Paris, and in 1883 was appointed professor at the Sorbonne. He was elected a member of the Academy of Sciences in 1886. In 1891 he discovered the process of reproducing photographically things in their natural colors, based on the principle of light interference. This discovery won for him the Nobel prize for physics in 1918.

Arsphenamin Shock

The shock produced by injections of arsphenamin is generally attributed to the presence of arsenoxid, and complying with the request of Dr. Queyrot, physician to the Paris hospitals, certain manufacturers have decided to indicate on the label the arsenoxid content. From experiments on dogs made by Dr. Pomaret, it develops that the arsenoxid found in arsphenamin and neo-arsphenamin has a marked tendency to produce high blood pressure. Thus it could not be held responsible for the "nitritoid crisis," which is characterized mainly by arterial hypotension. Dr. Pomaret presented a very interesting communication on this subject at the last session of the Société française de dermatologie et de syphiligraphie. He believes that arsphenamin shock is due to a precipitation of albumin in the blood through the phenolic character of arsphenamin and neo-arsphenamin. The same mechanical and physiologic phenomena are observed with regard to trinitrophenol, which thus eliminates the rôle we are tempted to attribute to the arsenic of the arsphenamin molecule.

First Congress of the International Society of Urology

The first congress of the International Society of Urology has just been held under the chairmanship of Dr. Legueu, professor of clinical diseases of the urinary organs at the school of medicine of the University of Paris. The opening session was presided over by the minister of public instruction, who was accompanied by Prof. E. Hurry Fenwick, presi-

dent of the International Society of Urology, and by the officers of the society. The meeting was first addressed by Professor Fenwick, who traced the history of the formation of the International Society of Urology and emphasized the importance of international scientific associations as regards the progress of science.

These three questions were discussed: (1) Nephritis with Uremigenic Syndrome; essayists: Prof. J. Teissier, Lyons; Dr. Foster, New York, and Dr. Albert Hogge, Liège; (2) Remote Results of Treatment of Traumatism of Urethra; essayists: Drs. O. Pasteau and Iselin of Paris; (3) Pyelography; essayists: Dr. Edmond Papin, Paris; H. H. Young, professor at Johns Hopkins Hospital, Baltimore, and C. A. Waters, assistant roentgenologist at Johns Hopkins Hospital. Two of these questions are of general interest.

Nephritis with Uremigenic Syndrome

Prof. J. Teissier emphasized especially the important rôle played by the liver in the development, the tolerance and the evolution of nitrogen retention. Conservation of the regular functioning of the liver is the central feature of antitoxic regulation and the primary factor of defense against dangers of hyperazotemic and ammoniacal intoxication. Ammonia is the causative agent, direct or intermediary, but surely testifies to intoxication of ureal origin. In addition to the maximal degree of concentration of urea in the blood, as the immediate cause of auto-intoxication in nephritis, ammoniemia constitutes a regular phenomenon which is parallel to the retention of urea in the blood. The prognosis of azotemic nephritis is directly dependent on this double condition. From a therapeutic standpoint, Teissier notes the good effects of organotherapy, applied early in the disease against accidents of nitrogen retention, and the useful effect of serotherapy with serum from the renal vein of a goat (excitation of the protective action of the hepatic gland). Dr. Foster distinguishes three types of uremia: (1) the eclamptic type, due to a specific toxin, with moderate azotemia; (2) the lethargic type, due to slow intoxication by urea, creatinin, etc., with intense azotemia, and (3) the serous type, caused likely by a serous encephalitis, and characterized by an excess of sodium chlorid in the blood. Uremia corresponds, practically, in all its forms to renal insufficiency. However, it is probable, but not yet certain, that the degree of this insufficiency is in proportion to the number of destroyed anatomic elements. Dr. Albert Hogge emphasized the fact that the clinical picture of "uremic" intoxications is often masked or disturbed, in internal medicine, by the symptoms of the condition causing the nephritis, and in surgery, by infectious phenomena and inflammatory complications. Renal insufficiency, as a rule, has thus far been better determined by clinical signs, by the quantity of urea in the blood and, possibly, also by the determination of nonureal nitrogen. Ambard's constant must not be substituted for other means of investigation. When the daily secretion of urine and the azotemia are satisfactory, the density of the urine is normal, and albumin and sugar are absent, it is useless to determine the constant. It is only in cases in which these factors are doubtful or indecisive that it may be indicated to resort to Ambard's test. Hogge holds the opinion that before every important surgical operation we should inquire into the functional capacity of the kidneys, by ascertaining the ureal nitrogen and the nonureal nitrogen of the blood; the albumin; the sugar, and the density of the urine. We must be suspicious of persistent oliguria and, if this exists, examine the myocardium thoroughly, in order to abolish asystole by the most active and quickest means. For similar reasons, and in order to ward off the dangers of postoperative renal insufficiency, we must use the anesthetics that are the least harmful to the kidneys. Dr. Maurice Chevassu, surgeon to

the Paris hospitals, has stated that the surgical treatment of medical cases of nephritis has brought nothing but disappointment. For those who may still be tempted to use surgical intervention, Chevassu advises the use of local anesthesia by means of a single puncture beneath the twelfth rib, in order to act on the kidneys with a minimum of intoxication. This method makes it possible to bathe successively with anesthetic the region of the lumbar intercostal nerves and the vertebral plane in the region of the pedicle of the kidney. Pousson of Bordeaux does not believe that surgical intervention is indicated in medical cases of nephritis so long as the health of the patient remains satisfactory under dietetic regimen and symptomatic medication. But when the patient has reached the cachectic phase, which is recognizable by the paleness of the skin, a slight puffiness of the face, flying edemas, dyspnea on the slightest effort, slight albuminuria, a few casts, with decrease of urea and of urinary salts, decapsulation (to which Pousson adds nephrotomy applied to at least one of the kidneys) may render excellent service.

BERLIN

(From Our Regular Correspondent)

July 12, 1921.

Results of Typhoid Vaccination

During the period from 1918 to 1919, approximately 31,000 persons in Prussia were vaccinated against typhoid. This number includes more than 14,000 cases in which vaccination was carried out at the instance of the commander of the British troops of occupation in Euskirchen. The reaction following the injections was usually moderate; occasionally more severe but benign inflammations of the skin and the subcutaneous cellular tissue, which, however, retrogressed promptly, were observed. In a few cases there was considerable fever. The inoculation of a child, aged 1½, with a slight dose was well borne. In Euskirchen serofulous children were vaccinated without any disturbing results. However, it was found that caution must be observed in vaccinating tuberculous subjects. Forty-five vaccinated persons came down with typhoid soon after the inoculation, eight cases being grave and two ending fatally. One woman took the disease although she had recently been twice vaccinated. The course of the disease in this instance was, however, mild. The official report draws from the results the conclusion that, while vaccination against typhoid does not furnish absolute protection against the disease, nevertheless the small number of those that take the disease after vaccination warrants the application of the method to check epidemics. As for the effect of vaccination on the course of typhoid epidemics, it has been repeatedly observed that the epidemics die out very soon after vaccination is instituted. The results of the vaccination that was carried out with British vaccines in the governmental district of Cologne are especially worthy of note. After 129 cases of typhoid had been reported, the British military authorities ordered the compulsory vaccination of all persons from 6 to 45 years of age. Altogether, 14,343 persons were vaccinated—in fact, they were vaccinated twice—with a vaccine that was mixed with paratyphoid A and B. The reaction was not more severe than with the German vaccine. It was not observed to exert an unfavorable influence on pregnancy or lactation. It could not be seen that exacerbations of chronic diseases were thereby produced, with the exception of one not fully explained case of advanced tuberculosis. In numerous cases still in the incubation stage, the vaccination hastened the development of the typhoid infection and thus led to the earlier recognition of those infected. In general, a favorable influence on the severity of the disease was recognizable. It is quite characteristic that in Essen the organization of the antivaccinationists opposed also typhoid vaccination.

Marriages

GEORGE ARTHUR WHITE, Cambridge, Mass., to Miss Margaret C. Wallace of Roxbury, Mass., August 10.

LLOYD ROBERTSON REYNOLDS, San Francisco, to Miss Catherine Crellin at Claremont, Calif., August 3.

H. KRUEGER KAPRIELIAN, Stamford, Conn., to Miss Flora Grant of New York City, August 6.

WILLIAM J. HANLEY, Kenosha, Wis., to Miss Mary Frances Burns of Watertown, Wis., June 22.

DANIEL S. QUICKEL, Anderson, Ind., to Mrs. Bertha I. Davis of Phoenixville, Pa., July 21.

RALPH EDWIN GRAY, Eldora, Iowa, to Miss Malie Gertrude Buford of Gorin, Mo., August 9.

GEORGE T. HARDING, Marion, Ohio, to Miss Alice Severns, at Monroe, Mich., August 11.

CHARLES C. GRATIOT to Miss Mary A. Peebles, both of Shullsburg, Wis., July 26.

Deaths

Gustav Mann, Houston, Texas; M.D., C.M., University of Edinburgh, Scotland, 1894; died while on a scientific oil mission at Tampico, Mexico, July 18. Dr. Mann was born in Dargeeling, East India, Nov. 6, 1864; B. Science, University of Oxford, England, 1898; professor of physiology, Tulane University, New Orleans, 1908-1916, after which he was appointed consulting chemist for the Freeport Oil Company, Houston, Texas. He was awarded the Dobbie Smith gold medal, the Ellis, Gunning-Victoria, Goodsir and Rolleston prizes for researches in physiology, and the Edinburgh gold medal for M.D. thesis. He was author of "Physiological Histology," in 1902, and "Chemistry of the Proteids," 1906; also articles on the evolution of flowering plants, comparative physiology of the brain, changes in nerve and gland cells, etc.

John Francis Croston ☉ Haverhill, Mass.; University of the City of New York, 1881; member of the board of health since 1883, and chairman at the time of his death; member of the school board 1882-1900; again elected in 1908 and reelected in 1910 and 1912; medical examiner for the Northern Essex district since 1892; during the World War served as chairman of the local draft board; died, July 30, from heart disease, aged 66.

Florence Hale Abbot ☉ Boston; Woman's Medical College of the New York Infirmary for Women and Children, 1897; formerly assistant physician at the Taunton Insane Hospital, and at Dr. Edward Mellus' Hospital, Newton, 1910-1915; member of the New England Society of Psychiatry, and the American Medico-Psychological Association; died, August 1, at the New England Deaconess Hospital, Brookline, Mass., aged 54.

Marshall L. Cushman ☉ Lansing, Mich.; University of Michigan, Ann Arbor, 1906; postgraduate courses in Berlin and Vienna; instructor in otolaryngology, University of Michigan; specialized in otology, laryngology and rhinology; during the World War served as captain, M. C., U. S. Army, in France; died, July 14, at the Millet Sanatorium, East Bridgewater, Mass., from tuberculosis, aged 38.

Franklin Rogers ☉ Com., M. C., U. S. Navy, Washington, D. C.; Bellevue Hospital Medical College, New York; 1872; assistant surgeon, U. S. Navy, 1872; medical inspector with rank of commander, 1898; last active duty, fleet surgeon on flagship *Brooklyn*; retired for physical disability, October, 1901; died, May 28, at the Naval Hospital, Washington, from acidosis; uremia, aged 70.

Robert Luddington Brown, Parkersburg, W. Va.; Jefferson Medical College, Philadelphia, 1881; member of the West Virginia State Medical Association; served in the Spanish American War; at one time a commander in the U. S. Navy; was found dead in bed, July 25, from heart disease, aged 67.

Aubert Durnell ☉ Walsenburg, Colo.; St. Louis University, St. Louis, 1909; coroner of Huerfano County; was found dead in his office, July 30, from heart disease, aged 40. He served in France as captain, 155th Infantry, M. C., U. S. Army, during the World War.

☉ Indicates "Fellow" of the American Medical Association.

William M. Bayliss, Clarence, Mo.; Kansas City Medical College, 1882; member of the Missouri State Medical Association; at one time superintendent of the Tuberculosis Hospital, Mt. Vernon; died, July 28, from a complication of diseases, aged 71.

Ross Edwin Prigden, El Paso, Texas; Tulane University of Louisiana, New Orleans, 1910; served as first lieutenant, M. C., U. S. Army, during the late war; died, August 3, following an operation for gallstones, at Rochester, Minn., aged 33.

Alonzo M. Morrison, Louisville, Ky.; University of Louisville, 1859; practitioner at Prospect for over fifty years; during the Civil War, served as major, M. C., Union Army; died, July 31, at the Russel Infirmary, Louisville, aged 83.

Amos Emanuel Fried ☉ Cleveland; Ohio Wesleyan University, Cleveland, 1913; on the staff of the Mount Sinai Hospital; served in the Army transport service during the late war; died suddenly, July 23, from heart disease, aged 39.

Jasper Muir Wilson, Pleasure Ridge, Ky.; University of Louisville, 1859; surgeon in the Union Army at Bowling Green and Louisville hospitals during the Civil War; retired from the Army in 1871; died, July 27, from senility, aged 89.

Charles Eastwick Smith ☉ St. Paul; University of Pennsylvania, Philadelphia, 1908; secretary of the state board of health since 1919; formerly on the staff of St. Joseph's Hospital, St. Paul; died, July 31, at the Miller Hospital, aged 38.

John Henry Marling, Baltimore; Trinity Medical College, Toronto, Canada, 1888; was found dead in the Patapsco River, August 1, believed to have drowned himself while suffering from despondency, due to continued ill health.

Charles F. Altmiller, Bloomsburg, Pa.; Medico-Chirurgical College of Philadelphia, 1901; member of the Medical Society of the State of Pennsylvania; died, August 2, at Hazleton, Pa., from abscess of lung, aged 44.

John Calvin Felty ☉ Gettysburg, Pa.; University of Pennsylvania, Philadelphia, 1873; on the staff of the New Jersey Insane Asylum, Trenton, 1891-1915; died, August 6, from nephritis, aged 72.

Robert Matthew Ullrich, Brooklyn; Long Island College Hospital, Brooklyn, 1904; surgeon on the staff of the Ridgewood Sanatorium, where he died, July 27, following an operation, aged 47.

James S. Rawlins, Dancyville, Tenn.; University of Pennsylvania, Philadelphia, 1867; Confederate veteran; at one time president of the Memphis Medical Society; died, July 26, aged 74.

William F. Julien ☉ Gary, Ind.; Rush Medical College, Chicago, 1900; specialized in ophthalmology, otology, laryngology and rhinology; died, June 11, from pneumonia, aged 46.

John S. Green, Sr., Long Green, Md.; University of Maryland, Baltimore, 1882; member of the medical and surgical faculty of Maryland; died, August 2, aged 64.

Thomas J. Parker, Chicago; Western University, London, Canada, 1892; member of the Illinois State Medical Society; died, August 6, from cerebral hemorrhage, aged 56.

Walter R. Weedon, Eufaula, Ala.; Kentucky School of Medicine, Louisville, 1894; member of the Medical Association of the State of Alabama; died, July 2, aged 47.

Christopher James Musgrave ☉ New York City; University of the City of New York, 1887; formerly instructor in the Post-Graduate Hospital; died, July 29, aged 56.

Austin Mitchell, Racine, Wis.; University of Michigan, Homeopathic Medical School, Ann Arbor, 1874; practitioner for nearly half a century; died, July 27, aged 73.

George W. Hixson, Cambridge, Ohio; Jefferson Medical College, Philadelphia, 1903; member of the Ohio State Medical Association; died, July 8, aged 49.

William E. Lamkin, Eugene, Mo.; Missouri Medical College, St. Louis, 1875; died, July 28, at Jefferson City, Mo., from cerebral hemorrhage, aged 72.

Charles W. McIntyre, New Albany, Ind.; University of Louisville, 1883; member of the Indiana State Medical Association; died, June 6, aged 81.

William B. Cogswell ☉ Stratford, Conn.; Bellevue Hospital Medical College, New York City, 1881; died, July 28, at the Galen Hospital, aged 67.

Arturo del Castillo, Key West, Fla. (licensed by the Florida State Board of Medical Examiners); died, July 23, after an illness of six months.

William Brooks Swasey, Cornish, Me.; Bellevue Hospital Medical College, New York City, 1867; died, June 2, from cerebral hemorrhage, aged 77.

George H. Burgin, Philadelphia; University of Pennsylvania, 1876; surgeon of the General Society of the War of 1812; died, July 31, aged 67.

John M. Boice, Sisterville, W. Va.; Medical College of Ohio, Cincinnati, 1878; died suddenly, August 2, from cerebral hemorrhage, aged 65.

John W. Bilbo, Russelville, Ind.; Medical College of Indiana, Indianapolis, 1891; died, July 24, from paralysis and chronic nephritis, aged 69.

William A. Lomison, Mt. Carmel, Pa.; Hahnemann Medical College and Hospital of Chicago, 1891; died, July 19, from pneumonia, aged 73.

Erwin Julius Kintzi, Los Angeles; College of Physicians and Surgeons (University of Southern California), 1919; died, July 19, aged 28.

Robert Seldon ☉ Catskill, N. Y.; University of Wooster, Cleveland, 1869; died, July 23, at the Samaritan Hospital, Troy, N. Y., aged 74.

Isaac B. Hacker, Reading, Pa.; Jefferson Medical College, Philadelphia, 1879; died, July 24, from a complication of diseases, aged 65.

Robert L. Davis, Sweetwater, Tenn.; Southern Medical College, Atlanta, 1891; died, July 7, from carcinoma of the liver, aged 66.

William Edgar Downie, Indianapolis; University of Louisville, 1912; took poison, July 22, following a nervous breakdown, aged 35.

John W. Pugh, Gas City, Ind.; Curtis Physio-Medical Institute, Marion, 1885; died, July 26, from cancer of the liver, aged 77.

Edward W. Brown, New Vienna, Ohio; Hahnemann Medical College, Philadelphia, 1879; died, July 28, from heart disease, aged 64.

John Frank, Bayonne, N. J.; Medical Department of Columbia College, New York City, 1880; died, July 19, aged 66.

Howard A. Fehr, Allentown, Pa.; Hahnemann Medical College of Philadelphia, 1894; died, July 17, from nephritis, aged 52.

James W. Snider, Mt. Eden, Ky.; University of Louisville, 1880; died, July 18, at his home in Avoca, Jefferson County, aged 62.

Simon Walter Brooks, Geneva, Ga.; Atlanta Medical College, 1886; died suddenly, June 24, from heart disease, aged 57.

James J. Mitchell, Gurdon, Ark.; St. Louis College of Physicians and Surgeons, St. Louis, 1883; died, June 16, aged 75.

Alfred Walton, Bangor, Me.; Bowdoin Medical School, Brunswick, 1867; died, May 31, from arteriosclerosis, aged 89.

Chapman C. Smith, St. Albans, Vt.; University of Vermont, Burlington, 1865; died, July 26, from senility, aged 80.

Anna T. L. Thomas, Biloxi, Miss.; Hahnemann Medical College and Hospital, Chicago, 1886; died, July 24, aged 68.

Archibald McDowell Bynum, Valentines, Va.; University College of Medicine, Richmond, 1913; died, July 18, aged 32.

John B. Elliot, Sr., Highlands, N. C.; Medical College of South Carolina, Charleston, 1867; died, June 26, aged 79.

Milton Burr Davis, Patchogue, N. Y.; Long Island College Hospital, Brooklyn, 1883; died suddenly, July 15, aged 61.

Frank Hurlock ☉ Philadelphia; Jefferson Medical College, 1881; died, July 24, from cerebral hemorrhage, aged 62.

George Franklin Baer, Pittsburgh; Hahnemann Medical College of Philadelphia, 1905; died, July 10, aged 37.

Camille Coté, Salem, Mass.; Montreal School of Medicine and Surgery, Quebec, 1879; died, July 14, aged 62.

Charles F. Johnson, Pruntytown, W. Va.; University of Maryland, Baltimore, 1879; died, May 31, aged 76.

Gilbert B. Ingalls, Mayfield, N. Y.; Long Island College Hospital, Brooklyn, 1872; died, May 25, aged 69.

John Milton Poindexter, Kansas City, Mo.; University of Louisville (Ky.), 1884; died, May 12, aged 65.

Manley J. Siler, Mercer, Tenn.; University of Louisville, 1875; died, July 4, from dysentery, aged 69.

John Munroe MacDonald ☉ San Francisco; University of California, 1891; died, July 23.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

IODINOL

An "Intensified Iodin" at an Intensified Price

Although reports on the composition and therapeutic efficiency of several of the so-called "organic iodine" preparations have been published,¹ THE JOURNAL still continues to receive inquiries concerning products of this type. In view of the general interest in the subject, it seemed worth while to examine "Iodinol," another member of this class. Iodinol is put out by the Toledo Pharmacal Co.; price to physicians: one dollar a pint. Concerning its composition, the manufacturer states that Iodinol is:

A water solution of organic iodine containing one grain of the element in each fluid drachm.

The circular describing Iodinol refers to the preparation as "intensified iodine"—whatever that may mean—but no information is offered concerning the nature of the "organic iodine" compound in Iodinol. Hence, the product is essentially secret in composition. In order to determine the character of the iodine in Iodinol, a specimen of the product was examined in the A. M. A. Chemical Laboratory. The chemists report:

"Iodinol is of the consistency of thin syrup, has a brown color and a peculiar, not unpleasant odor, resembling that of the official syrup of ferrous iodide. The reaction is strongly acid to litmus. On evaporation and subsequent ignition of the residue, the preparation leaves almost no ash. Reducing sugars are present in large amounts. The preparation darkens on the addition of ferric chloride solution, thus indicating the presence of tannin. The absence of uncombined iodine is demonstrated by the fact that when chloroform is added to the preparation and the mixture shaken no violet color is produced in the chloroform layer. By adding ferric chloride solution and shaking with chloroform, a violet color results. The addition of an excess of silver nitrate solution to a dilute aqueous solution of Iodinol immediately produces a precipitate of silver iodide. The dilute solution gives a yellow precipitate with lead acetate solution and a scarlet precipitate with mercuric chloride solution. These tests indicate that the iodine in Iodinol exists in some combination which is as readily ionized as potassium iodide. After the precipitate with silver nitrate has been removed by filtration, the excess of silver removed by the addition of hydrochloric acid and a second filtration, the clear filtrate does not respond to tests for any form of iodine. These tests demonstrate that all of the iodine contained in Iodinol is present either in the form of iodide ions or in a combination which readily yields iodide ions.

"In a true 'organic iodine' compound, the iodine is so closely bound in the molecule that it can not be precipitated directly as an iodide by the soluble silver salts. Such a compound (or its decomposition products) is relatively more slowly absorbed in the organism than are the metallic iodides, and it is correspondingly less irritating to the digestive tract. Since all of the iodine in Iodinol is readily precipitated by silver nitrate solution, it is obvious that it can not be considered an 'organic iodine' preparation, either from the chemical or the therapeutic viewpoints.

"Quantitative determinations of the combined iodine in the specimen indicates that Iodinol contains about 1.708 gm. of iodine per 100 c.c., or about 7.78 grains per fluidounce. This is essentially the claimed iodine content (1 grain per fluidrachm or 8 grains per fluidounce).

"The examination indicates that Iodinol is an iodo-tannic preparation, probably similar to the iodo-tannic syrup official in the French Pharmacopeia, except that it is stronger in iodine than the French preparation."

A correspondent writes to THE JOURNAL:

The reason I have been using Iodinol is because it is a *relatively cheap and convenient way to dispense iodine for internal use*. I don't regard it as unethical, since the Council has failed to suggest a suitable substitute.

1. Iodalin: J. A. M. A., Dec. 12, 1914, p. 2149. Nourry Wine: J. A. M. A., Dec. 12, 1914, p. 2150.

Iodinol is *not* "a relatively cheap . . . way to dispense iodine." Iodin in the form of Iodinol is about fourteen times more expensive than when purchased in the form of potassium iodide, and ten times as expensive per iodine unit, as sodium iodide. Furthermore, the Council has *not* failed to suggest a suitable substitute. The following true "organic iodine" preparations are described in New and Nonofficial Remedies:

	Per Cent. of Iodin
Iodalbin	21.5
Iodocasein	18.0
Iodoleine	26.0
Iodoleine	33.0
Lipiodine—"Ciba"	41.0
Riodine	17.0
Sajodin	24.5

There is no secrecy about any of these iodine compounds and the physician may prescribe any of them with the expectancy of obtaining iodine effects. The results may be somewhat slower to appear in organic iodine therapy than by treatment with a soluble metallic iodide, owing to slower absorption, but the aggregate effects are identical under either form of treatment.

Concerning the results from the use of inorganic iodides, such as potassium iodide, the manufacturer of Iodinol states:

A destruction of the tubules of the kidneys may take place, nervous symptoms may develop and in a great many cases the heart becomes affected.

There is no creditable pharmacologic evidence to indicate that the administration of the inorganic iodides causes "a destruction of the tubules of the kidneys." The "nervous symptoms" and tachycardia usually occur in persons with thyroid dysfunction and do not take place "in a great many cases" as the Iodinol exploiters assert. Further, there is no evidence that iodism is less apt to occur after the use of organic combinations of iodine than after the administration of inorganic iodides of equivalent iodine dosage. In those instances in which iodism has followed the administration of potassium iodide and in which equivalent symptoms did not occur after treatment with iodine in organic combination, it has usually been shown that the iodine dosage was much lower in the latter cases than in the former.

The label for Iodinol states:

Iodinol in teaspoonful doses is equal in therapeutic action to 10 to 15 grains of potassium iodide with the minimum systemic disturbance.

This statement is absurd. "Ten to fifteen grains of potassium iodide" are equivalent to from seven and a half to eleven grains of iodine while one fluidrachm of Iodinol contains *less than one grain of iodine!* Discriminating clinicians and pharmacologists hold that, if a given quantity of iodine be administered in an absorbable form, it will produce essentially the same effects regardless of whether it be given as "inorganic" or as "organic" iodine.

Therapeutically, Iodinol is no better than a sweetened solution of potassium iodide of equivalent iodine content; economically, it is far more expensive than potassium iodide or the other official iodides; ethically, it is to be condemned because it is secret in composition and is sold under exaggerated, unwarranted and untruthful claims.

Maladjusted Children.—To provide for the needs of the emotionally maladjusted child, schools should establish small classes, including not more than ten, in which the neurotic child could be more carefully studied. The attitude of the school toward this class should not be that it is a punishment, but that it is an attempt to treat the child's behavior as a symptom. The child should be sent back to the regular classes just as soon as possible. The neurotic child feels himself as a thing apart, and some of his behavior is due to the attempt to get back into the group. It would be wise, therefore, to make the adjustment not only during school hours, but also outside of them. This can best be done by intensive individual study of the child in the home and school and by placing him in contact with somebody outside of the school, such as a visiting teacher, who thoroughly understands him, who he knows has his interest at heart. It is to this influence on the part of a visiting teacher and psychiatric social worker that most of the improvement in our cases is ascribed.—L. Blumgart, *Mental Hygiene* 5:339 (April) 1921.

Correspondence

THE PRESCRIBING OF ALCOHOL

To the Editor:—Articles appearing in THE JOURNAL and in other medical publications relative to the Volstead law and its amendments remind me of an incident in old Vermont in my student days. A friend who had been an excessive user of tobacco and too fond of alcoholics succumbed to chronic nephritis and pneumonia. Meeting his physician in a drug store not long afterward, I asked him, whether in his opinion, the excessive use of tobacco and alcoholics had not contributed materially to the sickness and death of my friend. He replied that probably it had, but that that was a mean question to ask a man with a cigar in his mouth and who had just had a drink of whisky—thereby admitting that he could not give an unbiased answer to such a question.

Is it not just possible that some of the physicians who are so fearful that they are to be deprived of their personal liberties by the Volstead act and its amendments are too much like the Irishman who never permitted a glass of liquor to pass his lips, it always went between? Are they not speaking one word for their patients and two for themselves?

The writer, who does not know the taste of any kind of alcoholic and who after thirty-eight years of active practice finds it no hardship not to be permitted to prescribe them, should perhaps plead guilty of belonging to the other extreme, who believe that the sooner alcoholics are abolished as a beverage or even as a medicine, the better.

Where one has been helped by it as a medicine, if ever, thousands have been harmed by it as a beverage, and thousands more of innocents have suffered untold hardships and sorrows because of it.

Here in South Dakota, a state with sixty-six counties, some of them as big as some of the New England states, fifty-three of the counties have not a single physician with a license to prescribe alcoholics.

With us it requires both a federal and state license.

ARTHUR H. TUFTS, M.D., Sioux Falls, S. D.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TEST FOR DETERMINING COAGULATION TIME OF BLOOD

To the Editor:—Can you tell me whether the following test for the coagulation time of the blood is reliable and satisfactory? The end of a capillary tube, 2 or 3 inches long, is touched to a fresh drop of blood on the ear and the blood is drawn down into the tube; then after about three minutes, small pieces of the tube are broken off. This is done at frequent intervals until threading is observed. Is it necessary to wash the capillary tubes before using in this way, or can they be used dry just after you buy them?

F. B. BOGARDUS, M.D., Kalispell, Mont.

ANSWER.—The test for determining the coagulation time of the blood as given above is a slight modification of that proposed by George R. Love and published in the *Medical Record* (98:436 [Sept. 11] 1920). Love specifies that the capillary tubes shall be from 0.3 to 0.5 mm. in diameter and, instead of collecting the blood directly into the tubes from a puncture of the ear, he draws the blood by puncture of the median basilic vein and places it at once in small test tubes, the walls of which have been paraffined. From these tubes the blood is drawn into the capillary tubes at periods which must not be more than two minutes from the time the blood is collected. The modification suggested by Dr. Bogardus would seem to be one that should yield reliable and satisfactory results, provided the blood is flowing freely from

the puncture of the ear. There should not be any delay in the filling of the capillary tubes, and the time of filling each tube should be accurately noted. A further point that would seem to be of importance is that the temperature at which the tubes are kept after being filled should approximate from 20 to 25 C. Concerning the question of using the capillary tubes just after they are bought, without washing, it should be said that these tubes must be kept scrupulously clean and dry, and that they are not in this condition as they come from the shops. The tubes should be cleaned with water, alcohol and ether, and allowed to dry before being used.

EXTERNAL PELVIMETRY—DIFFERENCE IN MEASUREMENT OF THE TRUE CONJUGATE AND EXTERNAL CONJUGATE

To the Editor:—1. Can you refer me to any article on external pelvimetry of the female computed with reference to height, weight and build? Most books on obstetrics do not take these into account. 2. What is the usual difference in the true conjugate as compared with the external conjugate computed in inches or centimeters? Please omit my name.

A. C. D.

ANSWER.—1.

Pierce, G. H.: Outlet Pelvimetry, *Med. Rec.* 98:723 (Oct. 30) 1920.
Grunkraut and Haret: Pelvimetry with Roentgenoscopy, *Presse méd.* 28:756 (Oct. 23) 1920.

Haret, G.: Radiopelvimetry, *J. de radiol. et d'electrol.*, September, 1920.

Acosta-Sison, H., and Calderon, F.: Pelvimetry and Cephalometry Among Filipino Women and New-Born Babies, Based on 1,237 Cases, *Philippine J. Sc.* 14:253 (March) 1919.

Bourne, A. W.: Pelvimetry in Antenatal Clinics, *Brit. M. J.* 1:70 (Jan. 18) 1919.

MacKenzie, W. R.: Roentgenographic Pelvimetry, *Brit. M. J.* 1:612 (June 1) 1918.

Huntington, J. L.: True Value of Certain Pelvic Measurements, *Am. J. Obst.* 76:277 (Aug.) 1917.

Van Allen, H. W.: Roentgen Ray in Pelvimetry, *Am. J. Roentgenol.* 3:367 (July) 1916.

Cummings, H. H.: External Pelvimetry with Special Reference to Method of Measuring Outlet, *J. Michigan M. Soc.*, December, 1911; abstr. THE JOURNAL, Oct. 28, 1911, p. 1484.

2. The true conjugate, or conjugata vera, is the distance from the top of the pubes to the tip of the sacral promontory. In the normal pelvis it measures 11 cm. The external conjugate or Baudelocque's diameter, is the distance from the anterior surface of the pubes to the depression under the last lumbar spine and measures 20 cm.

EFFECT OF DRINKING WATER WITH MEALS—CONTROL OF PYLORIC SPHINCTER

To the Editor:—Please give me the latest opinion, based on experimental evidence, concerning the following: 1. Does the ingestion of water during meals dilute the gastric juice? 2. Does the action of the pyloric valve depend on sympathetic nerve impulses or on the chemical reaction of the gastric or duodenal contents? References to the literature bearing on these subjects would be appreciated. Please omit name.

F. E. M., New York.

ANSWER.—1. The immediate effect of water during a meal is certainly one of dilution. However, this fact has been overemphasized by those who are adverse to the drinking of water with meals, for it has been shown indubitably by several investigators, working on dog and man, that water itself promotes a secretion of gastric juice and that when water is given shortly before or with a meal it has a very definite effect in increasing the secretory response of the stomach as regards volume of juice and acidity. A given amount of water has "less and less effect on gastric secretion the longer the time interval between the meal and the giving of water" (Sutherland). Ivy has likewise found that the ingestion of water with the meal increases the amount and the free and total acidity of the gastric juice. Incidentally, the ingestion of water with meals decreases the emptying time of the stomach.

For a detailed account of the experiments and bibliography on the subject see:

Ivy, A. C.: Studies in Water Drinking, *Am. J. Physiol.* 46:420 (July) 1918.

Sutherland, G. F.: On the Secretory Response of the Gastric Mucous Membrane to Water and Saline Solutions, *Am. J. Physiol.* 55:258 (March) 1921.

2. Regarding the control of the pyloric sphincter, its activity is not dependent on impulses which reach it either by way of the sympathetic nerves (splanchnics) or by way of the vagi. To be sure, the vagi and the splanchnics may and do normally regulate its activity, since these nerves convey essentially motor and inhibitory impulses, respectively, to the stomach, including the pyloric sphincter. However, the stomach performs its motor and secretory functions quite

normally after all its extrinsic nerves have been sectioned.

According to Cannon, the pyloric sphincter relaxes under the influence of the free acidity of the gastric juice, and contracts under influence of free acid in the duodenum (acid chyme). This theory, supported by a wealth of experimental evidence (obtained chiefly from cats), has been questioned latterly by clinicians and laboratory workers alike. The theory failed to explain, for example, the rapid exit of water and neutral egg white solutions from the stomach at a time when the free acidity of the gastric juice had not risen sufficiently to open the pylorus or to close the pyloric sphincter after reaching the duodenum. The theory failed, furthermore, to explain the normal or accelerated rate of the emptying of the stomach in achylia gastrica. Morse even reported a diminution in the discharge of the stomach with an increase in the acidity of the gastric contents. Luckhardt, Phillips and Carlson by experiments with man and dog found a greater relation between the muscular activity of the stomach (tone and peristaltic waves) and the opening of the pylorus than between the latter and the reaction of the intragastric contents. Cole, in man, found that the stomach begins to empty itself before the ingestion of a full meal is complete, which indicates a greater relation between the motor activity of the organ and the intragastric reaction. These findings in man have been corroborated and extended by McClure, Reynolds and Schwartz, who found that the normal human stomach begins to empty itself within a few minutes after the ingestion of a meal (of proteins, fats or carbohydrates). These investigators also relate the opening of the sphincter with the approach of each antral peristaltic wave. Lately, Wheelon and Thomas showed, in dogs, that the opening of the pyloric sphincter is "dependent, in part at least, on gastric motility." They promise further observations showing that the "rhythmic contractions of the sphincter bear a definite and constant relation to the motility of the stomach."

The following articles present data (and bibliography) in support of the short discussion given above:

- Cannon, W. B.: The Acid Control of the Pylorus, *Am. J. Physiol.* **20**: 283, 1907.
Morse, W. E.: The Relation of Acid to Gastric Discharge and Duodenal Regurgitation in the Dog, *Am. J. Physiol.* **41**: 439 (Oct.) 1916.
Luckhardt, A. B.; Phillips, H. T., and Carlson, A. J.: The Control of the Pylorus, *Am. J. Physiol.* **50**: 57 (Oct.) 1919.
Cole, L. G.: Physiology of the Pylorus, Pileus Ventriculi and Duodenum as Observed Roentgenographically, *THE JOURNAL*, Sept. 6, 1913, p. 762; *Am. J. Physiol.* **43**: 618, 1916.
McClure, C. W.; Reynolds, L., and Schwartz, C. O.: On the Behavior of the Pyloric Sphincter in Normal Man, *Arch. Int. Med.* **26**: 410 (Oct.) 1920.
Wheelon, H., and Thomas, J. E.: Rhythmicity of the Pyloric Sphincter, *Am. J. Physiol.* **54**: 460, 1921.

DELAYED SPEECH DEVELOPMENT IN CHILDREN

To the Editor:—Will you discuss reasons for delayed speech development in children? A country practitioner has applied to me for information concerning his own child, the tenth in the family who, he says is in good health and otherwise shows no defect in physical development, but who now at 3 years of age says only a few words and those indistinctly. He makes signs for what he wants, and when understood or misunderstood says "Yes" or "No." He says "Papa" clearly, but "Mama" only with an effort. He plays freely with other children, but even then makes his wishes known by signs. He hears well and has no tongue tie. The physician says he knows of other similar cases. Naturally he is concerned as to the outcome to be expected.

HENRY W. IRWIN, M.D., Natchitoches, La.

ANSWER.—The causes of delayed development of speech in children may be thus classified:

1. Deafness, complete or partial.
2. Feeble-mindedness, severe or moderate.
3. Mental retardation, less than feeble-mindedness, but of congenital origin.
4. Injury to the speech centers or tracts, either through traumatism (for example, at birth), or disease. In these cases the children are likely to show paralysis, and they may be feeble-minded.
5. Impaired mental physiology, usually due to the effects of prolonged ill health, marked adenoids, etc.
6. Disturbed psychology in an otherwise normal child. This class is rather large, and in the individual case, the cause is often obscure. Environmental conditions, diet, etc., should be studied, in the light of the peculiarities of the child. For example, it sometimes happens that too ready acquiescence in the tendency of a particular child to gesture rather than to talk may confirm such a tendency and thus actually discourage the inception of talking.
7. Peripheral abnormalities. Tongue tie is an example. But, in the child of alert mentality, speech is likely to start and progress much as usual, excepting for the lack of articulative normality resulting from the deformity.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

- ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vigne, Juneau.
IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.
ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
ILLINOIS: 217 County Bldg., Chicago, Aug. 30-31. Director, Mr. W. H. H. Miller, Capitol Bldg., Springfield.
MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter P. Bowers, 144 State House, Boston.
MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.
PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.
RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.
WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

ILLINOIS PRACTICE ACT OF 1917 DECLARED VOID

The decision of the Illinois Supreme Court in *Love v. People* is one of the most important decisions on the state regulation of the practice of medicine that has been rendered for many years. The case came before the supreme court directly on a writ of error from the lower court. The evidence shows that Love, the defendant in the original case and the plaintiff in error on the appeal, was graduated from the Palmer School of Chiropractic located in Des Moines, that he took a two year course in this institution, and that no chiropractic school in this country gives a four year course. He made application to the Department of Education and Registration for a license and was informed that the Illinois Medical Practice Act of 1917 required a four year course of instruction for a license to practice any system or method of treating human ailments without the use of drugs; also that a regulation of the department required that his application be accompanied by letters of recommendation regarding his moral and professional character from at least two reputable medical men or osteopaths living in Illinois.

On being advised by his attorney that these requirements were unfair, discriminatory and unconstitutional, he began practicing and treated a number of patients according to the methods of chiropractic. For this he was indicted, convicted and sentenced to pay a fine of \$50 and costs in the Vermilion County court. The indictment charged him with treating human ailments without the use of drugs or medicine and without operative surgery and without a license.

On account of the constitutional point involved, the writ of error was taken direct to the supreme court. There was no question of the violation of the medical practice act. The defense was that Section 5 of the act, which fixes the minimum standard of professional education required to practice medicine and surgery in all its branches and for treating human ailments without the use of drugs or medicine or operative surgery is invalid because it is unreasonable, discriminatory, violative of Section 1, Article 2 of the Illinois constitution, and of the due process clause of the fourteenth amendment of the federal constitution.

Section 5 of the medical practice act provides the minimum standard of professional education as follows: The applicant for a license to practice medicine and surgery in all its branches must be "a graduate of a medical school deemed to be reputable and in good standing at the time of graduation." The applicant for a license to practice "any system or method of treating human ailments without the use of drugs or medicine and without operative surgery" must be a graduate of a professional school requiring a "four years' course of instruction" for graduation.

After reviewing the history and claims of chiropractic, the court says, "It is not the province of the courts to extol or belittle chiropractic, osteopathy, or medicine and surgery. . . . The statute now in question recognized such science (chiropractic) as a useful and recognized method of treating

human ailments and prescribes what are deemed the necessary professional and educational qualifications to practice such methods of healing. We must, therefore, in this consideration treat chiropractic . . . as a profession or business that may be regulated by provisions prescribing reasonable requirements of those who apply to practice that profession, without unlawful or unjust discrimination."

The court then reviewed the power of the state to restrict and regulate various pursuits and occupations and to impose restrictions on such pursuits and showed that the power of the legislature must be exercised in conformity with constitutional requirements and that such restrictions must operate equally on all persons pursuing the same business or profession under the same circumstances. Where an act does not impose on all persons of like age, sex and condition the same restrictions in their business or profession, it is the duty of the court to declare the act void. The court then refers to the decision of the supreme court of Ohio in the *State v. Gravett* (55 L. R. A. 791) in which the law was declared void which required osteopaths to hold a diploma from a college which required a four year course and did not require such time and study from those applying for an unlimited license to practice medicine and surgery. The court then says, "For like reasons we must hold that Section 5 of the statute now in question (the Illinois medical practice act of 1917) is void because it unlawfully and unjustly discriminates against one class of physicians, or those desiring to become physicians, by requiring that before they can practice treating human ailments without the use of drugs, medicine, or operative surgery, they must be graduates of a professional school, college or institution teaching that system which requires as a prerequisite for graduation a 'four years' course of instruction,' while for one who desires to practice medicine and surgery in all their branches the only professional education required is that prior to July 1, 1922, he be 'a graduate of a medical college deemed to be reputable and in good standing at the time of his graduation, and has completed a course of study in such college' in accordance with the law and the rules of the state board of health established and in force at the time of his graduation.

. . . We are not prepared to hold that requiring four years' professional education before a chiropractor or osteopath is allowed to practice his profession is unreasonable or unjust. Such a question is a question for the legislature, and the legislature is presumed to have investigated the question for itself in ascertaining what is best for the good of the profession and for the people among whom such profession is practiced; but the legislature cannot discriminate against chiropractors or osteopaths as to the time of professional education required, where no reason can be perceived for such discrimination. The act itself discloses clearly that there is an unjust discrimination against chiropractors and osteopaths. . . . Surely there is no reason for providing that the limited professional education of one class of physicians shall be greater or for a longer time than that for those practicing medicine and surgery in all their branches."

This decision, which nullifies the Illinois Medical Practice Act of 1917, clearly demonstrates two facts: First, that the only interest of the state or of the courts in the regulation of the practice of medicine arises from their interest in it as a business. It is not the function of the legislature or the court to decide scientific questions. The relative merits of different systems of treatment cannot be determined by legislative vote or court decision. The sole interest of the state in such laws lies in its interest in the regulation of the practice of medicine as a business; consequently, all discussions of medical practice acts or state examining boards as a means for elevating the standard of the practice of medicine are beside the point. Second, in any laws regulating or licensing those who treat the sick, the qualifications and conditions for license must be the same, or at least must not be greater for those asking for a limited license than it is for those asking for an unlimited license. In the majority of cases it is far better to provide that the state board or department of registration shall establish such regulations and qualifications as it may deem advisable, instead of speci-

fying these qualifications in the law. If the regulations are unfair they can be criticized and condemned by the court without jeopardizing the entire practice act. The court also held that the regulations of the state board requiring chiropractors to submit letters of endorsement from two physicians or osteopaths was unjust and unreasonable.

In the opinion of the attorney general, this decision makes invalid the Illinois Medical Practice Act of 1917, and restores the act of 1899 which it repealed. The Department of Education and Registration is proceeding under the act of 1899 until further legislation is adopted.

Kansas February Examination

Dr. Henry A. Dykes, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Feb. 8, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Four candidates were examined, all of whom passed. Twenty candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University	(1920)	79.3
University of Kansas	(1921)	84.2
St. Louis University School of Medicine	(1920)	84.6
Washington University	(1920)	79

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University	(1919)	Missouri
National Medical College	(1888)	Missouri
Chicago College of Medicine and Surgery	(1912)	Illinois
Chicago Hospital College of Medicine	(1917)	Illinois
Northwestern University	(1920)	Illinois
Rush Medical College	(1916)	Illinois
University of Illinois	(1917)	Missouri
Drake University College of Medicine	(1897)	Missouri
Hospital College of Medicine, Louisville	(1907)	Kentucky
Johns Hopkins University	(1915)	Maryland
Tufts College Medical School	(1901)	Mass.
National Univ. of Arts and Sciences Med. Dept.	(1917)	Missouri
Marion-Sims College of Medicine	(1897)	Iowa
St. Louis University School of Medicine	(1916)	Missouri
University of Michigan Medical School	(1906)	Michigan
University of Cincinnati	(1912)	Ohio
University of Oklahoma	(1917)	Oklahoma
University of Tennessee	(1914)	Tennessee
Vanderbilt University	(1910)	Missouri
Milwaukee Medical College	(1906)	Wisconsin

Utah April Examination

Dr. C. L. Olsen, corresponding secretary, Utah State Board of Medical Examiners, reports the written examination held at Salt Lake City, April 8, 1921. The examination covered 19 subjects and included 100 questions. An average of 75 per cent. was required to pass. Two candidates, including one osteopath, took the physician's and surgeon's examination, both of whom passed. Three candidates were licensed by reciprocity. Two candidates were licensed by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Western Reserve University	(1920)	83.7
Osteopath		85.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Maryland	(1916)	Colorado

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Hahnemann Medical College and Hosp. of Chicago	(1891)	U. S. Army
University of Pennsylvania	(1918)	Nat'l Bd. Med. Ex.

Vermont June Examination

Dr. W. Scott Nay, secretary, Vermont State Board of Medical Registration, reports the written examination held at Burlington, June 28-30, 1921. The examination covered 12 subjects and included 180 questions. An average of 75 per cent. was required to pass. Thirty-one candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Vermont.....	(1901) 86.6, (1919),* 91.6, (1921) 85.7, 86.6, 86.8, 87.1, 87.4, 87.7, 87.8, 88.1, 88.1, 88.5, 88.8, 88.8, 89.1, 90, 90.1, 90.2, 90.3, 90.5, 90.6, 91.1, 91.1, 91.2, 92.8	(1920) 88.9, 90.2,	
University of Montreal.....		(1906)	85.7
University of Naples.....		(1919)†	84.5
* No grade given.			
† Graduation not verified.			

Book Notices

TUBERKULOSE: IHRE VERSCHIEDENEN ERSCHEINUNGSFORMEN UND STADIEN SOWIE IHRE BEKÄMPFUNG. Von Dr. G. Liebermeister, Leitender Arzt der Inneren Abteilung des Städtischen Krankenhauses Düren. Paper. Price, 96 marks. Pp. 456, with 16 illustrations. Berlin: Julius Springer, 1921.

Liebermeister's theme is that tuberculosis is to be viewed as a generalized and not as a local disease. Even in cases in which the process is overwhelmingly manifested in one organ, as the lung, meninges or bone, there will be found elsewhere, much oftener than is commonly believed, foci that prove the previous presence of the specific bacilli in the blood. These foci are not always macroscopically or even histologically the classical tubercle; there is, in addition to the tubercle, an acute exudative form as well as a chronic fibrous form. The tuberculous nature of the latter form is often overlooked as it is seen in myocardium, blood vessel, liver, kidney, etc. That these three types are tuberculous, Liebermeister concludes from the histologic structure, the finding in the blood during life or in the tissues after death of acid-fast bacilli especially by his acetic acid-antiformin method, by animal inoculation or by symptoms and signs, and particularly by the tuberculin reaction during life. Like others he sees three stages of tuberculosis, and emphasizes the importance of their study and treatment, especially of the second stage with its bizarre manifestations of anemia, asthenia, bronchitis, emaciation, etc. He is an ardent advocate of the specific tuberculin therapy, though he admits the value of supporting nonspecific treatment. There are brief histories of cases, together with numerous tables, all the result of a ten years' careful clinical and necropsy study of this disease. One may not always feel that the proof is convincing as to the tuberculous nature of some of his cases, or as to the connection between the treatment and the cure. The finding in the blood of one or two acid-fast, short rods after a tedious and complicated procedure does not always satisfy as a clinical diagnosis of tuberculosis. Nor does a symptomatic improvement after the use of tuberculin in a doubtful case prove to us the value of this form of treatment. But we pardon what seems to be overenthusiasm or unwarranted optimism; for a book which is the result of long and seemingly careful bedside, laboratory and mortuary investigation, and which enables us to see one of the commonest of our infectious diseases in a new and clearer light, is well worth while. The book would be improved by condensation as well as by a fuller index.

PRACTICAL CHEMICAL ANALYSIS OF BLOOD. A Book Designed as a Brief Survey of This Subject for Physicians and Laboratory Workers. By Victor Carl Myers, M.A., Ph.D., Professor of Pathological Chemistry in the New York Post-Graduate Medical School and Hospital. Cloth. Price, \$3. Pp. 121, with 13 illustrations. St. Louis: C. V. Mosby Company, 1921.

This book is designed as a brief survey of the subject for physicians and laboratory workers, and is reprinted largely from articles which have appeared during the past year in the *Journal of Laboratory and Clinical Medicine* under the title of "Chemical Changes in the Blood in Disease." As the preface states: "The object has been to present briefly a discussion of the chemical blood determinations which have been found of definite value in the diagnosis and treatment of disease. In the laboratory part of the book a single method for each determination has been included, partly for the sake of brevity, and partly because the methods described are especially suited to the scheme of blood analysis which we employ." The subjects are discussed under the headings of nonprotein and urea nitrogen, uric acid, creatinin, blood sugar, carbon dioxide combining power, cholesterol and chlorids. The discussion of the methods is clear and concise, the various technical manipulations being fully detailed. While some workers might prefer other methods for the various determinations, such, for instance, as those originated by Folin and Wu, yet those discussed by Myers yield accurate and reliable results and may be depended on. Under each separate topic the author has given a full discussion of the findings in the various conditions to which

these examinations are applicable, and has given a clear interpretation of the results to be obtained by following these methods. In an appendix the author has presented a number of practical questions which may arise in connection with the chemical analysis of blood for diagnostic purposes, and has offered literature references to other blood determinations, which have, at present, less practical value. Here, also, are discussed a few quantitative methods of urine analysis in connection with the blood analyses, an alphabetical list of the standard solutions and reagents employed in the various tests forming a very convenient source of reference. This little book is recommended to all those who have occasion to employ such tests, either in their own routine work or in performing them for others.

THE FUNDAMENTALS OF BACTERIOLOGY. By Charles Bradfield Morrey, B.A., M.D., Professor of Bacteriology, Ohio State University, Columbus, Ohio. Second edition. Cloth. Price, \$3.25. Pp. 320, with 177 illustrations. Philadelphia: Lea & Febiger, 1921.

This is a textbook designed for a half year's work in the fundamental technic of bacteriology. A detailed description of the contents seems unnecessary, particularly since the author makes no claims as to originality. The last section of the book is devoted to a general discussion of the life and activities of pathogenic bacteria. The reader is struck by the number of technical terms encountered throughout the book. These are in most cases accurately defined, although the synonymous use of "complement-fixation" and "complement-deviation" is to be regretted. It is also difficult to understand how a student can comprehend the principles of immunity with no knowledge of disease processes or their causes. There are however, various features to be commended, the most important of which is the simplicity of language, a point too frequently overlooked in elementary textbooks. The value of a purely technical course in bacteriology for college students is doubtful. It would seem far better to teach technic in connection with a general study of the structure and activities of bacteria and their relationships, and thus to relegate technical processes to their proper position—one of usefulness as a means to an end.

THE HOPE OF OUR CHILDREN. A Treatise on Tuberculosis in Juveniles. By Hans Much, Director of the Institute for the Research of Tuberculosis at the University of Hamburg. Translated by Dr. Max Rothschild, Medical Director of the California Sanatorium for the Treatment of Tuberculosis, Belmont, California. Paper. Price, 60 cents. Pp. 22. San Francisco: The Courier Company, 1921.

This little brochure is a plea for early active and preventive treatment of tuberculosis in children. The discussion is largely popular, the appeal being especially directed to parents, family physicians and school officials. The subject is well presented and in scientific manner. The statement that if children pass through tuberculosis they "acquire a lasting protection against tuberculosis" is misleading, at least to the layman, who may fail to grasp the fact, recognized by the author a little further on, that this protection may later be broken down with the redevelopment of tuberculosis. Also, to say that "in its incipency every tuberculosis is curable," the cure being largely by the use of roentgen rays, may arouse more hope than is justified in the light of practical experience. Should we not in speaking to the laity keep well within the bounds of demonstrated fact?

THE MANNER OF MAN THAT KILLS. Spencer — Czolgosz — Richeson. By L. Vernon Briggs, M.D., Director of the Massachusetts Society for Mental Hygiene. Cloth. Price, \$5. Pp. 444, with illustrations. Boston: Richard G. Badger, 1921.

Dr. Briggs presents in this work his study of the life histories of three notorious criminals—Spencer, Czolgosz and Richardson. All three suffered capital punishment for the crimes they committed since, in the testimony of various experts, they were considered sane. It is Dr. Briggs' belief that they were not sane, and his book is written with a view to proving his belief. The plea is that it is the duty of society to provide suitable environment and protection and early medical treatment rather than to punish the defective as a criminal after he has committed the crime. Dr. Briggs makes a strong case in each instance. It must be remembered, however, that the book is not so much a medical work as a sociopsychologic treatise.

Medicolegal

Physicians Not Liable for Typhoid Fever

(*Davis et al. v. Rodman et al. (Ark.)*, 227 S. W. R. 612)

The Supreme Court of Arkansas, in affirming a judgment in favor of the defendant physicians, says that the plaintiffs were man and wife who had a family of six minor children and two adult married sons. The adult sons lived in their own homes. One of them was taken with typhoid fever, and the other nursed him and subsequently had the fever. The plaintiffs and three of their minor children were also stricken with the fever, owing, it was alleged, to the negligence of the defendants, for which a recovery of damages was sought.

There was an allegation that the defendants "failed to have buried or disinfected the secretions and excretions from the bodies of the patients." But there is no duty imposed on physicians by statute personally to bury or disinfect the secretions or excretions of their typhoid fever patients. The state board of health requires that "no person in charge of a typhoid fever patient shall so dispose of the excreta or other infectious bodily secretion or excretion as to cause offense or danger to any person or persons." If it be conceded that this makes it the duty of physicians to instruct those in immediate charge of a patient to dispose of the excretions and secretions in the foregoing manner, still there were no allegations of fact in this case showing that the failure to discharge that duty was the proximate cause of the communication of the disease.

It is undoubtedly the duty of physicians who are attending patients afflicted with contagious or infectious diseases not negligently to do any act that will tend to spread the infections. It is likewise their duty to exercise reasonable care to advise members of the family and others who are liable to be exposed to it of the nature of the disease and the danger of exposure. The relation of a physician to his patient and the immediate family is one of the highest trust. On account of his scientific knowledge and his peculiar relation, an attending physician is, in a certain sense, in custody of a patient afflicted with infectious or contagious disease, and he owes a duty to those who are ignorant of such disease, who by reason of family ties or otherwise are liable to be brought into contact with the patient, to instruct and advise them as to the character of the disease. It is a sound rule of law that one who by reason of his professional relation is placed in a position in which it becomes his duty to exercise ordinary care to protect others from injury or danger is liable in damages to those who are injured by reason of his failure to exercise such care.

It was therefore the duty of the defendants, when called to attend the children of the plaintiffs, to notify the plaintiffs, other nurses and attendants of the nature and character of the disease, to warn them of the danger of infection, and to instruct them as to the usual methods approved by the profession, of which they had knowledge, for the prevention and spread of the disease. This duty was incumbent on the defendants regardless of the rules and regulations of the state board of health on the subject. But it was not the duty of the defendants as physicians to enforce the rules of the state board of health for the prevention of typhoid fever. That was the duty of local health officers. Violation of the rule of the state board of health with regard to reporting communicable diseases was evidence of negligence, but was not actionable negligence creating civil liability, unless it was the proximate cause of injury to the plaintiffs, which there was no allegation of facts to show. Assuming it to be true that the defendants advised the plaintiffs to move the second adult son stricken to their home, and that they could put him among their other children, such instructions, coming from attending physicians without warning of the danger of infection to the other children, were acts of gross negligence, but specific acts and facts were not alleged showing that they caused the injury to the plaintiffs.

Nor did mere failure to "vaccinate" the plaintiffs, their children, nurses and others exposed to the disease render the defendants liable for damages. It cannot be said that the

efficacy of inoculation of a specific vaccine to prevent the spread of typhoid fever has been so thoroughly established by medical science as to make it the absolute duty of physicians to inoculate nurses, attendants and persons exposed during an epidemic of that disease. It must be left to the judgment and discretion of the physician under the circumstances of each particular case to determine whether or not inoculation is necessary.

Proper Charge to Jury in Malpractice Case

(*Horn v. Pope (Ala.)*, 87 So. R. 161)

The Supreme Court of Alabama, in affirming a judgment in favor of the plaintiff for damages for alleged malpractice by the defendant, does not state the amount of the judgment or the evidence on which it was recovered. The plaintiff stated his claim in various forms in different counts, and the court holds that each count of the complaint sufficiently conformed to rules of pleading in cases of this character as heretofore established and approved by this court, so that neither of them was subject to the defendant's demurrer. It also holds that there was no error in giving the plaintiff's requested charge, which to an extent explains the case, and was as follows:

If the jury believe from the evidence that the plaintiff broke his leg, and that the defendant was employed by the plaintiff's father (plaintiff being a minor) to treat and attend the same as a physician and surgeon, and he entered upon and undertook such employment, and did set or dress or treat the plaintiff's said leg as a physician or surgeon, and assumed charge of the same, then the plaintiff was entitled to receive from the defendant the care, attention and skill of an ordinarily skilled physician and surgeon. And if you believe that the plaintiff did not receive from the defendant such care, attention and skill, and that in consequence of not receiving the same and without fault on the plaintiff's part, or on the part of any one else, suffered increased pain, suffering and injury, then the jury are instructed that the defendant is liable and the jury will render a verdict for the plaintiff, and assess his damages found from the evidence, not to exceed the amount claimed in the complaint.

Irritation of Tumor Necessitating an Operation

(*Louisville Ry. Co. v. Koob (Ky.)*, 227 S. W. R. 291)

The Court of Appeals of Kentucky affirms a judgment in favor of plaintiff Koob for \$3,800 damages for personal injuries, which included the bruising of her breast, irritating a tumor so that a physician decided that it was best to remove it from her breast, as he was afraid it might result in cancer. The court says that about five years before the physician had noticed the tumor and had recommended that it be taken out then, as it might become malignant. However, there was no danger of its becoming malignant, if not irritated. When the bruised gland was removed, it showed irritation. It was argued that the defendant railway company was not responsible for the operation on the plaintiff's breast, since the operation was due to a tumor which should have been removed several years before. But the evidence showed that the tumor was not malignant, and if the breast had not been bruised and irritated, it might never have been necessary to remove the tumor. Hence it could not be said that the defendant was in no wise responsible for the operation, for the accident caused the bruised condition which made the operation necessary.

Society Proceedings

- Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
- American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
- American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
- Colorado State Medical Society, Pueblo, Sept. 6-8.
- Idaho State Medical Association, Twin Falls, Oct. 6-7.
- Indiana State Medical Association, Indianapolis, Sept. 28-30.
- Kentucky State Medical Association, Louisville, Sept. 27-29.
- Minnesota State Medical Association, Duluth, Aug. 24-26.
- Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
- National Medical Association, Louisville, Ky., Aug. 23-26.
- New England Surgical Society, Worcester, Mass., Sept. 21-22.
- Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
- Utah State Medical Association, Salt Lake City, Sept. 13-14.
- Vermont State Medical Society, St. Albans, Oct. 13-14.
- Washington State Medical Association, Seattle, Sept. 2-3.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
- Wyoming State Medical Society, Casper, Sept. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

April, 1921, 161, No. 4

- Pellagra. W. J. MacNeal, New York.—p. 469.
- *Absence of Pancreatic Secretion in Sprue and Employment of Pancreatic Extract in Treatment. T. R. Brown, Baltimore.—p. 501.
- *Epinephrin Hypersensitiveness and Its Relation to Hyperthyroidism. F. W. Peabody, C. C. Sturgis, E. M. Tompkins and J. T. Wearn, Boston.—p. 508.
- *Diet in Treatment of Chronic Arthritis. R. Pemberton, Philadelphia.—p. 517.
- *Pathology of Bronchial Asthma. Nai Kamchorn and E. G. Ellis, Bangkok, Siam.—p. 525.
- Influenza. C. Frothingham, Boston.—p. 528.
- *Acute Nitrobenzol Poisoning: Studies on Blood in Two Cases. R. F. Loeb, A. V. Bock and R. Fitz, Boston.—p. 539.
- New Intestinal Tube; Its Use in Case of Ulcerative Colitis. M. Einhorn, New York.—p. 546.
- *Nocturnal Polyuria. J. H. Barach, Pittsburgh.—p. 551.
- *White Adrenal Line (Sergeant); Its Clinical Significance. W. E. Kay, San Francisco, and S. Brock, New York.—p. 555.
- *Cholesterol in Cerebrospinal Fluid. A. Levinson, L. L. Landenberger and K. M. Howell, Chicago.—p. 561.
- Pulse-Rate and Blood-Pressure Responses of Men to Passive Postural Changes. M. M. Ellis, Long Island, N. Y.—p. 568.
- *Laboratory Aids in Diagnosis of Gonococcal Infections, with Special Reference to Gonococcus Complement-Fixation Test. R. A. Kilduffe, Pittsburgh.—p. 578.
- Pathology and Treatment of Fractures of Spongy Bones. P. W. Nathan, New York.—p. 585.

Absence of Pancreatic Secretions in Sprue.—Brown is convinced from a study of cases that in certain at least of the chronic cases of sprue (1) there is practically complete absence of the pancreatic ferments, and (2) that while, obviously, all the well-recognized forms of treatment, dietetic, hygienic, etc., should be rigorously carried out, nevertheless, very great improvement and, in some cases, apparently clinical cure can be brought about by regular and constant administration of pancreatin.

Epinephrin Hypersensitiveness and Hyperthyroidism.—Summarizing the observations made on various groups of subjects without evidence of organic disease, Peabody et al. state that hypersensitiveness to epinephrin is certainly not characteristic of the hardened soldier; that it occurs in about 14 per cent. of average young men, such as medical students; that it is present in nearly 50 per cent. of the type of young men who broke down under military training with the picture of "effort syndrome" and that it is still more common among definite psychoneurotics. It is difficult not to see some relation between epinephrin hypersensitiveness and what one may call a "nervous constitution." Different individuals, both sick and well, react with different degrees of intensity to the injection of epinephrin. The fundamental nature of the reaction is unknown. Hypersensitiveness to epinephrin is found in many patients with the clinical picture of hyperthyroidism and with an increased basal metabolism, but it is not constant under these conditions. The "positive" reaction to epinephrin appears to occur most often in highly nervous individuals, but it is not constant in such persons. The clinical significance of the reaction is not clear, but at present it should certainly not be regarded as having any specific significance in the diagnosis of hyperthyroidism.

Diet in Treatment of Arthritis.—While no rule can be advanced for determining the level of the appropriate diet in any given case of arthritis, Pemberton says the nearest approach to such a help is based on the recognized approximate requirement of 30 calories per kg. of body weight under resting conditions. If reasonable precautions be observed this is probably a safe nutritive level under most circumstances, and if the total calories so determined be contrasted with the calories level under the previous conditions of the individual's life the observer will often be surprised at the sharp reduction evidenced. It must not be supposed, however, that this will necessarily achieve the desired result in all cases. It is probably fair to say, that this level should be established in many refractory cases as

a foundation for other forms of therapy that might otherwise be inoperative. Attention is called to the principle of giving the individual as much satisfaction as possible at his meals by serving bulky substances of small nutritive worth. It is thus possible to provide what appears to be a fairly generous meal, although the amount of actually nutritious substances, such as eggs, bread, butter, milk, etc., which form the source of the calories in the diet may be very limited.

Pathology of Bronchial Asthma.—A twelfth case of fatal bronchial asthma was studied by Kamchorn and Ellis. Clinically, it is of interest because of the family history of asthma in four generations. Furthermore, the duration of the disease, with attacks from childhood to the age of 52 years, would supposedly lead to permanent histologic changes in the bronchi if such ever occur in this affection, yet no greater changes were present in the walls of his bronchi than might develop in a few days during an acute inflammation without asthma. Therefore, the histology of the bronchi does not explain the course of bronchial asthma. The length of time a person suffers from the disease and the number of attacks he has are apparently without effect on the bronchi. The theory of spasm of the bronchial muscles, while not thus proved, is by each case increasingly favored.

Acute Nitrobenzol Poisoning.—Two young men bought six bottles of Jamaica ginger from a stranger. Both agreed that this ginger did not taste like ordinary ginger but was drinkable, so that they partook freely of it. On subsequent analysis the liquid was found to contain a high percentage of nitrobenzol. In about three hours after beginning on the first bottle one man began to have generalized headache, nausea and blurring of vision. He thought that he fell on the sidewalk and remembered nothing further until he woke up in the hospital. The other man, at about the same time, began to feel dizzy and nauseated. He did not lose consciousness but came to the hospital with his friend. At entry both men were of a steel gray-blue color, the unconscious man looking particularly dead while his companion was of a ghastly color but in reasonably good shape. There was nothing else especially notable except that neither man excreted any urine for at least hours after entry into the hospital. The stomachs of both men were washed out at once. The sicker man was bled 100 c.c. of blood and transfused with 600 c.c. of normal blood. In the middle of transfusion he suddenly woke up and appeared normal. The second man was also transfused, with less dramatic effect. Both men, however, felt perfectly well on the following day and made normal recoveries, except that the more seriously poisoned man developed a mild, uncomplicated pneumonia. The oxygen capacity of both bloods on the first observation was markedly reduced, in one case being only 6.2 volumes per cent. The total hemoglobin was not reduced. The fact that methemoglobin was not detected by spectroscopic examination suggests that a large proportion of the hemoglobin was changed to Filehne's nitrobenzol hemoglobin. This combination, in turn, was an easily destroyed compound as demonstrated by the blood analysis made twenty-four hours later. By this time the appearance of both patients was much more nearly normal and the bloods showed no diminution in their total hemoglobin, oxyhemoglobin or oxygen capacity. Leukocytosis developed in one case. The high-colored, almost black, urine excreted by these patients was probably due to para-amido-phenol.

Nocturnal Polyuria.—A survey of 100 cases of subacute and chronic nephritis was made by Barach. He found that nocturnal polyuria is a highly diagnostic symptom of an established subacute or chronic nephritis. It occurs independently of arterial hypertension. The quantitative analysis shows a complete reversal from the normal in the amount of work accomplished by the kidneys during the day and night periods. Observations on patients having nocturnal polyuria show that it is not the result of heavy evening meals, physical exertion, arterial hypertension nor the horizontal posture. The most probable cause seems to be found in the physiologic adjustments in circulation incidental to sleep. The evidence gathered in these observations suggests that nocturnal polyuria is primarily a manifestation of increased elimination of water because of a more favorable state of the renal circulation and

that the increased elimination of salts is coincidental rather than causative.

White Adrenal Line.—From a study of 255 cases of a variety of diseases and normals, Kay and Brock feel justified in asserting that the so-called white adrenal line of Sargent is a local vasomotor reflex, resident in the skin, bearing no direct relationship to suprarenal gland activity. The reasons for postulating the above are: (a) Its independence of blood pressure, acute fatigue and other signs of hypo-adrenia; (b) its frequent occurrence in normals and in a variety of diseases unassociated with hypo-adrenia; (c) its appearance in the face of persistent general manifestations of epinephrin subcutaneously administered; (d) its peculiar association with scarlet fever. It would appear that the state of the vasomotor system which allows of its best exhibition is found in young adults of either sex, and especially in the exanthem of scarlet fever. On the basis of this series it is stated that this line has not the clinical significance attributed to it.

Cholesterol in Cerebrospinal Fluid.—Levinson, Landenberger and Howell examined 168 fluids for cholesterol. Normal cerebrospinal fluid contains no cholesterol or only a very small trace of cholesterol. Fluid in which the Wassermann and Lange reactions are positive contains no cholesterol in appreciable amounts. Only three out of twenty-five such fluids gave a reading in the colorimeter. Fluid of hemorrhage of the brain showed high cholesterol content. Fluid from tumor of the brain gave a trace of cholesterol. Fluid from a case of brain abscess gave a high cholesterol reading. The majority of meningitis fluids showed a trace of cholesterol. Three fluids had a high reading. Ventricular fluid gave no cholesterol reading, except when there was the presence of hemorrhage of the brain or other pathologic condition. The Hauptmann reaction seems to depend on the cholesterol content of the cerebrospinal fluid. This work does not bear out Pighini's contention that the Wassermann reaction depends on the cholesterol of the fluid. The authors believe that the cholesterol content depends wholly or partially on the permeability of the meninges.

Gonococcus Complement Fixation Test.—A positive reaction, Kilduffe asserts, is of far greater value than a negative, which again emphasizes the necessity for the proper interpretation of laboratory procedures. Factors influencing the interpretation and reliability of the reaction are: (1) Because of the small amount of antibody produced, the reaction, when positive, is weaker than the Wassermann and may be indefinite. (2) It is frequently absent in acute, uncomplicated cases, and may not appear earlier than six weeks after the onset. (3) In acute exacerbations of a chronic urethritis the reaction is positive in about 80 per cent. of cases; in ordinary chronic urethritis with mild prostatic involvement, the reaction is positive in from 30 to 40 per cent. of cases. The occurrence of an acute complication usually gives rise to a positive reaction. A positive reaction may persist for several weeks after a clinical cure, usually lasting for two or three weeks. If obtained later than that, a focus of active infection is probably present. In women the reaction is positive, as a rule, only when the infection reaches the cervical canal. The reaction is positive in about 60 per cent. of pyosalpinx cases. In cases of gonorrheal arthritis the reaction is positive in from 80 to 100 per cent. The administration of gonococcus vaccine or antigonococcic serum may give rise to a positive reaction which may persist for six or twelve weeks. The reaction has a greater positive than negative value.

May, 1921, 161, No. 5

- Symptomatology and Diagnosis of Foreign Bodies in Air and Food Passages. Based on Study of 789 Cases. C. Jackson, Philadelphia.—p. 625.
- Cancer of Uterus. J. B. Deaver and S. P. Reimann, Philadelphia.—p. 661.
- Multiple Sclerosis and Psychoanalysis. S. M. Jelliffe, New York.—p. 666.
- Surgical Treatment of Empyema by a Closed Method. A. E. Mazingo, Indianapolis, Ind.—p. 676.
- Postnatal Development and Pathologic Organ Reconstruction in Relation to Function and Disease. H. Obertel, Montreal, Canada.—p. 694.
- *Transfusion of Blood. I. S. Ravdin and E. Glenn, Philadelphia.—p. 705.
- Study of Polycythemia Vera with Splenomegaly; Report of Two Cases; Treatment by Roentgen Rays. E. P. Pendergrass, Philadelphia.—p. 723.
- *Typical Tuberculosis with Mikulicz's Syndrome; Report of Case with Unusual Pulmonary and Subcutaneous Lesions. P. L. Marsh, Ann Arbor, Mich.—p. 731.

*Syphilis of Trachea and Bronchi; Résumé of Diagnostic Features; Three Case Reports. P. M. Stimson, New York.—p. 740.

Transfusion of Blood.—Ravdin and Glenn report on 168 blood transfusions done for various anemias. They regard transfusion as a specific in acute hemorrhage where the "limit of bleeding" has not been reached, in melena and in the hemorrhage of hemophilia. It is of definite value in primary pernicious anemia in hastening and prolonging remissions. It is indicated in cases of severe secondary anemia. After transfusion, operations on debilitated or anemic individuals may often be safely undertaken that otherwise would involve serious risk. Transfusion in shock is not as efficacious as in cases of shock associated with hemorrhage. The authors have not been able to prove the value of transfusion in acute infections, but in chronic infections they have had results justifying its use. Transfusion is of unproved value in acute leukemia. In aplastic anemia it is at the most a temporizing procedure. The difference, as far as reactions are concerned, between the citrate method and the Kington-Brown method is practically nil and the simplicity of the former warrants its preference.

Tuberculosis with Mikulicz Syndrome.—A case of tuberculosis is presented by Marsh in which there was a typical clinical picture of Mikulicz's syndrome associated with atypical pulmonary and cutaneous lesions. Histologic examination of a salivary gland and of a subcutaneous tumor revealed undoubted miliary tubercles. Search of the literature revealed only three other cases of the syndrome which were beyond question tuberculous, and only two other cases with skin manifestations, neither of which resembles Marsh's case.

Syphilis of Trachea and Bronchi.—In Stimson's first case, the principal symptom was a paroxysmal cough of three and a half months' duration and increasing severity, accompanied by dyspnea and cyanosis. A positive Wassermann reaction was obtained. Respiratory relief resulted from mercury and arsphenamin, but death occurred soon after from lobar pneumonia. Necropsy revealed a partial obstruction of the left bronchus due to a gummatous lymph node, stenosis of the left pulmonary artery, lobar pneumonia and syphilis. The second patient gave a history of three years of paroxysms of coughing, which for a year were occasionally severe enough to cause syncope. The clinical features were the peculiar deep barking cough, the stridor with enough dyspnea to make sleeping horizontally difficult, and asthmatic rhonchi in both lungs; also a positive Wassermann, a chronic catarrhal laryngitis and a papule in the lower part of the trachea, after the removal of which and the administration of arsbenzol there was a steady improvement in the patient's condition. The third patient gave a history of one year of attacks of "bronchitis," with a severe paroxysmal cough and much sputum, also attacks of difficult painful inspiration and expiration, a fairly constant moderate dyspnea and much loss of weight. The clinical features were marked inspiratory and expiratory dyspnea, notable contractions of the accessory muscles of inspiration, stridor, and inspiratory thrill over the larynx, trachea and left chest, and vesicular breath sounds that were louder on the left side than on the right, also a positive Wassermann, and death thirty-six hours after admission to the hospital. Necropsy was not done. The clinical diagnosis was syphilis of the right bronchus.

American Journal of Ophthalmology, Chicago

July, 1921, 4, No. 7

- Restoration of Obliterated Eye Socket. J. M. Wheeler, New York.—p. 481.
- Meibomian Glands in Chronic Blepharo-Conjunctivitis. S. R. Gifford, Omaha.—p. 489.
- Retinitis of Cardiovascular and of Renal Diseases. W. L. Benedict, Rochester, Minn.—p. 495.
- Ocular Blood Tension. P. Gaudissart, Brussels, Belgium.—p. 500.
- Spasm of Central Retinal Artery. A. B. Bruner, Cleveland.—p. 503.
- Some Clinical Phases of Ocular Involvement in Sinus Disease. E. S. Thomson, New York.—p. 507.
- Ocular Diseases of Nasal Origin. J. A. Patterson, Colorado Springs, Colo.—p. 513.
- Tubercular Infection as Cause of Delayed Healing in Operations on Eye. E. B. Miller, Philadelphia.—p. 516.
- Marginal Vesicular Keratitis. H. S. Gradle, Chicago.—p. 519.
- Primary Epithelioma of Cornea with Treatment. R. Duncan, Los Angeles.—p. 520.
- Recording Scotometer. E. O. Marks, Brisbane, Australia.—p. 521.
- Paralysis of Divergence and Absence of Externus. W. Ralston and E. L. Goar, Houston, Texas.—p. 523.

Boston Medical and Surgical Journal

July 28, 1921, 185, No. 4

- Differential Diagnosis in Destructive Lesions of Great Trochanter. Report of Two Illustrative Cases. C. W. Peabody, Boston.—p. 107.
Present Status of Radiation Treatment of Hypertrophied Tonsils. H. A. Osgood, Boston.—p. 114.
Significant Reactions of Arterial Tension. Manifestations of Angio-Kinetic Energy Clinically Observed and Interpreted. C. J. Enebuske, Boston.—p. 118.
A Nutrition Campaign in Rochester. W. R. P. Emerson, Boston.—p. 117.

Journal of Bacteriology, Baltimore

July, 1921, 6, No. 4

- Spiral Bodies in Bacterial Cultures. L. Florence, Princeton, N. J.—p. 371.
Cause of Eyes and Characteristic Flavor in Emmental or Swiss Cheese. J. M. Sherman, Washington, D. C.—p. 379.
*New Modification and Application of Gram Stain. G. J. Hucker, Geneva, N. Y.—p. 395.
Color Standards for Colorimetric Measurement of H-Ion Concentration. L. J. Gillespie, Boston.—p. 399.
Effect of Pepton Production of Tetanus Toxin. H. L. Wilcox, New York.—p. 407.
Growth and Proteolytic Enzymes of Certain Anaerobes. K. G. Dernby and J. Blanc, Paris.—p. 419.

Modification of Gram Stain.—In making microscopic examinations of the quality of milk received at New York state cheese factories, a need arose for a stain which would have a greater differential value than methylene blue, and which would be applicable for quantitative, as well as qualitative results. In developing a modification of the Gram stain which could be used in staining milk smears, the difficulty has been to secure a decolorizing solution which would allow the gram-positive organisms to retain the stain and still remove the color from the milk and the gram-negative types. A method is described by Hucker which has proved satisfactory. Gentian violet solution: Anilin oil, 3 c.c.; alcohol (absolute), 7 c.c.; water, 90 c.c.; shake; filter; gentian violet (Grübler) 2 gm. Iodin solution: Iodin, 1 gm.; potassium iodid, 2 gm.; water, 300 c.c. Decolorizing Solution: Anilin oil (2 parts) and xylene (1 part), 5 parts; alcohol (95 per cent.), 95 parts. Counter stain: Bismarck brown, 4.5 gm.; water (boiling), 50 c.c.; filter; alcohol (95 per cent.), 30 c.c.

Journal of General Physiology, Baltimore

July 20, 1921, 3, No. 6

- Role of Activity Coefficient of Hydrogen Ion in Hydrolysis of Gelatin. J. H. Northrop, New York.—p. 715.
Energy and Vision. P. L. Du Nouy, New York.—p. 743.
Rate of Growth of Domestic Fowl. S. Brody, Columbia, Mo.—p. 765.
Thermolability of Complement, in Relation to Hydrogen Ion Concentration. C. B. Coulter, Brooklyn.—p. 771.
Case of Salt Antagonism in Starfish Eggs. R. S. Lillie, Cleveland.—p. 783.
Studies in Wood Decay. II. Enzyme Action in Polyporus Volvatus Peck and Fomes Ignarius (L.) Gillet. H. Schmitz, Moscow, Idaho.—p. 795.
Studies on Regulation of Osmotic Pressure. I. Effect of Increasing Concentrations of Gelatin on Conductivity of a Sodium Chlorid Solution. W. W. Palmer, D. W. Atchley and R. F. Loeb.—p. 801.
Correlation of Propagation-Velocity of Contraction-Wave in Muscle with Electrical Conductivity of Surrounding Medium. S. E. Pond, Worcester, Mass.—p. 807.
Donnan Equilibrium and Physical Properties of Proteins. III. Viscosity. J. Loeb, New York.—p. 827.

Journal of Laboratory and Clinical Medicine, St. Louis

July, 1921, 6, No. 10

- *Pathology of Influenza as Seen in Those with Chronic Mental Disease. N. D. C. Lewis, Washington, D. C.—p. 531.
*Alkali Reserve of Blood Plasma During Acute Anaphylactic Shock. A. A. Eggstein, New York.—p. 555.
*Etiology of Scarlet Fever. Alkali-Producing Organisms in Scarlet Fever. R. W. Pryer, Detroit.—p. 561.
Wassermann Test and Its Interpretation. R. L. Kahn, Lansing, Mich.—p. 579.
*Two Stains Used in Preference to Wright's Stain in Routine Staining of Blood Smears. G. B. Grant and E. R. Wilson, Los Angeles.—p. 593.

Pathology of Influenza in Insane.—An investigation was carried out by Lewis on necropsy material obtained at the Government Hospital for the Insane, Washington, D. C. This group of cases is particularly interesting because (1) in most instances the acute infection occurred in tissues already considerably impaired by the chronic processes usually existent in psychopathic and neurologic patients; (2) special attention has been given to the histopathologic changes in the central nervous system; and (3) the ages of the individuals

studied ranged from 7½ months (fetus) to 78 years, with many past middle life, and over 70 years of age. Practically all tissues of the body presented acute changes, the result of the infection; these changes were congestion, edema, degeneration, and rupture of walls of blood vessels resulting in hemorrhages and focal necroses, and alterations in the parenchymatous cells, varying in degree from simple albuminous degeneration to complete necrosis. When the organs were the seat of chronic processes having an abundance of new formation blood vessels there was a striking hemorrhagic picture produced from the rupture of these vessels and the associated tissue reactions. Mucous membranes in general exhibited one or the other of two changes: The congested vessels were plainly visible with bright capillary networks, or membranes were a diffuse beefy red color from rupture of vessels and general outpouring of red blood globules. In cases the kidneys were fairly free from chronic disease, but reacted strongly to the infection by acute parenchymatous cell alterations, marked general edema and universally by hemorrhages, which varied in number, size and location. In the cases forming Group II of original productive nephritis, the acute changes were more diffuse and destructive, particularly the hemorrhages which were often remarkable in extent. Of twenty cases clinically diagnosed dementia, six showed original organic brain disease, usually of the nature of a diffuse, or of a focal gliosis, while congestions, hemorrhages and acute softenings were prominent through all structures regardless of the presence or absence of an original lesion. In the brains from senile and arteriosclerotic patients presenting the usual vascular changes and lack of adequate nutrition, the acute process was exceptionally destructive to vessel walls, and focal areas of softening were most abundant. Among the influential and postinfluential psychoses, the acute hallucinatory disorders, depressions and dementia praecox were the most frequent. The intense meningeal and cortical edema and congestion, the acute processes in the parenchymatous cells, and the alterations in the vessel walls may account for the precipitation of many cases of acute hallucinatory disorder. In later stages of cerebral edema there has been evidence of a tendency to develop depressions, many of which are the type indicated by the term of manic-depressive insanity.

Alkali Reserve During Anaphylactic Shock.—The animals used by Eggstein were sensitized by preliminary injections of horse serum, or purified dried egg albumin. The influence of the preliminary or sensitizing doses of protein on the carbon dioxid capacity of the plasma was found negligible. The animals, after receiving the sensitizing doses of protein, were kept on a well balanced diet for an interval sufficient for sensitization, at the termination of which the shock experiments were made. Acute anaphylactic shock in dogs is associated with an immediate and progressive acidosis. The acidosis appears before the onset of recognizable clinical symptoms of shock. When the carbon-dioxid capacity of the blood plasma falls below 25 volume per cent. the animal usually dies. The acidosis is quickly relieved after shock if the animal survives. The alkali reserve of the plasma is restored to normal in less than six hours. The administration of sodium bicarbonate to dogs before anaphylactic shock has an apparent beneficial influence on the recovery of the animals. However, it will not always prevent death even though the alkaline reserve of the plasma is restored to normal or above. Alkaline treatment of guinea-pigs preliminary to acute anaphylactic shock reduced the mortality 16.7 per cent. in a series of forty-two animals treated with relatively large doses of sodium bicarbonate intravenously and a minimum lethal shock dose of the sensitizing protein.

Etiology of Scarlet Fever.—A large coccus-shaped organism which in size resembles somewhat a yeast has been isolated by Pryor from scarlet fever patients and has not as yet been found in other conditions. This organism is characterized by alkali production in all sugars, abundant spore production and typical amine odor. The spores are very resistant to heat, withstanding at least two hours' boiling but are usually killed by a temperature of 110 C. in the autoclave.

New Stains for Blood Smears.—The stains used by Grant and Wilson do not require preliminary fixation. Solution 1.—Saturated solution eosin in methyl alcohol. Solution 2.—Mallory's instantaneous hematoxylin. Smear should be even

and not too heavy. Dry in air or pass through flame. Stain with saturated solution methyl eosin, from two to two and a half minutes. Wash in distilled water. Stain with hematoxylin solution from three to four minutes. Wash in distilled water, blot and dry. This stain is entirely satisfactory for differential counts, but is unsatisfactory for staining malarial parasites. The following stains were used on all smears suspected of malaria: Solution 1. Saturated solution eosin in methyl alcohol. Solution 2. 0.25 per cent. aqueous solution azure II. Smear should be even and not too heavy. Dry in air or pass through flame. Stain with Solution 1, from two to two and a half minutes. Wash in distilled water. Stain with Solution 2, from twenty to forty seconds.

Kansas Medical Society Journal, Topeka

July, 1921, 21, No. 7

- On Diagnosis and Operative Results of Some Neurologic Conditions. E. Sachs, St. Louis.—p. 217.
Standardized Splints. R. C. Young, Arkansas City.—p. 220.
Comparative Sequelae of Contagious Disease and Focal Infection. F. W. Huddleston, Liberal.—p. 223.
Cancer of Breast—Review of Present Status of Operative Treatment. R. B. Stewart, Topeka.—p. 225.
Law for Doctor: Right of Physician to Rate Himself Relative to His Professional Standing, for Purpose of Determining Amount of His Fee. L. Childs.—p. 228.

Maine Medical Association Journal, Portland

July, 1921, 11, No. 12

- Medical Inspection of School Children. P. E. Gilbert, Ashland.—p. 365.
Report of Delegates to American Medical Association. B. W. Bryant.—p. 378.
Uses of Ultra-Violet Rays in Dermatology. R. B. Josselyn, Portland.—p. 383.

Medical Record, New York

July 30, 1921, 100, No. 6

- *The Thyroid. C. H. Mayo, Rochester, Minn.—p. 177.
Local Anesthesia and Surgical Technic. R. E. Farr, Minneapolis.—p. 179.
Origin and Significance of Minor Vertebral Deformities. J. M. Taylor, Philadelphia.—p. 183.
Complete Encephalitis. J. V. Haberman, New York.—p. 187.
The Intensive Treatment of Hay-Fever. W. Scheppegegrell, New Orleans.—p. 191.
Method of Procedure in Treatment of Cases of Doubtful Initial Lesion. A. Sayre, New York.—p. 192.
On Collaborative Diagnosis. J. Gutman, Brooklyn.—p. 194.
Two Cases of Advanced Suppurative Disease of Lateral Sinus and Jugular Vein. C. E. Perkins, New York.—p. 195.

Basal Metabolism in Thyroid Disease.—Mayo asserts that a basal metabolic rate as high as from +85 to +100 may fall to +35 or +40 if the patient is placed under rest and treatment; this may, however, be but a fictitious improvement. A patient with a metabolic rate of +56, who has survived a recent exacerbation and is improving, is a safer risk than a patient with a rate of +46 who is on the rising wave of an exacerbation. Ligation should be performed under local or nitrous oxid anesthesia. Most patients can be operated on under local anesthesia. With modern technic and methods, the mortality in exophthalmic goiter has greatly decreased, probably due more to early operation than to the advances in surgery.

Military Surgeon, Washington, D. C.

July, 1921, 49, No. 1

- Work of Public Health Service in Care of Disabled Veterans of World War. H. S. Cumming.—p. 1.
After-Care and Medical Follow-up of War Risk Insurance Beneficiaries. J. G. Townsend.—p. 11.
Lesions of Knee in Ex-Soldiers. F. J. Cotton.—p. 20.
Venereal Prophylaxis. J. S. Gomez.—p. 33.
Medical Aspects of Naval Aviation. J. F. Neuberger.—p. 39.
Flight Surgeon; Method for Securing Physical Efficiency. W. F. Bonner.—p. 50.
Occurrence of Mycotic Infections Among Arriving Aliens in Relation to National Preparedness. T. B. Anderson.—p. 53.
Recent Prevalence of Influenza and Its Preventive Inoculation in Japanese Navy. Y. Hori.—p. 62.
Medical Administration of Intermediate Section, France. E. L. Ruffner.—p. 72.
Pulmonary Tuberculosis, Pulmonary Mycosis and Pulmonary Spirochetosis. R. W. Mendelson.—p. 81.
Training of Surgeons for Surgical Teams. W. M. Thompson.—p. 83.
Treatment of Acute Empyema by Closed Method. A. E. Mozingo.—p. 89.

Northwest Medicine, Seattle

July, 1921, 20, No. 7

- Roentgenologic Study of Pain in Right Lower Abdomen. J. T. Case, Battle Creek, Mich.—p. 165.

- Relative Fields of Radium, Surgery and Cautery in Treatment of Cancer of Cervix. R. C. Coffey, Portland, Ore.—p. 173.
*Lethargic Encephalitis in Children. C. U. Moore, Portland, Ore.—p. 176.
*Myeloencephalitis. E. O. Houda, Tacoma, Wash.—p. 181.
Treatment of Influenza and Its Complications. J. T. Wood, Coeur d'Alene, Idaho.—p. 184.
*Auditory Hallucinations in Relation to Disease of Middle Ear. G. E. Price, Spokane, Wash.—p. 187.

'Lethargic Encephalitis in Children.—Twenty-eight cases are analyzed by Moore. Instead of only one-third of the cases having lethargy, as with Comby in Paris, twenty-two patients were somnolent in type, or 80 per cent. In only nine cases do the histories mention a preceding illness. Two thirds of these were respiratory infections. The results show six deaths, or 20 per cent. mortality, and complete recovery in thirteen cases, or 46 per cent. These twenty-eight cases illustrate the many and varied forms of the disease. The youngest case was in a baby 6 weeks old.

Myeloencephalitis.—Houda describes finding a "virus" which showed as a very small active "micrococcus" in twenty-eight cases. The blood was taken from veins, transferred to sterile tubes, the ends of which are hermetically sealed in a gas flame to prevent contamination. After incubating for seventy-two hours or more, a vital slide made from the serum shows the virus more readily than a fresh blood slide. Seemingly the multiplication of this virus reaches a certain degree, after which further growth ceases in the same tube of blood. Transplantation has failed to produce a luxuriant growth on many culture mediums, aerobically and anaerobically. On the ordinary mediums, while no growth is visible, the vital slide shows the virus as still present after many days, if the tube is sealed to prevent evaporation and drying. In only one case was a growth obtained of what appeared as the same virus, but considering the method there is room for doubt. In one case a section of the cord was obtained postmortem aseptically. The culture medium used was a fresh calf brain. This was sectioned technically; a streak inoculation produced a growth in thirty-six hours along the line of inoculation. A vital slide on this was identical in appearance with the virus as seen in the fresh specimen, a very small active micrococcus. In six cases there were positive cultures on ordinary mediums. These showed no parallel characteristics. Each culture had peculiarities of its own. Morphologically they were classified as cocci and diphtheroids. In the blood tubes these types were readily differentiated from the small micrococcus present in practically every encephalitis case.

Auditory Hallucinations.—Price reports a case with marked auditory hallucinations of eight years' duration, without other evidence of mental disease.

Public Health Journal, Toronto

July, 1921, 12, No. 7

- Child Welfare. H. F. Royer.—p. 289.
Prevention of Amblyopia as a Sequel of Squint by Early Treatment. W. Wright.—p. 294.
Address to Graduating Class of Wellesley Hospital, Toronto. E. G. Flaws.—p. 298.
Study in Complement Fixation Tests for Gonorrhoea. M. L. Wessels.—p. 302.
Child Welfare in British Columbia.—p. 308.
Mothers! Breast Feeding of Infants is Best. J. J. Middleton.—p. 312.

Porto Rico Medical Association Bulletin, San Juan

June, 1921, 15, No. 131

- *Differential Diagnosis of Tropical Pyrexias. A. Torregrosa.—p. 93.
Cont'n.
*Surgery in Porto Rico. Jorge del Toro.—p. 117.
*Chronic Appendicitis. J. Avilés.—p. 122.
*Fragility of the Kidneys. M. Salazaar.—p. 126.

Differential Diagnosis of Fevers Most Commonly Observed in Porto Rico.—In this instalment of Torregrosa's comprehensive monograph, he discusses colon bacillus septicemia in particular, describing epidemics of this colibacillosis. The sudden onset, rapid course and the algid phase and meningeal phenomena render it liable to be mistaken for pernicious malaria, especially as the leukopenia with mononucleosis is the same in both. The gastro-intestinal symptoms might suggest typhoid if it were not for the usual abrupt drop of the temperature the second day, which is a special feature of this

tropical colibacillosis. The apyrexia may last for several hours or the whole day. He never encountered cases of associated malaria and colibacillosis, but in a few cases typhoid occurred in the course of malaria. Congestion in the lungs and pleural irritation were special features of this combination. He analyzes further the hyperpyretic, the algid and the diaphoretic forms of grave or pernicious malaria. The authorities on tropical fevers are freely quoted, with detailed case reports from Torregrosa's own extensive experience.

Surgery in Porto Rico.—Del Toro recalls that the success and progress of surgery in a country depends in large measure on the nonsurgeons, on the profession in general. Although a hospital may be small and possibly does not conform in every single respect to the accepted surgical ritual, yet the patient may get more personal attention than in the large hospitals, where it seems as if the work was done for the sole purpose of demonstrating the magnificent organization and rolling up statistics. In short, he adds, "it seems to me to be preferable to be a sick entity rather than a subject for a record." Gynecologic surgery, he says, is the most advanced in Porto Rico, and the proportion of operable cases of uterine cancer is large and increasing daily. Surgery of the pancreas and appendix is also on a par with surgery in other countries, as disease in these organs is recognized early. He remarks that bladder tumors do not seem to exist in Porto Rico. He pleads for more and better equipped hospitals, and better training in surgical diagnosis.

Chronic Appendicitis.—Avilés relates that in a recent series of twenty-two cases of chronic appendicitis the gallbladder was diseased, or there was ulceration in the duodenum, or symptoms indicating gastric ulcer, and in five cases there were pelvic complications.

Fragility of the Kidneys.—Salazar means by this term the tendency for the physiologic balance to be easily upset. He comments on the enormous prevalence of albuminuria in Porto Rico, and discusses the causes. Inherited syphilis seems to be a common factor; in one case profuse albuminuria for nearly a year in an elderly man subsided under persevering administration of potassium iodid. In other cases the albuminuria seems to be due to incipient tuberculosis, but malaria and intestinal autointoxication are the principal causal factors. Alcohol seems to be responsible for fragility of the kidneys in larger measure than before prohibition. Calcium chlorid, he says, is the ideal treatment to restore the balance in the kidneys in young and old. He gives from 1 to 5 gm. daily, according to age, fractioned, and merely dissolved in water. He warns against giving drugs when there is febrile albuminuria until the diuresis is at least 800 gm.

Texas State Journal of Medicine, Fort Worth

July, 1921, 17, No. 3

Etiology of Chronic Peptic Ulcer. W. B. Russ, San Antonio.—p. 152.
*Debutante Slouch: A Factor in Surgery. O. L. Norsworthy, Houston.—p. 154.

Epidemic Encephalomyeloneuritis. K. H. Beall, Fort Worth.—p. 157.

*Climate for Tuberculosis. B. Cornick, San Angelo.—p. 161.

Some Phases of Negro Tuberculosis Problem in Texas. Z. T. Scott, Austin.—p. 164.

Useful Versus Useless Public Health Measures. A. P. Harrison, Austin.—p. 167.

Results, Aim of All Health Work. A. H. Flickwir, Houston.—p. 171.

Essential Factors in Successful Malarial Control Work. L. G. Lenert, Austin.—p. 172.

Debutante Slouch.—The distorted shapes, deformed figures and weakened constitutions, to be treated as "ptotic habitus," as the result of the "debutante slouch," are in decided evidence in almost all social gatherings of young people today. A girl, however vigorous and well, may, through the "debutante slouch" and other mechanical interference of her normal shape and of her abdominal and pelvic organs develop ptotic habitus. In the presence of prenatal influence the "slouch" and other mechanical environments, develop the condition earlier in life and to a great degree, and under combined causes is more apt to be permanent in all its effects. People having long waists almost invariably have low placed and quite movable kidneys. When such individuals make over-drafts on their nerve force, nervous exhaustion, loss of fat and a more atonic state of the fibrous and other tissues, ensue. The same state of facts obtains with reference to

all ptotic habitus individuals, whether of defective constitutions of congenital origin or those having a strictly environmental cause. The latter may become a factor in heredity in future generations. Treatment of all cases, whether of acquired origin or not, should be prophylactic. These patients should be urged to lead a type of life that will keep them in the best of health. They should seek occupations, mental and physical, compatible with their limitations. Gymnastics, deep breathing and knee chest postures, should be practiced daily. Front laced corsets should be worn constantly when not in bed. The corsets should be made to fit each individual. A well fitted, semilunar pad, extending entirely across the abdomen, below the umbilicus, fastened underneath the corset, will give increased comfort and add much to the support of the relaxed lower abdominal walls. All patients should have from two to three months in bed, with the foot of the bed elevated 18 inches. While in bed, a well regulated, fattening diet, general daily massage and attention to the bowels, followed by twelve months' use of correctly fitting front lace corset, and continuation of constitutional treatment in every respect before operation, should be required.

Atmosphere for Cure of Tuberculosis.—Of all the atmospheric factors which are found in those western regions which have earned a reputation for the climatic healing of tuberculosis, the one factor, Cornick says, which is universal, the only common factor, indeed, recognized everywhere in these western climates, is an atmosphere which has been dried in the rays of the sun. Altitude per se is not a factor in the cure. Altitude is merely a coincidence, which is found at certain climatic resorts where a dry atmosphere likewise prevails. Other things being equal, Cornick claims, we should seek for our patients agreeable temperatures both for winter and summer, since very high and very low extremes of temperature may be equally depressing to the average enfeebled health seeker, no matter whence he comes. Hundreds of health seekers fail every year to get the desired benefits of climate, simply because they are not taught in the elementary principles of personal hygiene. There is no warrant whatever for the claim that those who get well in the western climate must remain in the West for the balance of their days. It is true that in order to be safe they must give sufficient time to the cure, but that is the case everywhere. When once the cure is achieved, if they but continue to observe the fundamentals of correct living, they may go anywhere and continue to be safe.

West Virginia Medical Journal, Huntington

June, 1921, 15, No. 12

Radium Treatment of Uterine Cancer. C. F. Burnam.—p. 453.

Radium in Control of Uterine Hemorrhage. J. F. Fox and R. O. Rogers, Bluefield.—p. 459.

Indications for Use of Radium. J. E. Hubbard, Huntington.—p. 464.

Treatment of Leukemia with Radium; Preliminary Report of a Case. R. O. Rogers, Bluefield.—p. 468.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

July, 1921, 15, No. 2

Oriental Sore in Russian Turkestan and Results of Treatment with Injections of Tartar Emetic Solution. J. A. Sinton.—p. 107.

*Method for Cultivation of Blastocystis. H. P. Barret, Charlotte, N. C.—p. 113.

Incidence of Intestinal Parasites, Especially with Regard to Protozoa, Amongst Symptomless Carriers in Jamaica. H. H. Scott, Jamaica, B. W. I.—p. 117.

Sizes of Endameba Histolytica Cysts Among Symptomless Carriers in Jamaica. H. H. Scott, Jamaica, B. W. I.—p. 133.

Sizes of Endameba Coli Cysts Among Symptomless Carriers in Jamaica. H. H. Scott, Jamaica, B. W. I.—p. 149.

Cestodes from Indian Poultry. T. Southwell.—p. 161.

Cestodes from African Rats. T. Southwell.—p. 167.

New Species of Cestoda from a Cormorant. T. Southwell.—p. 169.

Case of Suspected Leprosy. J. W. W. Stephens and S. Adler.—p. 173.

Culture Medium for Blastocystis.—The culture medium used by Barrett is made up of human blood serum and 0.5

per cent. sodium chlorid solution. The salt solution is sterilized in the autoclave and the serum added after inactivation at 55 C. for one half-hour. The pooled serum of several individuals has been used instead of that from a single individual, although no work has been done to show whether or not one serum may be inhibitory while another is favorable to the growth of blastocysts. This medium is faintly alkaline to litmus. The medium is distributed in narrow test tubes in quantity sufficient to give a column of fluid at least 100 mm. high. No growth takes place at the surface of the tube, and the parasites multiply best at the lower portion of the tube, evidently needing little free oxygen for their growth.

Bristol Medico-Chirurgical Journal

March-June, 1921, 38, No. 142

- Some Problems in Surgical Treatment of Abdominal Conditions. F. Fraser.—p. 2.
Present Position of Psychotherapy. R. G. Gordon.—p. 11.
Teething Myth. R. C. Clarke.—p. 28.

British Journal of Surgery, Bristol

July, 1921, 9, No. 33

- *Value of Cecostomy in Treatment of Malignant Disease of Colon. H. Stiles.—p. 1.
*Eponyms. I. Colles' Fracture. D. Power.—p. 4.
*Fracture of Carpal Scaphoid. A. H. Todd.—p. 7.
*Palliative Treatment of Aneurysm by 'Wiring' with Colt's Apparatus. D. Power.—p. 27.
Fifty Cases of Hour-Glass Stomach Subjected to Operation. W. T. Thomas.—p. 37.
*Case of Hour-Glass Stomach. G. A. Ewart.—p. 42.
Intussusception: Review of 400 Cases. W. S. Perin and E. C. Lindsay.—p. 46.
Suppurating Teratomatous Cyst in Splenic Region. W. G. Spencer.—p. 72.
*Tumors of Salivary Glands, with Their After-History. R. Kennon.—p. 76.
*Prognosis of Carcinoma Mammæ. Review of 169 Cases. G. P. Mills.—p. 91.
Case of Unilateral Polycystic Disease of Kidney in Child Aged Two Years. A. Fullerton.—p. 99.
*Congenital Occlusion of Ileum. J. Morley.—p. 103.
Kondoléon Operation for Elephantiasis. A. K. Henry.—p. 111.
Injuries of Diaphragm: with Special Reference to Abdominothoracic Wounds. C. W. G. Bryan.—p. 117.
Skin Grafting in Buccal Cavity. T. P. Kiner and T. Jackson.—p. 148.
Cystic Adenoma of Bile-Ducts. A. Evans.—p. 155.
Case of Splenomedullary Leukemia. R. E. Kelly.—p. 157.
Case of Tumor of Carotid Body. G. Keynes.—p. 159.
Renal Calculus: Horse-Shoe Kidney: Heminephrectomy.—p. 162.

Treatment of Disease of Colon by Cecostomy.—Stiles has become so convinced of the great value of cecostomy in the treatment of malignant disease of the large intestine that he has seriously considered the question as to whether it is advisable to do it as a preliminary to a resection at a later date, even in the absence of obstruction, just as a sigmoidectomy is done preliminary to removal of the rectum. At any rate, he advises a preliminary cecostomy in patients who, while not suffering from complete obstruction, are to be regarded as bad operative risks, because after the cecostomy they may pick up sufficiently to warrant the risk of the major operation. He mentions the value also of cecostomy in the treatment of megalocolon, of volvulus of the sigmoid, and of certain cases of diverticulitis. Here, again, the cecostomy may be done either as a preliminary to the major operation, or as a part of it, according as the merits of the case demand.

Colles' Fracture.—Power proposes to give in a series of articles the *ipsissima verba* of those surgeons whose names are associated with the diseases or injuries to which they first called attention. Here he takes up Colles' fracture, reproducing Colles' original paper on the subject published in the *Edinburgh Medical and Surgical Journal*, 10:182, 1814, entitled "On the Fracture of the Carpal Extremity of the Radius."

Fracture of Carpal Scaphoid.—Todd shows that fractures of the carpal scaphoid are really very characteristic, and have well-marked and almost pathognomonic physical signs; that they should always be diagnosed at the time when they occur, because it is only then that treatment is capable of restoring a useful degree of function; and, lastly, that failure to diagnose these fractures, though very common at the

present time, is fraught with the most serious consequences for the patient, inasmuch as it means that he will almost certainly have a permanently crippled wrist, in spite of all the treatments that he may undergo.

Colt's Apparatus for Treatment of Aneurysm.—In the cases reported by Power, other methods had been tried by competent persons under the best possible conditions of nursing, and had failed. In nearly all the cases the pain was relieved by wiring, and two of the patients returned voluntarily and asked for a second operation. In some of the recorded cases an actual cure of the aneurysm seems to have followed the introduction of the wire.

Case of Hour-Glass Stomach.—The case cited by Ewart shows that a satisfactory result can be obtained by an anterior retrocolic gastrojejunostomy, even though the jejunum proximal to the anastomosis is anchored to the posterior aspect of the stomach, which necessitates a certain amount of angulation in bringing forward the intestine.

Cases of Salivary Gland Tumors.—Of cases in which operation was performed for salivary gland tumors, 137 have been investigated by Kennon, and the after-histories of forty obtained, the majority of which are at least five years after the operation. Of these, 124 cases occurred in the parotid and thirteen in the submaxillary gland; of the former, the proportion of females to males was 59:19 in simple cases, 12:8 in carcinoma, 3:2 in sarcoma, and about equal in those of submaxillary origin. Of the 124 parotid tumors, 91 (73.4 per cent.) were adenomas (this tumor is also called embryoma, endothelioma, and mixed tumor), 27 (21.8 per cent.) were cancer, and 6 (4.8 per cent.) were sarcoma. Of the cancer cases, 7 out of 20 (35 per cent.) arose from degeneration of an adenoma. Two varieties of adenoma were recognized, the diffuse and the acinar; and two varieties of carcinoma, the spheroidal-celled and the cubical-celled (adenocarcinoma). Of the adenomas operated on over five years ago, 15.5 per cent. have recurred. Recurrence was immediate in the majority of cases, or under twelve months. It is due to the liberation of healthy cells so frequently seen splitting the capsule in the sections examined. Capsule-splitting with the resultant inflammatory reaction explains the sudden increase in size and pain so often described in the history of the patient. Excision rather than enucleation would diminish the risk of recurrence due to leaving remnants of capsule; and preliminary ligation of the external carotid artery is advisable in any large adenoma or malignant growth. Facial paralysis was not met with prior to operation in the simple cases. Postoperative facial paralysis is more frequently due to tension relaxation of the nerve by removal of the tumor than to nerve section, and is therefore usually temporary. The contention that operation hastens inoperable recurrence, shortens life, or causes disfigurement has no support in this research; and the fact that 35 per cent. of cases of carcinoma arise in simple tumors of long standing serves as a warning to those willing to allow a preoperative delay of seven years in primary cases and five and a half years in recurrent cases.

Prognosis of Carcinoma Mammæ.—The 169 cases reviewed by Mills were all pathologically carcinoma, and in all but 11 of them a clinical diagnosis of carcinoma was also made before operation. Of the 118 cases traced, 47 patients, or 39.8 per cent., were living and well at the end of six years; of 87 hospital patients, 32, or 35.5 per cent., were well; of 31 private cases, 15, or 48.4 per cent., were well. This difference is not due entirely to the private patients having been operated on earlier. Taking a six-year standard of cure, the results of a representative series of cases of carcinoma mammæ operated on by various surgeons are as follows: all cases, 39.8 per cent. cured; gland-infected cases, 18.3 per cent. cured; gland-free cases, 62.9 per cent. cured. The prognosis is worst for carcinoma simplex (32.9 per cent.), better for a "squamous" (40 per cent.), better still for a carcinoma simplex with overgrowth of duct epithelium (57.1 per cent.), and very good for papillary carcinoma (100 per cent.). Clinical enlargement of axillary glands, even if hard, is no proof of their pathologic involvement, nor is absence of clinical enlargement proof of their freedom from involvement. Age

at operation, duration of growth, and adhesion to the skin, have little effect on the prognosis. Adhesion to muscle is a bad sign in the prognosis, the difference in the percentage of cures between adherent and free cases being nearly 30. The prognosis is much the best in people of normal fatness; it is very bad in the obese, and probably bad in spare patients. Of individual operations, one on the lines laid down by Sampson Handley gives the best results, especially in gland-free cases, but is very closely followed by Halstead's operation. Early gland-free cases, however, do extremely well after removal of the breast, pectoral fascia, and axillary glands. Occasionally even an advanced carcinoma will do unexpectedly well after an admittedly imperfect operation.

Congenital Occlusion of Ileum.—Two cases of congenital occlusion of the lower ileum are reported by Morley. One was a case of occlusion of the ileocecal valve, and the other was a case of occlusion due to volvulus of the ileum.

British Journal of Tuberculosis, London

July, 1921, 15, No. 3

Beneficent By-Products of Tuberculosis Movement. T. Clifford Allbutt, Cambridge.—p. 101.

Vaccination of Cattle Against Tuberculosis. A. Calmette, Paris.—p. 103.

Tuberculosis. A. Newsholme.—p. 105.

Training in Tuberculosis. S. L. Cummins, South Wales and Monmouth.—p. 109.

*Care of Tuberculous Cripples: A Proposed Scheme. T. H. Martin, Leasowe.—p. 112.

Future of Sanatorium. A. N. Robertson, Benenden, Kent.—p. 115.

Work of Tuberculosis Care Committee. P. R. McNaught, York.—p. 118.

Care of Tuberculous Cripples.—The following points are urged by Martin (1) The introduction of special teaching in the medical schools and facilities for postgraduate study. (2) The inauguration of a diploma in tuberculosis in order that specially trained officers may be available for the work. (3) The centralization of the work for nonpulmonary tuberculosis under one head, namely, the Medical Officer of Health and his Surgical Tuberculosis Officer, as against the multiplication of responsibilities which now exists. (4) The treatment of these cases in special hospital schools and residential open-air schools, as against their reception into the wards of the general hospitals and the convalescent homes. (5) The establishing of after-care clinics and the necessary machinery for following up cases which have undergone treatment, in order that the results obtained from the treatment of this disease may be most effectively checked.

Journal of Pathology and Bacteriology, London

July, 1921, 24, No. 3

Heterophile Antigen and Antibody. T. Taniguchi.—p. 241.

Acute Yellow Atrophy of Liver and Fatty Infiltration of Liver and Kidney which Results from Action of Certain Poisons on Liver. A. G. R. Foulerton.—p. 257.

*Development of Female Phase of Leukocytozoon Syphilidis. J. E. R. McDonagh.—p. 272.

Pathology and Pathogenesis of Spirochetosis Icterohemorrhagica. C. Basile.—p. 277.

*New Method for Staining Bacterial Flagella. S. G. Paine.—p. 286.

*Histopathology of Typhus Fever. A. C. Stevenson and A. Balfour.—p. 289.

*Effect on Guinea-Pig of Deprivation of Vitamin A and of Antiscorbutic Factor. Condition of Costochondral Junctions of Ribs. F. M. Tozer. p. 306.

Sizes of Red Blood Cells in Emphysema. C. P. Jones.—p. 326.

*Lesions Produced in Rabbits by Inoculation of Streptococci Isolated from Rheumatic and Other Lesions in Human Subject. W. W. C. Topley and H. B. Weir.—p. 333.

Wassermann Test Using a Method of Prolonged Fixation at Ice-Chest Temperature. E. J. Wyler.—p. 349.

Leukocytozoon Syphilidis.—The organism has been studied by McDonagh in vivo, stained with borax-methylene blue, and in section stained for the most part with pyronin and methyl green from the time it leaves an endothelial cell till it becomes a zygote.

Staining Bacterial Flagellae.—The method described by Paine was invented by the late H. G. Plimmer. The stain is made as follows: Tannic acid, 10 gm.; aluminium chlorid (hydrated), 18 gm.; zinc chlorid, 10 gm.; rosaniline hydrochlorid, 1.5 gm.; alcohol 60 per cent., 40 c.c. The solids are placed together in a mortar, and at once (i. e., before deliquescence) triturated with the alcohol. Ten c.c. alcohol are used first and the mass is mixed thoroughly, care being taken to smash up the whole of the zinc chlorid—at this stage a

homogeneous paste of a golden brown color is obtained—the rest of the alcohol is then stirred in slowly, when the mass goes gradually into a viscous solution of deep red color. In this state the stain appears to remain stable for several years. For use, it is diluted with water when nearly complete precipitation occurs, a small amount remaining in solution, evidently as a balanced colloid, which, when applied to the bacterial film, becomes absorbed on the flagella and periphery of the organism. No further treatment is necessary, but it is advisable to stain the body of the organism with fuchsin or methylene blue. The mordant is applied to the film without fixing as follows: 1 part of the stain, 0.5 c.c., say, is mixed with 4 parts of water, 2 c.c. in a small corked specimen tube. After inverting the tube three or four times it is allowed to stand for sixty seconds, then filtered through a small filter on to the slide and again allowed to remain for sixty seconds, when a slight bronzing should be visible on the surface. It is then washed rapidly under the tap. The film is then flooded with cold carbol fuchsin for five minutes, washed, dried, and examined in oil. If satisfactory, the film may be mounted in Canada balsam.

Histopathology of Typhus.—Stevenson and Balfour do not think the time has yet come to draw any definite conclusions on their typhus work, despite the recent advances which have been made in the knowledge of Rickettsia. A study of the literature and of specimens they have seen at various times induces them to keep an open mind on the question. So many different species of Rickettsia have been found that despite Kuczynski's statement as regards their successful cultivation, they confess to having doubt as to their exact nature, let alone their pathologic significance.

Deprivation of Vitamin A.—The results are recorded by Tozer of experiments on the guinea-pig which were devised to investigate and distinguish between the effects produced by deprivation of antiscorbutic, of vitamin A, or of both these accessory factors together, with special reference to the histologic condition of the bone tissue. The suggestion is confirmed that deprivation of vitamin A has a pronounced effect on the bone tissue, indistinguishable, under certain conditions, from the effects of scurvy. An attempt is made to define true scurvy symptoms as shown during life, at necropsy and from histologic examination, and to distinguish them from symptoms caused by absence of vitamin A. Histologic appearances at the costochondral junction bearing some resemblance to rickets are described and illustrated. These peculiar abnormalities have been observed in animals suffering from prolonged deprivation of vitamin A, and from mild and from acute scurvy complicated by deficiency of vitamin A.

Streptococcal Lesions in Rabbit.—As the result of the post-mortem examination of a fatal case of acute rheumatism, a streptococcus was isolated by Topley and Weir, cultures of which, when inoculated into rabbits, produced lesions similar to those already described by several workers. The effect of passage on this organism has been studied, especially with regard to the possibility of the presence or development of any tendency towards localization in particular tissues; and the results obtained have since been compared with those following the inoculation of streptococci from other sources. The results obtained may be summarized as follows: Of twenty-nine rabbits inoculated with streptococcus 5189, three showed no effects. The remaining twenty-six developed pyrexia, associated in all but three cases with definite lesions. Twenty-three animals developed arthritis; seventeen, a pericardial effusion; two, endocarditis; and one appendicitis. Two points seem clear: (1) It is possible to produce in rabbits, by inoculation with streptococci derived from cases of acute rheumatism, lesions which together reproduce most of the features of the disease as it occurs in man. (2) Similar lesions may be produced by inoculation with streptococci obtained from sources quite unconnected with rheumatic infection. If these conclusions be correct it is clear that there is no *Streptococcus rheumaticus* in the strict sense of the term. We are left then with three possibilities: (1) Acute rheumatism is an attenuated pyemia, due principally to streptococci, as suggested by Singer (1898) and by Menzer

(1902). (2) Acute rheumatism is due to streptococci which have peculiar properties, as suggested by Rosenow. (3) The streptococci isolated from cases of acute rheumatism are merely secondary invaders, a view that has been supported by many authorities.

Journal of State Medicine, London

July, 1921, 29, No. 7

- Relation of Medical Zoology to Public Health Problems. R. W. Hegner, Baltimore, Md.—p. 199.
Army Medical Staff Administration in Field. O. Wibin.—p. 211.
Encephalitis Lethargica. B. Lawrence.—p. 216.

Journal of Tropical Medicine and Hygiene, London

July 15, 1921, 24, No. 14

- Occurrence of Twelve-Day Fever of Dengue Group in Nigeria. L. W. Davies and W. B. Johnson.—p. 189.
Case of Psoriasis. A. Viswalingam.—p. 192.

Lancet, London

July 23, 1921, 2, No. 4

- Accuracy in Diagnosis. D. Drummond.—p. 165.
Etiology of Skin Diseases. A. Whitfield.—p. 168.
*Case of Primary Tumor of Pleura. E. H. Eastwood and J. P. Martin.—p. 172.
Case of Cure of Detachment of Retina. R. F. Moore.—p. 174.
Operative Urethroscopy: An Improved Urethroscope. W. W. Powell.—p. 175.

Primary Tumor of Pleura.—A man, aged 38, had a slight cough, and suffered from shortness of breath. The breathlessness had gradually increased until he was unable to go about his work, and was compelled to sit in a chair all day. He had no pain in any part of his body, but for a fortnight he had been aware of a tender spot on his breast bone. There was a prominence on the chest just below the angle of the sternum, and at the left side of this prominence, at the junction of the third costal cartilage with the sternum, there was a point of great tenderness. The surrounding area was not tender. The other signs were those of a large right-sided thoracic effusion—dulness on percussion over the whole of the right side of the chest and extending in front across to the left border of the sternum above the area of cardiac dulness; no Grocco's triangle; vocal fremitus absent on the right side; breath sounds absent anteriorly but present posteriorly, bronchial in type, and weak; vocal resonance much less on the right side than on the left. The apex beat was displaced 2 inches outside the nipple line and in the sixth interspace; heart sounds normal. There was no other visible or palpable pulsation in the chest. Measurement showed that the two sides of the chest were equal. Frequent aspirations of first straw colored then blood stained fluid were made. The patient died suddenly eleven weeks from the onset of symptoms. On opening thorax a growth was found which took the form of massive nodular thickening of the parietal pleura lining the whole of the ribs, costal cartilages, sternum, and diaphragm on the right side, and which to some extent had spread on to the visceral pleura at the root and base of right lung. There were no bands or adhesions. The right lung was collapsed and fibrous, and except at the base and root was covered with thickened plura which was apparently inflammatory and not new growth. At its base the lung had been superficially infiltrated with growth, which formed a nodular layer about $\frac{1}{8}$ inch to $\frac{1}{4}$ inch thick. The growth had extended between the fourth and fifth ribs on the right side to form a subcutaneous swelling above noted, but had not infiltrated the bone or cartilage. The left pleura and lung were normal, except for a few superficial scattered nodules of growth on the visceral pleura and a slight degree of emphysema of the lung. The mediastinal glands were somewhat enlarged, and were found to be heavily infiltrated with growth. Histologically the tumor consisted of a fibrous tissue stroma in which were seen epithelial-like cells of rather polymorphous appearance, varying according to their situation from round, flat cells, indistinguishable from squamous epithelium, to pear-shaped or spindle-shaped forms. The cells were grouped in columns or clumps, but no definite alveolar arrangement could be made out. The very few blood vessels seen were mostly well formed.

South African Medical Record, Cape Town

June 25, 1921, 19, No. 12

- Intestinal Radiography for Chronic Appendicitis. L. E. Ellis.—p. 223.
Problem of Tuberculosis in South Africa. J. A. Mitchell.—p. 226.
Specific Vaccines for Treatment of Acute Gonococcal Urethritis and Its Complications. F. Veglia.—p. 230.
Native Preventives of Anthrax Infection. J. Lewis and O. F. Gibbs.—p. 232.

Archives des Maladies de l'Appareil Digestif, Paris

June, 1921, 11, No. 3

- *Chronic Stenosis of Duodenum. P. Duval and J. Gatellier.—p. 145.
Gastritis in the Gassed. C. de Luna.—p. 208.
*Invagination of Large Intestine in Adult. J. Tourneix.—p. 213.

Chronic Stenosis of Duodenum.—Duval and Gatellier devote nearly fifty pages with seven illustrations to this study of chronic stenosis below the ampulla of Vater from congenital malformation of the peritoneum, especially stenosis from compression by an artery, and means to remedy it: As two incisions are required to correct conditions in duodenum and colon, they prefer to operate at two sittings: first duodeno-jejunoscopy, with fixation of the right colon later. Some cases are described and the anatomic findings in forty-six others in which nothing was done beyond breaking up adhesions during an operation for other causes.

Invagination in Adult.—The condition in the man of 34 was found too grave for operative relief, and necropsy confirmed the invagination of the entire right half of the large bowel with part of the ileum.

Bulletins de la Société Médicale des Hôpitaux, Paris

June 24, 1921, 45, No. 22

- Landouzy's Typhobacillosis in Children. J. Comby.—p. 939.
*Miliary Tuberculosis in a Diabetic. G. Caussade and E. Doumer.—p. 942.
*Spontaneous Retrogression of Linitis. E. Enriquez and Gaston-Durand.—p. 949.
*Potassium Chlorid as a Diuretic. L. Blum, E. Aurel and R. Lavy.—p. 955.
Influenza as Factor in Tuberculosis. Crouzon and Marceron.—p. 965.
*Tendon Reflexes After Lumbar Puncture. G. Guillain.—p. 967.

Acute Miliary Tuberculosis in a Diabetic.—Caussade and Doumer's case was peculiar in that the clinical picture was that of Landouzy's typhobacillosis.

Retrogression of Linitis.—The total hypertrophic retraction of the stomach in the woman of 31 was found too extreme for intervention at the exploratory laparotomy in 1910. There had been symptoms for a year, with difficulty in swallowing, pains, vomiting, and distaste for meat. The symptoms continued for a few years and then gradually improved, while roentgenoscopy showed the stomach gradually returning to normal shape. The gastric symptoms for the last year have been restricted to vomiting two hours after meals and sometimes in the morning. The history of old tuberculosis suggests the possibility of interstitial tuberculous infection of the stomach which in time has retrogressed except in the region of the pylorus. Treatment for syphilis in the early stage had been ineffectual. If it had been applied during the third or fourth year, it would have been credited with the retrogression of the linitis.

Potassium Chlorid in Nephritis with Edema.—The experiences related show that instead of inducing retention of fluids, like sodium chlorid, potassium chlorid increases the output of urine, acting like a powerful diuretic. In some of the cases tested it proved effectual in this respect when all other diuretics had failed. Three instructive cases are described. The drug has a laxative action in those predisposed to diarrhea, and if it is not properly eliminated the patients complain of nervous symptoms, weakness, fatigue, headache and chilliness. There are no cardiovascular by-effects if the circulatory system is intact, but otherwise there may be dyspnea, cyanosis, a sensation of constriction and morbid apprehension and extrasystoles, and the blood pressure may fall. To avoid these symptoms of intolerance, the dose must be kept below 5 to 7.5 gm. in the twenty-four hours. It is wise to test the tolerance with 1 gm. doses at first. In one of the cases reported, the edema with amyloid nephritis was not modified by the potassium chlorid although the drug was borne and eliminated well.

Modification of Tendon and Skin Reflexes by Lumbar Puncture.—Guillain protests against assuming that lumbar puncture is a harmless procedure, without any importance for the patient. The simplest and most normal lumbar puncture may entail disturbances, painful at least, if not grave. He reports a case of syphilitic paraplegia with exaggeration of the tendon reflexes and retention of urine. Lumbar puncture confirmed the syphilitic nature of the partial paraplegia, but it was followed by exaggeration of the paraplegia while the reflexes were completely transformed. This modification proved transient; in five or six days the abolished tendon reflexes had returned to the previous exaggerated form.

Gynécologie et Obstétrique, Paris

1921, 3, No. 6

Combined Radium and Roentgen Ray Treatment of Cancer of Uterine Cervix. S. Recasens.—p. 387.

*Terminal Vessels of Abdominal Aorta. Maurer and Portes.—p. 393.

Primary Syphilitic Phlebitis. Y. Manouélian.—p. 407.

*Rupture of Varix on Fibroma. A. Chalié and L. Morénas.—p. 412.

Hemisection of the Uterus for Access to Adnexa. C. Daniel.—p. 420.

Terminals of Abdominal Aorta.—Maurer and Portes give illustrations of the forking of the abdominal aorta and the course of the various vessels in this region, as determined in fifty female cadavers.

Flooding of Peritoneum from Rupture of Varicose Vein on a Fibromyoma.—Chalié and Morénas have compiled fifteen cases of sudden hemorrhage from this cause before 1910, and summarize four since, and describe a case from their own service. The clinical picture was about the same in all. The patient, a woman approaching the menopause, previously in good health and with nothing to suggest menstrual disturbance, suddenly experienced severe pain in the abdomen, accompanied by a tendency to syncope. Other symptoms developed indicating extensive internal hemorrhage, with tenderness suggesting peritonitis from perforation. The sudden onset occurred in bed in one case; in the street, the woman carrying a large basket, in another. If an exploratory laparotomy follows at once, the differential diagnosis is not important, but the most serious consequences would be the result of mistaking the symptoms from this flooding of the peritoneum for an abdominal crisis from tabes, hydro-nephrosis or kidney stone, with nothing but medical expectant treatment.

Journal d'Urologie, Paris

May-June, 1921, 11, No. 5-6

*Postoperative Renal Hemorrhage. F. Legueu.—p. 345.

*Surgical Treatment of Medical Nephritis. Pousson.—p. 353.

*Suppuration in Polycystic Kidney. M. Chevassu.—p. 373.

*Suprarenal Tumor in Abdominal Wall. F. Curtis and G. Potel.—p. 403.

*Calculus in Ureter. Rafin.—p. 425.

*Incomplete Evacuation of Female Bladder. P. Bazy.—p. 441.

*Surgical Treatment of Cancer of Bladder. Rochet.—p. 447.

*False Cystitis. P. Noguès.—p. 457.

*Cystoscope Findings with Bowel Tumor. E. Michon.—p. 463.

*Suprapubic Prostatectomy. G. Marion.—p. 467.

The Optics of Cystoscopes. Heitz-Boyer.—p. 481.

The New Aspects of Urinary Surgery. O. Pasteau.—p. 497.

*Anesthesia and Acidosis. E. Jeanbrau, P. Cristol and V. Bonnet.—p. 505.

*Antigonococcus Vaccine Therapy. G. H. Richard.—p. 513.

*Osteofibroma of the Kidney. E. Desnos.—p. 529.

*Anuria from Calculus after Nephrectomy. André and Grandineau.—p. 551.

Danger from Old Solutions of Silver Salts. J. Janet.—p. 559.

Postoperative Hemorrhage from the Kidney.—Legueu discusses the bleeding severe enough to require secondary nephrectomy. An important vessel severed during a partial operation on the kidney was responsible for the hemorrhage in only one of his sixteen cases of the kind in ten years. In four of twelve cases investigated with minute care, a small infarct was evidently responsible, and in six of the cases an abnormal artery was responsible for the infarct. In another case the congestion and bleeding from the small vessels occurred around a patch of sclerosis. The presence of infection he regards as the factor which determines whether the infarct will entail hemorrhage or not.

Surgical Treatment of Medical Nephritis.—Pousson has a record of 29 cases in which he operated after failure of all medical measures. In the 7 cases of acute nephritis, 5 recovered after nephrotomy and one of the 2 nephrectomized. The

other, he thinks, might have been saved if merely nephrotomy had been done. This relieves congestion, permits antisepsis, and drains—which is all that is needed. Decapsulation acts only on the congestion alone. One woman thus treated twenty-four years ago is still in the best of health. In the 11 cases of chronic nephritis, with uremia, edema or oliguria or all combined, the fourteen operations were followed by the death of 6 of the patients, but the condition of all had been most alarming, and 5 were saved. One man of 31 was improved by the nephrotomy but six months later nephrectomy was required. He is still in good health, seven years later. The interval since recovery after nephrotomy is nearly six years in another case, and nine months in another. All the others have died since from the steady progress of their kidney disease or from the acute exacerbation which the decapsulation failed to arrest. In 4 other cases of paroxysmal pains, no calculi were found in the kidney at nephrotomy but all were permanently freed from their pains by it. Profuse hematuria in the midst of apparent health required nephrectomy in 2 other cases, and nephrotomy in 2, with permanent recovery in all.

In 3 cases bilateral decapsulation was done to relieve the edema in ordinary Bright's disease. It returned five months later in one case, and the man of 38 died at the seventh month, the symptoms pointing to the heart. The second patient was syphilitic, and he still has polyuria but less albuminuria, and the general condition keeps good. In the third patient in this group, a man of 55, the nephritis had developed after a contusion of the right kidney. Tenacious and rebellious edema, slight uremia and oliguria were cured by double decapsulation. They returned again seven months later but were banished this time by medical measures alone, including restriction of salt. Pousson regards this case as a fine demonstration of the importance of surgical treatment of medical nephritis after failure of all other measures.

Suppuration in Polycystic Kidneys.—Chevassu reports 4 cases of this kind and has found 88 on record. The only group free from fatalities includes the 3 cases in which nephrotomy was done first and nephrectomy followed later. Primary nephrectomy yielded only 16 recoveries in 25 cases, and only 3 of these are still living after from four to ten years. In his own 4 cases, rinsing out the kidney pelvis restored one patient to active life on two occasions, the effect becoming manifest in less than two days.

Suprarenal Tumor in Abdominal Wall.—The small tumor in the epigastrium of the woman of 68 had been stationary for five years when it began to enlarge. By the sixth year it covered an area of 6 by 10 cm. but was not tender, and there were no symptoms from the viscera. As it bled profusely at the least scratch, the tumor was removed. It proved to be a complete suprarenal capsule located in the abdominal wall; in the course of time it had developed a neoplasm. The case suggests that certain hemorrhagic lipomas in the abdominal wall may have been in reality this type of aberrant suprarenal tissue. The extremely vascular character and the expansion with the pulse are features not found in ordinary tumors.

Calculus in Ureter.—Rafin performed four operations in one of his 20 operative cases of this kind, and in 4 cases another calculus was expelled spontaneously several years later. The results of surgical treatment are very satisfactory, but the surgeon must bear in mind that the injury from the impacted calculus predisposes to infection later, and the urine must be kept under supervision. If the calculus was of the "constitutional type," the diathesis should be combated; if of the "organ type" the urinary passages should be kept open and disinfected. His 20 cases are described in detail and compared with a similar series in which the calculus was finally spontaneously expelled.

Incomplete Evacuation of Bladder in Women.—Bazy warns that attacks of cystitis are liable to reduce the elasticity of the bladder in time, until it is unable to expel its contents completely. He describes six cases of the kind out of a much larger experience, all in women over 50. In only one instance, inflammatory adhesion from old adnexitis was responsible.

Cancer of the Bladder.—Rochet has found that a portion of the bladder no larger than a nut, left after resection for cancer, may stretch to form a reservoir as large as a mandarin orange. Even if recurrence should follow—two, three or four years later, the restoration to health in the interim amply repays for the extensive operation. He has performed nine operations of the kind, and describes the ultimate outcome in the six traced to date. One man of 40 is in good health three years since the partial cystectomy. The others have been lost track of or have died with intervals of a few months to two years. One man of 30 had recurrence in the scar from the operation, and the scar and more of the bladder was resected. During convalescence the inguinal glands enlarged, and these were resected. The ultimate outcome is not known in this unusual case. In conclusion he cites cases with known survival for six years or more even after total cystectomy for cancer. The only means for accurate diagnosis in men is with an exploratory cystotomy, with the consent of the patient to resection if malignant disease is found. The delicate point is that the patient has to be warned of the possibility of a rebellious fistula whether the cancer is removed or not. If total cystectomy is required, he warns not to waste time with the ureters but to fasten them temporarily to the skin.

False Cystitis.—Nogués explains how some chemical modification of the urine, especially in summer, from medication or beverages or foods, is liable to induce sensations resembling those of cystitis. This may be induced likewise by a calculus at any point in the urinary apparatus. Sedatives should be given by the rectum to act on the bladder itself. Epidural injections of physiologic saline, with or without procain, are a precious resource, as also general treatment.

Cystoscopy with Tumors in Sigmoid Flexure.—Michon gives a colored illustration of the aspect of the vertex of the bladder involved in a tumor of the adjacent bowel. When the latter is latent, the site of the change in the bladder wall should suggest the true cause, as bladder tumors are seldom in the dome of the bladder.

Suprapubic Prostatectomy.—Marion says that the outcome of suprapubic prostatectomy will be perfect in suppurating chronic prostatitis, long rebellious to medical measures, unless pain predominates in the clinical picture. The suprapubic prostatectomy may not cure the pain, as this is more from neuralgia than from the prostatitis. One of his nine patients thus treated succumbed to streptococcus peritonitis. This warns that the operation had better be deferred when streptococci are found in the blood.

Anesthesia and Acidosis.—Jeanbrau and his co-workers tested the urine of thirty-five patients before and for three days after major operations under various forms of anesthesia. The findings show that acidosis followed in all the cases except those in which spinal anesthesia with procain (syncaïne) had been employed. The latter anesthetic should therefore be preferred, they say, in cases of unstable balance, and also when kidney or liver functioning is substandard.

Vaccine Therapy of Gonococcus Disease.—Richard's long review of recent literature on this subject confirms the efficacy of antigonococcus vaccines and serums against the complications of gonorrhea. But the gonococci in the urethra are seldom affected by them.

Osteofibroma of the Kidney.—Desnos analyzes three cases of this kind, one from his own practice, giving colored plates. In this case, after an attack of profuse and protracted hematuria there was a lull for ten years, with only a little vague pain. Then hematuria and severer pain occurred intermittently, and hydronephrosis was suspected. Aggravation of the symptoms finally compelled nephrectomy, with complete relief for three months. The tumor proved to be an osteolipofibroadenoma of the kidney, and numerous metastatic tumors rapidly developed throughout the abdomen, with death within eight months.

Anuria from Calculus.—The anuria developed the fourteenth day after removal of the tuberculous right kidney. It proved impossible to catheterize the left ureter, but the anuria yielded to nephrostomy the sixteenth day. Before the anuria there had been nothing to suggest a calculus, and after the nephros-

tomy, catheterization of the ureter up to the obstacle finally dislodged it, the apparently single calculus being thus found to be two impacted stones. They were expelled in the urine as soon as they strung out one behind the other.

Lyon Chirurgical, Lyons

May-June, 1921, 18, No. 3

- *The Sympathetic Neuromas of Appendicitis. P. Masson.—p. 281.
- *Pulse Sign of Arteriovenous Aneurysm. N. Dobrovolskaia.—p. 300.
- Roentgenography of the Wrist. E. Destot.—p. 309.
- *Surgical Treatment of Tabetic Gastric Crises. G. Jean.—p. 339.
- *Congenital Dislocation of the Wrist. F. Masmonteil.—p. 351.
- Adaptation of Circulation to Ligation of Artery. R. Leriche and A. Policard.—p. 356.
- History of Surgery at Lyons. E. Villard.—p. 361.

Neuroma in Obliterated Appendix.—When the inflamed appendix becomes blocked, the nerve terminals are then liable to proliferate and form an actual neuroma. Masson has encountered ten such cases, and gives here the photomicrograms of three. This neuroma of sympathetic nerve fibers is enclosed in a fibrous sheath, and this in turn in a double shell of muscle. Every contraction of this muscular shell presses on the neuroma, and may set up reflex action of different kinds, as with a neuroma after an amputation. In one of the three cases described, there was a cancer in the ileocecal valve. In the second case nothing was found in the stomach at the laparotomy to explain the pain and tenderness in the stomach, but the neuroma in the obliterated appendix was probably the cause. In the third case there had been merely a history of chronic appendicitis. This neuroma formation was found in all but one of his ten cases of obliterating latent appendicitis.

Pulse Sign of Arteriovenous Aneurysm.—Pressure on the artery above the aneurysm slows the pulse when both artery and vein are involved in it, but not with a merely arterial aneurysm. In a case described, after resection of the aneurysm, the pulse could not be modified in this way.

Operative Treatment of Gastric Crises in Tabes.—Jean admits that he has never applied in a clinical case the procedure he has been studying for two years on animals and cadavers. He reviews the work in this line by various surgeons aiming to block or resect the pneumogastric, the posterior roots, or the visceral sympathetic, but he regards the great splanchnic nerve as the one to attack. When this nerve is severed from the posterior roots, fifth to ninth, the sensitivity of the stomach is abolished. The easiest access to the great splanchnic, where it lies just beyond the azygos vein, is through the pleura from the back, after resection of the eighth rib. When the pneumogastric is the principal factor in the gastric crises, the preferable intervention seems to be section of four branches of the pneumogastric on the anterior plane of the stomach, and one branch on the posterior plane, plus gastro-enterostomy. But when the sympathetic nerve predominates in the crises, the thoracic ganglia should be excised or the great splanchnic nerve resected. He describes the technic. In addition he reports a case in which the five posterior roots and their ganglia on each side were resected in a case of severe and almost continuous gastric crises. Postoperative paraplegia followed, and as this showed signs of improvement, intercurrent congestion of the lungs proved fatal the fifth day.

Madelung's Disease.—Masmonteil explains that congenital dislocation of the wrists represents what genu valgum and coxa vara represent for other joints. Treatment requires, besides wedge resection of the radius, resection of a low segment of the ulna.

Presse Médicale, Paris

June 29, 1921, 29, No. 52

- *Overlapping Infections of Air Passages. M. Nobécourt.—p. 513.
- *Congenital Torticollis. A. Feil.—p. 515.
- Examination Before an Operation. G. Audain.—p. 516.

Overlapping Infections of Air Passages.—Nobécourt incriminates hypertrophied tracheobronchial glands as aiding in the settling of other infectious processes in the region. He analyzes the resulting clinical pictures, and urges the importance of curing promptly any infection of the pharynx before it invades the lower air passages. The tracheobronchial gland-

ular process may be very small and mild, but on account of superimposed infection the clinical picture is that of advanced tuberculosis.

Congenital Torticollis.—Feil illustrates some cases in which the fusing together of the upper vertebrae caused tilting of the head. In some this occipitalization of the atlas, as he calls it, was apparent from birth. In others it did not become apparent until the age of 20. It accompanied congenital torticollis in two of the cases described, and the slight deviation of the head persisted after operative correction of the torticollis.

July 2, 1921, 29, No. 53

*Prostatism Without Hypertrophy of Prostate. J. M. Bartrina.—p. 521.
Cysticercus Spinal Meningitis. Titu Vasiliu.—p. 522.

*Intraspinal Injection of Stimulant. R. Bloch and Hertz.—p. 523.

Diagnosis of Hypertrophy of the Prostate.—Bartrina comments on the blunders that have been made in ascribing to the prostate disturbances for which syphilis or Pott's disease or a diverticulum in the bladder, paralysis of the bladder, or spinal cord disease was responsible. In another group of cases, he continues, the symptoms of prostatism without a palpable prostate are due to an epithelioma developing in or near the prostate. Neuritic manifestations from the incipient epithelioma may give the clue long before physical signs are pronounced enough for diagnosis otherwise. The phenomena from any impairment in the contracting power of the bladder may owe their origin to incipient epithelioma in the normally sized prostate. There may be nothing beyond retention of urine to call attention to the prostate, but if the prostate is removed the microscope will reveal epithelioma cells. He adds that if surgeons would follow the history of these "prostatism without prostate" cases, they would be surprised at the large proportion that develop malignant disease sooner or later.

Treatment of Syncope at Spinal Anesthesia.—Bloch and Hertz have witnessed the whole range of acute reactions to spinal anesthesia in their over 1,000 applications of this form of anesthesia. They are usually combated by subcutaneous injections of stimulants, but the action of this is so slow that they now, in grave cases, inject about 20 cg. of caffeine directly into the spinal cavity, as for the anesthesia itself. In four cases described, this resuscitated the patients almost at once after complete arrest of the respiration. It is mentioned of one patient that he did not have even a headache thereafter. Their experimental research seems to indicate that the caffeine under these circumstances acts only as a stimulant for the centers in the medulla oblongata.

Progrès Médical, Paris

May 28, 1921, 36, No. 22

Importance of Oral Infection. L. Watton and A. Aimes.—p. 253.
Spina Bifida and Vertebral Anomalies. A. Feil.—p. 256.
Epidemic Hiccup. A. Hanns.—p. 257.
Psychiatry, War and Revolution. Laignel-Lavastine.—p. 258.

June 18, 1921, 36, No. 25

Modern Treatment of Uterine Cancer. A. Brechot.—p. 287.
*Cancer of Uterine Cervix During Gestation. H. Vignes.—p. 289.
Radium Treatment of Uterine Cancer. J. Barcat.—p. 290.

Cancer of Uterine Cervix During Gestation.—Vignes remarks that a cancer developing in the cervix during a pregnancy is usually recognized early, as the hyperemia in the region whips up the incipient cancer, and it bleeds early and frequently and spreads rapidly, often with pains and dysuria or hematuria. One case is on record in which an inoperable cancer of the cervix was treated with radium and a living child was delivered by cesarean section followed by hysterectomy. Some element of the ovum must have protected the fetus against the radium. Gestation seems to whip up malignant disease anywhere in the body. The strain of delivery and the involution of the uterus favor the invasion of the uterine muscle by cancer in the vicinity. Cesarean section followed by hysterectomy is preferable to waiting for natural delivery.

June 25, 1921, 36, No. 26

*Amyotrophic Lateral Sclerosis. C. Achard.—p. 299.
*Malformation of Cervical Vertebrae. A. Feil.—p. 301.
History of Therapeutic Pneumothorax. M. Pallasse.—p. 307.

Incipient Amyotrophic Lateral Sclerosis.—In Achard's case the man of 65 seems perfectly well except for a slight motor disturbance in the right hand. The aspect is like that of a monkey's hand, and he has not complete control of his thumb. The left hand is a little weak, but there is no atrophy of muscles such as is apparent in the right hand. He accepts this condition as dooming the man within a few years. The duration of amyotrophic lateral sclerosis is usually from two to four years, but rare instances have been known of survival for ten or sixteen years. Tentative arsphenamin treatment has not modified the clinical picture, confirming what Charcot called "the abominable prognosis."

Malformations of the Cervical Spine.—Feil discusses the anatomy and clinical picture of six different types of malformation in this region, with concrete examples and fifteen illustrations.

Revue Franç. de Gynécologie et d'Obstét., Paris

April, 1921, 16, No. 4

*Vitiligo in Women. F. Jayle and H. Aubry.—p. 193.

Genital and Abdominal Vitiligo in Women.—Jayle and Aubry declare that vitiligo never develops in a woman with perfect ovarian functioning. They describe twenty cases to show the various types that may be encountered. The genital and abdominal forms must be regarded, they say, as a form of degeneracy. In thirteen cases of genital vitiligo, cancer developed in three. The logical treatment is indirect, through the endocrine glands. Cases are known of a complete cure under thyroid treatment.

Schweizerische medizinische Wochenschrift, Basel

June 30, 1921, 51, No. 26

*Suture of Tendon in Hand or Finger. C. Kaufmann.—p. 601.

*The D'Espine Bronchophony Sign. T. Reh.—p. 604.

The Constitution in Pathology. K. Helly.—p. 607.

Traumatic Herpes of the Cornea. F. Stocker.—p. 610.

Teaching of Anatomy in Switzerland. H. Frey.—p. 615. Conc'n in No. 27.

Suture of Tendon in Hand or Finger.—Kaufmann quotes Dubs' statement that in the 235 cases of primary suture of an extensor tendon, which he has compiled, it was successful in only 51 per cent. and only in 10 per cent. of 117 flexor tendon cases. These bad results are traceable in part to the antagonistic behavior of the insured workmen, but mainly to the inefficient technic. Kaufmann has been constantly successful with the method he applies. With a longitudinal incision along the center of the nail phalanx, the skin has to be loosened up on each side and the skin here is too thin to stand this except on the thumb. Instead of a longitudinal, he makes a transverse curving incision, the convex side toward the nail. Through this the thin silk or catgut is passed through the stumps of the tendon, 0.5 cm. from the end, and tied with the least possible traction on the tendon. The incision in the skin is then coapted by pressure with gauze, and the finger is fastened to a finger splint in over-correction for at least two and a half weeks. Success is certain with either primary or secondary suture of the tendon with strict asepsis and avoidance of antiseptics. He advises against ever attempting to suture the skin on hand or finger, and advocates keeping the patient in bed for a few days as the sovereign method. This may decide the course in the insured. If the ruptured tendon is immobilized in over-correction immediately after the rupture of the tendon, it may heal without any functional disturbance. This occurred in one woman of 71 in the right ring finger. It healed in five weeks without interfering with piano playing. He reports in conclusion a few cases of more complicated tendon ruptures, but application of the principles above stated insured faultless healing in all.

The D'Espine Bronchophony Sign.—Reh expatiates on the general acceptance of the value of this whispering sign in diagnosis of tuberculosis of the intrathoracic glands, especially in children.

Archivio Italiano di Chirurgia, Bologna

June, 1921, 3, No. 5

*Traumatic Pulsating Exophthalmos. V. Ferrero.—p. 405.

*Incarcerated Treitz' Hernia. G. Crescenzi.—p. 421.

- *Mountain Sunlight and Healing of Wounds. L. Torraca.—p. 441.
Lymphangioma in Temporal Region. G. Roella.—p. 453.
*Immunization Against Pneumonia. E. A. Delfino.—p. 470.
Regeneration of Costal Cartilages. E. Sorge.—p. 481.
Bifurcation of Posterior Tibial Nerve. G. B. Macaggi.—p. 507.

Pulsating Exophthalmos.—Ferrero reviews the literature on pulsating exophthalmos from Travers' case in 1809 to date. In a case in his own practice there was evidently an abnormal communication between the internal carotid and the sinus cavernosus, of traumatic origin. The symptoms developed suddenly after the trauma, and permanently subsided after a ligature had been thrown around the internal carotid. This led to formation of a clot at the site of the damage in the artery wall, which soon permanently plugged the abnormal communication.

Incarcerated Treitz' Hernia.—Crescenzi knows of only one other case on record in which the hernia in the duodenojejunal recess was pedunculated so it could be treated like an ordinary hernia. In a grave case in his own experience there had been no symptoms from the viscera, but there had been two attacks of ileus during the last year. The intraperitoneal findings on palpation of the abdomen resembled those with a contracting gravid uterus.

Heliotherapy of Wounds.—Torraca has been conducting experiments in this line at the Monte Rosa Institute. This is 2,901 meters above sea level (about 8,710 ft.). The wounds on the guinea-pigs healed more rapidly when the animals were exposed to sunlight for a few hours each day. As the experimental lesions were aseptic, the benefit cannot be ascribed to a bactericidal effect of the rays.

Immunization Against Pneumonia from Aspiration.—Delfino regards it as very significant that 11 of 16 rabbits survived after they had been infected with staphylococci, introduced directly into the trachea on a foreign body, and then injected with a preventive vaccine. All of the 16 controls not given the vaccine died. On the other hand, all the rabbits died in a group of 8 infected with streptococci and treated with polyvalent vaccine, as also all in a group of 12 treated with normal horse serum instead of the vaccine, after infection with staphylococci or streptococci. These experiences encourage the use of a vaccine to ward off infection after a foreign body has been aspirated into the air passages. There is also a possibility that the vaccine might exert a curative action with infection already installed. In a recent case in D. Maragliano's service, before extraction of a metal pencil tip from the left bronchus of a boy of 7, two injections of polyvalent antipyrogenic vaccine were given and one again afterward. The high fever and other signs of infection subsided although there had been some laceration of the mucosa during the extraction. The improvement that followed the first injection, even although the foreign body had not been removed, and the prompt recovery after extraction are certainly encouraging, Delfino remarks.

Pediatrics, Florence

June 1, 1921, 29, No. 11

- *Parenteral Injection of Milk. F. Pentimalli.—p. 481.
*Bilirubin in Urine and Stools. A. F. Canelli.—p. 495.
*Serologic Diagnosis of Tuberculosis. R. Kharina-Marinucci.—p. 500.
The Schick Reaction. F. Lo Presti-Seminario.—p. 503.

Experimental Protein Intoxication.—Pentimalli comments on the lack of toxic action from milk and casein injected intravenously in rabbits. They bore without apparent harm the injection of from 2 to 5 c.c. of raw, boiled or centrifuged milk on successive or alternate days or at longer intervals. Not until toward the third injection did symptoms of protein toxic action become apparent. Then symptoms of anaphylaxis became manifest, and some of the animals died in acute or protracted anaphylaxis, while others recovered under artificial respiration and ether. With the Rosenau and Anderson method, the treatment could be kept up for several months, postponing the anaphylactic state, but it finally developed in all, none of the rabbits escaping the final cachexia, even if the treatment had been discontinued. There was no evidence of immunity in any of the animals. One rabbit had four attacks of grave anaphylaxis in the course of six months in which it was given several series of injections of from 3 to 6 c.c. of centrifuged raw milk. Each time the anaphylaxis

appeared after a shorter interval. The inevitable cachexia suggests that disturbances from protein intoxication may be an element in the clinical picture of certain morbid conditions with which it has not been connected hitherto.

The Bile Pigments in Urine and Stool in Anemia.—Canelli explains the differential importance of the percentage of bilinogen as throwing light on the transformations of hemoglobin, and hence aiding in classification of anemias, and in the prognosis. The nitric acid-zinc chlorid test for it in urine and stools is simple, and convenient for both children and adults. In chlorosis and school anemia, the proportion of bilirubin is subnormal.

Deviation of Complement in Diagnosis of Tuberculosis in Children.—The tests with 227 children confirmed that only a positive reaction can be regarded as decisive. An extract of tubercle bacilli made with water, ether and alcohol proved most reliable.

Riforma Medica, Naples

June 25, 1921, 37, No. 26

- *Burying Stump of Omentum. D. Taddei.—p. 601.
*Cholesterin Content of Blood Serum. G. L. Malerba.—p. 602.
*Torsion of Testicle in Pseudohermaphrodite. A. Pignatti.—p. 605.
*Plastic Operation for Femoral Hernia. S. Bile.—p. 610.
Present Status of Anaphylactic Hemoglobinuria. E. Pesci.—p. 612.
Present Status of Treatment of Suppuration in Lung. E. Aievoli.—p. 615.

The Stump of the Omentum.—A thread is passed through the expanse above after the stump has been ligated, the thread forming a V, the needle dipping into the tissues at the tip and at the upper ends of the broad V. The ligated stump is then turned up and, by pulling the thread, the stump is buried in a deep pocket.

Cholesterin Content of the Blood.—Malerba found that instead of the normal 1.2 or 1.8 per thousand, the cholesterin content of the blood ranged from 2 to 10 per thousand in 8 cases of chronic nephritis, inversely to the nitrogen content of the blood. It was from 2.5 to 2.7 per thousand in 4 cases of diabetes; in 4 cases of tumor in the liver, the range was from 3.9 to 4.3. With cholelithiasis, the range was from 2.4 to 3.5. It was within normal range in 2 cases of acute nephritis and in 9 cases of cardiovascular disease, but was below normal in 7 cases of pneumonia or typhoid. He gave cholesterin by the mouth in 2 cases of aplastic anemia with cholesterin content of only 0.8 and 0.83. The general condition improved, but the cholesterin content of the blood did not increase during the sixteen days of treatment. The cholesterin was given by the mouth in a 3 per cent. solution, from 2 to 4 tablespoonfuls, fasting.

Torsion of Testicle in a Pseudohermaphrodite.—Pignatti reports the discovery of this condition in operating on a girl of 14 sent to the hospital with the diagnosis of incarcerated inguinal hernia. The article is illustrated.

Plastic Operation for Femoral Hernia.—Bile has applied in two clinical cases the technic he describes with illustrations as a new procedure. After ligating and resecting the sac through a slanting incision, he draws the Gimbernat and Cooper ligaments together with two or three silk threads, and then cuts a square flap in the aponeurosis of the greater oblique and turns this over, suturing it to close the femoral canal. The edges of the gap in the aponeurosis are loosened up and drawn down and sutured to the turned over edge of the flap and beyond.

Mitt. a. d. med. Fak. d. Univ. Kyushu, Fukuoka

1920, 5, No. 3. German Edition

- *Transplantation of Fowl Tumors. K. Yamamoto.—p. 209.
*Rodent Ulcer of the Vulva. S. Kusuda.—p. 235.
*Ovarian Vesicular Cystoma. S. Kusuda.—p. 307.
*The Precipitin Reaction. K. Fujiwara.—p. 325.
*Injury of Hearing by Congestion in Head. T. Matsui.—p. 335.

Transplantation of Fowl Tumors.—Yamamoto reports extensive experimental research with sixty-one new cases of tumors in domestic fowls, and a tumor in a dog and one in a guinea-pig. The attempts to transplant benign tumors were invariably negative, even when the lipoid, fibroma, angioma, or adenoma tissue was implanted in the operative wound or in a spontaneous tumor. Small cell sarcomas also gave nega-

tive results, but implantation of two strains of spindle cell sarcomas from hens was always followed by growth of the implanted tumor, with metastasis in internal organs or only in adjoining muscle. The arrest or resorption of an already implanted tumor in fowls and the failure of the transplantation seemed to be intimately connected with the sexual function.

Rodent Ulcer of the Vulva.—Kusuda bases this illustrated study on ten cases and 144 articles in European and Japanese literature. The primary cause is some disturbance in the circulation in the region; excoriations and ulceration follow. The original disturbance may be due to syphilis or tuberculosis, but this is not necessarily the case. The ulceration is the main thing; the proliferation of tissue secondary. This is contrary to what is observed in elephantiasis, in which the proliferation is the main feature.

Polypous Ovarian Cystoma.—In one of Kusuda's three cases the cystoma was as large as a man's head and the center proved to be a dermoid cyst. In the third case the cystoma was twice the size of a man's head. The patients were women of from 42 to 56.

The Precipitin Reaction.—Fujiwara's experimental work has confirmed that the precipitate formed by the mixture of the antigen and the antiserum can be used to produce new precipitin by injection into animals. The immune serum thus derived gives the precipitin reaction with both the serums used. These guinea-pigs show symptoms of anaphylaxis when injected with either of these serums.

Injury of Hearing from Congestion of Head.—Matsui induced the congestion in the head of the anesthetized guinea-pigs by dividing the cervical sympathetic, applying a constricting band to the neck or allowing the animal's head to hang down. Nine photomicrograms show the serious results on the internal ear, the congestion inducing extravasation and mechanical injury. The injury was always greater in the labyrinth than in the vestibular apparatus.

Deutsche Zeitschrift für Chirurgie, Leipzig

June, 1921, 163, No. 3-4

*Köhler's Disease of Scaphoid Bone. E. Sonntag.—p. 145.

*Postoperative Peptic Ulcer. F. Mandl.—p. 167.

*Spontaneous Fracture of the Patella. F. Wagner.—p. 208.

*Wound of Cervical Spinal Cord. J. Wieting.—p. 221.

*Parosteogenic Juvenile Osteochondropathy. J. H. Zaaier.—p. 229.

*Technic for Goiter Operations. J. Dubs.—p. 257.

*Decapsulation to Cure Phosphaturia. E. Birt.—p. 278.

*Modification of Malgaigne's Exarticulation sub Talo. G. Gaudlitz.—p. 284.

Köhler's Disease of Scaphoid Bone.—Sonntag adds two more cases to the forty-eight he has found on record in which pain, limping, tenderness, and sometimes redness of the skin above, were explained by the irregular outline of the unusually small, compact scaphoid bone in young boys. Girls are much less frequently affected. No complications have ever been observed, and conditions return to normal in days, weeks or months, confirmed by roentgenoscopy two or three years later. Treatment should be conservative.

Postoperative Peptic Ulcer.—Mandl's survey of German literature shows fully 200 cases of postoperative peptic ulcer, and in Hochenegg's service there were 8 cases known among the 600 gastro-enterostomy patients, 1907-1919. The intervals before symptoms developed ranged from three weeks to eleven years in all but one of his eight cases; in this there had been no respite from disturbances. He also analyzes 21 cases of peptic ulcer after gastro-enterostomy done elsewhere. The spontaneous cure of a peptic ulcer is of very rare occurrence, which renders particularly interesting the spontaneous cure which so often follows perforation of the peptic ulcer into the colon. In 50 per cent. of the recurring ulcer cases on record he found cardiospasm mentioned, and this was pronounced in one of his eight cases. The more one studies these rebellious ulcer cases, the stronger the conviction that nervous influences must be incriminated. Scraps of silk suture have been found so often in the vicinity of the peptic ulcers that there can be no doubt that this is a contributing factor in some cases. Recent research has confirmed the importance in prophylaxis of means to reduce secretion of hydrochloric acid.

Spontaneous Fracture of the Patella.—Wagner relates that tabes was responsible for five of the six cases on record, but in the case he describes the man of 50 showed signs of progressive dystrophia of muscles as the only pathologic finding.

Parosteogenic Juvenile Osteochondropathy.—Zaaier explains how this term includes and explains the conditions known as the Legg-Calvé-Perthes, the Schlatter and the Köhler diseases, and separation of the epiphyses. Owing to some congenital dystrophia, some developmental defect in the ossification center of the head of the femur or tuberosity of the tibia or scaphoid bone, the part does not develop quite normally for a time, but finally as growth proceeds, the condition rights itself. This occurs in girls earlier than in boys. He describes four typical cases encountered in the last year, and compares them with the literature and some anatomic specimens from cases of the kind. The latter confirmed his assumption that the developmental defect is mainly the interposition in the ossification center of irregular islands of cartilage. In one specimen, there was a mass of cartilage, about 4 mm. wide, encroaching on the ossification center of the head of the femur on both sides. The anomaly is not visible in the roentgenogram until the ossification begins to show the effect of this temporary hampering of the normal process. It may occur with or without trauma. (Compare with p. 484.)

Thyroidectomy Without Draining.—Dubs advocates drawing up the muscles and suturing them to roof over completely the stump left after enucleation or excision of the goiter. He then sutures the skin at once with or without draining. It seems to be impossible to prevent a little serum seeping into the space, but it is less with this technic and without draining than otherwise, and it prevents the oozing of thyroid juice into the operative wound. No subjective or objective disturbances could be traced to this "muscle tampon" in his forty cases thus treated in the last six months, and the healing was perfect. Of course, if the capsule can be sutured water-tight, the muscle suture is not needed. His tables show the far more perfect healing without disturbance of any kind with this technic, comparing 208 cases without draining with 364 drained cases in the last three years.

Decapsulation Cures Phosphaturia.—In the five cases on which Birt bases the above statement, the patients had suffered for years with attacks of kidney colic and other symptoms from their phosphaturia. He exposed the kidney, and when no calculi could be palpated in it, he merely slit the capsule. This decapsulation was followed by the complete cure of all the symptoms, and none of the patients has had any recurrence during the interval since, up to three years. Birt is instructor in surgery at the Shanghai medical school, and theorizes that in a tropical climate the kidneys outgrow their capsule, and the resulting compression mechanically hampers the passage of salts into the urine. Slitting the capsule relieves at once and permanently. In his latest cases he did this on both sides.

Deutsches Archiv für klinische Medizin, Leipzig

July 5, 1921, 136, No. 5-6

*Arrhythmia. F. Herzog.—p. 259.

*Neurosyphilis. M. Staemmler.—p. 271.

*Action of Atropin on the Stomach. P. Hecht.—p. 296.

*Pigmentation in Addison's Disease. A. Bittorf.—p. 314.

*Infantilism and Dwarfism. G. Brandis.—p. 323.

*Adhesion of Layers of Pleura. H. Deist.—p. 347.

*Treatment of Cardiospasm. G. Boehm.—p. 358.

*Percussion Records. E. Schlagintweit.—p. 373.

Myogenous Arrhythmia.—In the two cases described by Herzog the arrhythmia was the result of impairment of the excitability of the auricle, but this did not hinder digitalis from curing the arrhythmia. He explains the mechanism of the characteristically protracted intervals.

Neurosyphilis.—The necropsy findings in one of Staemmler's two cases showed acute syphilitic meningitis in the young man, which had begun two and a half months after primary infection with syphilis. The acute onset, the fever and other symptoms suggested tuberculous meningitis, but no signs of tuberculosis could be found at necropsy. The

oculomotor paralysis had developed before the loss of consciousness, and there was no reaction to light in the paralyzed eye. In the second case the arteries nourishing the lumbar and lower thoracic spinal cord had become obliterated eighteen years after treatment for secondary syphilis. This entailed sudden paraplegia of the legs and paralysis of the rectal and vesical sphincters, with death in seven weeks. These cases belong in the group of supposedly properly treated syphilis. Nonne found in 160 cases of cerebral syphilis that no treatment had been given in 58, and inadequate treatment in 16, while 86 had been treated according to the technic accepted as the best at the time. No benefit from neo-arsphenamin or mercury could be detected in either of Staemmler's cases, although five clinicians have reported instances of rapid subsidence of syphilitic meningitis under specific treatment.

Action of Atropin on the Stomach.—Hecht's research was done on the surviving stomach of rats. It confirmed that the variability of the action of atropin is due to the presence or the lack of peristalsis-inducing substances in the stomach wall, and of cholin in particular.

The Pigmentation in Addison's Disease.—Bittorf presents evidence that the bronzing is due to formation of oxidase in the epithelium.

Infantilism and Dwarf Growth.—Brandis' four cases testify to the predominant rôle of the anterior lobe of the pituitary in stunting the growth. Treatment with hypophysis extract failed to induce any benefit.

Experimental Adhesion of Layers of Pleura.—Deist injected turpentine into the pleural cavity of rabbits to induce adhesion, and then applied measures to check the production of fibrin and thus abort the adhesion. Intrapleural injection of a 10 per cent. solution of sodium chlorid seemed to answer this purpose. In four clinical cases the fibrin and fibrinogen content of the pleural effusion five days after the injection was only 50 per cent. of what it had been before. In conclusion he extols the reliability of the pneumograph in determining the existence and the location of adhesion of the layers of the pleura, preliminary to pneumothorax. The findings were correct in twenty-nine of thirty-one pneumothorax cases.

Treatment of Cardiospasm.—Boehm investigated in six patients with cardiospasm and dilatation of the esophagus the response to atropin, pilocarpin, epinephrin, opiates and other drugs, special diets, dilatation of the stomach and hypnosis. All were examined under roentgen control. As none of the drugs seemed to modify the cardiospasm, the conclusion seems evident that the disturbance is not a spasmotic closure. The trouble must be in the lack of the normal mechanism for opening the normally contracted cardia. The resting cardia must be normally contracted, and it must open under psychic influences during the physiologic act of swallowing. The proof of this assumption is supplied by the cardia becoming permeable under the influence of hypnosis and suggestion. The practical conclusion of the research is that only psychotherapy or operative relief can be considered. For the latter he advises transpleural lengthwise slitting of the cardia and closing it again with a transverse suture. Epinephrin is useful for differentiating organic from functional stenosis, as this is the only substance that abolishes the stenosis, but this action is briefly transient.

Percussion Findings.—Schlagintweit reproduces curves obtained by percussing through a gap in the base of a funnel placed on the chest. A tube connects the tip of the funnel with a sensitized paper drum with light attachment.

Beiträge zur klinischen Chirurgie, Tübingen

1921, 122, No. 2

- *Present Status of Surgery. F. Sauerbruch.—p. 234.
- Acquired Spinal Cord Disease. A. v. Eiselsberg.—p. 249.
- Coxa Plana (Perthes). E. Kreuter.—p. 263.
- *Plastic Operation on Lips. F. König.—p. 288.
- *Antethoracic Artificial Esophagus. M. Madlener.—p. 299.
- *Diffuse Suppurative Peritonitis. M. Strauss.—p. 303.
- Chronic Ulcer of Body of Stomach. E. v. Redwitz.—p. 305.
- Gallstone Disease Plus Cancer of Bile Duct. Gebele.—p. 316.
- Torsion of Gallbladder. M. Strauss.—p. 322.
- Ligation of Hepatic Artery Cures Intrahepatic Traumatic Aneurysm. F. Colmers.—p. 324.

- *Reflex Anuria. E. Pflaumer.—p. 326.
- Bent Wire Found in Ureter. F. Schlagintweit.—p. 333.
- Roentgen Measurement of Bladder Diverticulum. Id.—p. 334.
- Advantages of Sectio Alta Over Retention Catheter. Id.—p. 335.
- Roentgen Dose with Gastro-Intestinal Cancer. J. Schlaaff.—p. 336.
- Puzzling Diagnosis. L. Duschl.—p. 342.
- Successful Treatment of Exstrophy of the Bladder. Pflaumer.—p. 346.
- Lymphosarcomatosis of Small Intestine. A. Krecke.—p. 348.
- Cylindroma of the Tongue. O. Preusse.—p. 355.
- Trauma of Spine and Serous Meningitis. E. Melchior.—p. 361.
- Topography of Recurrent Nerve. L. Franz.—p. 366.
- Lengthwise Resection of Stomach for Ulcer in Lesser Curvature. F. Neugebauer.—p. 369.
- Ruptured Malarial Spleen. F. Pendl.—p. 386.
- Splenectomy After Rupture of Spleen. H. Hauke.—p. 389.
- Volvulus of Sigmoid Flexure. R. Reichle.—p. 406.
- True Hermaphroditism. J. Losert.—p. 411.
- Perthes' Disease and Köhler's Disease. S. Weil.—p. 418.
- Oxyurids in Appendix. L. Drüner.—p. 438.
- Roentgen Findings in the Trachea. H. Kästner.—p. 455.

Present Status of Surgery.—In this review of the prevailing tendencies, Sauerbruch comments on the present vogue of local anesthesia, saying that it is quite a question whether local anesthesia is any less dangerous than inhalation anesthesia. Postoperative pneumonia occurs just as frequently after one as after the other; this was confirmed anew in a long series of hernia operations recently. Another drawback is the injury to the tissues from the fluid injected for their infiltration; necrosis of the fascia is more likely after local than after general anesthesia. He mentions three fatalities after a harmless operation on jaw or ribs, evidently from toxic action from the local anesthetic; some persons are extraordinarily susceptible to small amounts of cocaine or procaine. But the greatest drawback from the medical standpoint is the moral effect on the patient, from even an entirely painless operation. "No epochal surgical achievements have been reported in this first quarter of the century; further progress in surgery depends on the perfecting of diagnosis." He anticipates speedy progress in this line in disease of the central nervous system and organs in the chest. "The high hopes placed on radiotherapy of malignant disease have not been realized. Notwithstanding the perfected technic and diagnosis, the favorable results at first often yield to recurrence. . . . But the way a carcinoma or sarcoma may retrogress completely under radiotherapy amply justifies further study. Its lack of close connection with clinical medicine is its greatest fault." . . . "It is foolish also to suppose that the experiences with gynecologic cancer can be applied to other forms. Progress will depend now more on biologic study of the cancer forms, and on means to reduce pain before, during and after the operation."

Plastic Operation on the Lips.—König comments on the fine outcome possible when half of one lip can be saved and twisted around to complete the other.

Artificial Esophagus.—Madlener reports excellent results in a case of stricture of the esophagus from drinking lye, treated by making a new esophagus out of skin rolled up to form a tube as for cinematization of a stump. The cure was complete in three and a half months.

Treatment of Diffuse Purulent Peritonitis.—Strauss does not ascribe the recovery in the four cases he describes to the simple procedure he applied. But it certainly helped, he says. He merely drew the appendix up and fastened it to the skin; flatus and thin stools escaped by this appendicostomy, and the evil results of paralysis of the bowel were thus averted. In two cases the peritonitis was from perforation of a gastric ulcer, fourteen and twenty-six hours before the operation.

Reflex Anuria.—Pflaumer's research on dogs demonstrated that anuria does not inevitably follow from reflex action when there is high intrarenal pressure or intense ischemia.

Deutsche medizinische Wochenschrift, Berlin

June 23, 1921, 47, No. 25

- Basis for Specific Tuberculosis Therapy. H. Selter.—p. 701.
- *Thoracoscopy. H. C. Jacobaeus.—p. 702.
- Pain in Both Sides of Abdomen as Source of Error in Gynecologic Diagnosis. R. T. v. Jaschke.—p. 705.
- Traumatic Epilepsy and Its Treatment. W. Eliasberg.—p. 707.
- *Perforations of Esophagus into Air Passages. F. Peltason.—p. 709.
- Jaundice After Arsphenamin. P. Tachau.—p. 711. Begun No. 24, p. 677.

After-Treatment of Pleuritis. O. von Niedner.—p. 712.
Causes and Treatment of Foot Affections. F. Loeffler.—p. 715.
Treatment of Conjunctivitis. E. Richter.—p. 717.

Practical Importance of Thoracoscopy.—THE JOURNAL mentioned Jan. 18, 1913, Jacobaeus' success in direct visual inspection of the interior of the thorax in 71 cases and of the abdomen in 59. He uses a No. 12 Nitze cystoscope and for ten years has been applying this endoscopy to the pleura and peritoneum in the diagnosis of various pathologic conditions, especially in the liver and spleen, and with bands interfering with the movements of the intestines. In the thorax, it takes the place of the exploratory laparotomy for the abdomen. The surface of the pleura can be easily inspected almost throughout. It allows adhesion and bands interfering with therapeutic pneumothorax to be broken up. He cites a number of cases in which the attempt was made to break up adhesions through a thoracotomy, all with aggravation and generally a speedily fatal outcome from infectious complications. With direct visual inspection, however, it is a comparatively easy matter to introduce the actual cautery through another puncture hole, and sever the bands with the galvanocautery. This has been done now by himself or in other clinics in 100 cases to date. He introduces the thoracoscope under local anesthesia, generally on the anterior axillary line between the seventh and the ninth interspaces, or a little lower or higher according to the location of the bands. He usually severs the band at its narrowest point. The pain is moderate, as a rule. Practice is necessary to manipulate the cautery under direct visual inspection in this way. When the layers of the pleura were adherent over a considerable expanse, it has sometimes taken an hour or two to separate them. The electric current must not be too strong or there is danger of hemorrhage from the stump. No death has occurred from the procedure and only one considerable hemorrhage; this was in Dahlstedt's case. The pleural cavity filled up with blood, but the patient gradually recuperated without ill results. The one complication to be feared is pleuritis. In 3 cases an effusion developed several months later which in the course of a few months became a tuberculous empyema, and the patients died a year or two afterward. This secondary pleuritis was observed in 10 of the total 100 cases, but empyema followed only in 5 instances. The pleuritis was observed only in the cases requiring extensive separation of the layers of the pleura. He estimates that by this means artificial pneumothorax can be applied to two thirds or more of the persons who otherwise would be excluded from its benefits. In conclusion he describes six cases of tumors in the chest which it proved possible to locate with precision by the combination of insufflated air, endoscopy and fluoroscopy.

Roentgen-Ray Diagnosis of Abnormal Communication Between the Esophagus and the Air Passages.—Peltason reports several cases in illustration of the practical advantages of the roentgen-ray procedure over older methods of examination for the diagnosis of perforation from the esophagus into the air passages. One objection to the method lies in the fact that some of the contrast suspension may get into the air passages, and show the characteristic ramifications of the bronchial tree, as it is drawn down. This objection applies only to cases with sensory or motor paralysis of the larynx, and can be eliminated by an antecedent examination of the larynx. The small amount of the contrast suspension that makes its way through the perforation into the air passages he thinks may be regarded as negligible, as, if it allows passage of the contrast suspension, it must be allowing also passage of particles of food and drinks. These patients usually succumb to aspiration pneumonia in time, but the bronchial mucosa is surprisingly tolerant under these conditions.

Münchener medizinische Wochenschrift, Munich

June 24, 1921, 68, No. 25

Chronic Influenza. Treupel and Stoffel.—p. 763.
Susceptibility of Animal Tissues to Roentgen Rays. Schwarz.—p. 766.
Effect of Radiotherapy on Generative Processes. Werner.—p. 767.
Respiratory Treatment in Tuberculosis of Lung. Hofbauer.—p. 768.
So-Called Arthritic Spirochetosis. A. Stühmer.—p. 769.
Two Peculiar Cases of Intermittent Fever. H. Fendel.—p. 771.
Gas-Containing Liver Abscesses. P. Schenk.—p. 771.

Diphtheria Bacilli in Sputum. H. Lippmann.—p. 772.
Pandy Test in Infantile Tuberculous Meningitis. Widmaier.—p. 772.
Plastic Treatment of Hypospadias. R. Niedermayr.—p. 773.
Modification of Schloffer Phimosi Operation. Schöning.—p. 776.
Treatment of Genu Varum. A. Schanz.—p. 776.
Treatment of Oxyuriasis. K. Ochsenius.—p. 778.
Protection Against Smallpox. G. B. Gruber.—p. 778.
Local Anesthesia in Connection with Punctures. A. Brecke.—p. 778.
Typical and Atypical Averages in Statistics. G. Oeder.—p. 779.
Occultism and Familial Insanity. G. Kolb.—p. 779.
Serotherapy in Diphtheria. M. Pfandner.—p. 781.

Familial Insanity.—Kolb refers to a family of eleven members, all of whom had to be committed to the hospital for the insane. After the analogy of similar cases, he thinks it may be assumed that primarily only one member of the family may have been actually insane and that the other members became infected psychically, so to speak, by the one member (either directly or through the mediation of certain other members). He regards it as possible that the revival of spiritualism and occultism since the war may have played a part in the result.

Wiener klinische Wochenschrift, Vienna

June 9, 1921, 34, No. 23

Psoriasis. P. G. Unna.—p. 275.
Processes Increasing Cerebral Pressure. Marburg.—p. 277.
The Jarisch-Herxheimer Reaction. Oppenheim.—p. 278.
Negative Phase of Sensitiveness to Tuberculin. F. Hamburger and R. Peyrer.—p. 280.
Apparatus for Heliotherapy of Larynx. Jonas.—p. 280.

Zentralblatt für Chirurgie, Leipzig

June 25, 1921, 48, No. 25

*Removal of Suprarenal Gland in Epilepsy. C. Steinthal.—p. 878.
*Extirpation of Suprarenal Gland in Epilepsy. S. Sándor.—p. 881.
*Evacuation of Stomach Before Operating. E. Roedelius.—p. 883.
*Technic for Fixation of Spine in Spondylitis. Pólya.—p. 884.
Quick Method of Tying a Surgical Knot. B. von Mezö.—p. 886.

Removal of Suprarenal Gland in Treatment of Genuine Epilepsy.—Steinthal reports his lack of success in the treatment of seven cases of epilepsy by removal of the suprarenal gland. The five males were between 15 and 23; the two women were 19 and 29. In only one case was there a definite history of a preceding trauma. Küttner's technic was followed in all its details. In not a single case was there marked and permanent improvement following the operation. Five of the seven cases were of severe type, so that it might be urged that the "epilepsy paths" had become such deep ruts that a cure was exceedingly difficult, but at least two of the cases were mild. Therefore, Steinthal thinks that removal of the suprarenal gland cannot be regarded as a therapeutic remedy for epileptic seizures.

Treatment of Epilepsy by Extirpation of the Suprarenal Gland.—Sándor reports favorable results in four cases of epilepsy in which he removed one suprarenal gland. The longest interval is only three months, while the other cases are more recent. The results so far are excellent. It remains to be seen how permanent they will be. The first patient operated on had been confined to his bed for several months and during the three months previous to the operation was not free from attacks for more than half a day at a time. Now (three months after operation) he can walk about actively, although he still has mild attacks about every two weeks. The jerking is confined to his hands and arms. He does not fall down during the attacks. He merely stands still a few minutes; then walks on. As there was a very slight loss of blood during the operation, the improvement cannot be due to that cause. Sándor thinks that the method is deserving of further trials.

Use of Stomach Tube Before Operations for Perforating Ulcer.—Roedelius formerly followed the general custom of not emptying the stomach of its contents before an operation for perforating ulcer. The perforated organ seemed to be generally regarded as a *noli tangere*, but of late he has overcome his scruples and has used the stomach tube to remove the contents of the stomach before such operations. He is much better satisfied with the results than by the old method. He does not think it is at all dangerous. If the opening in the stomach should be made larger by the stomach tube, which is not at all likely, he does not see that it would matter materially as the perforation will soon be closed.

Technic for Fixation of the Spine in Spondylitis.—Pólya recommends a modification of the Albee operation. He found that in the Albee operation the transplanted bone lies too near the surface and is kept in place only under great tension, by tied sutures, which, if they tear, cause a dislocation of the bone graft. To be sure, such accidents do not occur frequently, but they have been reported in the literature. The modified technic he proposes will, he asserts, avoid the danger, and is, at the same time, simpler and easier than the original method. Instead of implanting the bone graft in the split spinous processes, as Albee recommends, he advises inserting it between the vertebral arch and the spinous processes, turning back the whole set of spinous processes by chiseling them loose at their base. The bone graft is pushed into this space where it holds firmly without the need of sutures. With this procedure it is possible to use a piece of resected rib, which fits well in the bed prepared for it, in place of the customary strip of the tibia. This gives the further advantage that the position of the patient does not need to be changed during the operation, and that there is only one field of operation to be disinfected. He describes his operation in detail, with five illustrations. He has operated in this manner in eight cases, using six times the tibia and twice a piece of a rib, and is well satisfied with the results.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 4, 1921, 1, No. 23

*Elimination of Hippuric Acid. I. Snapper.—p. 3044.

*Coagulation Time of Blood. J. Geers.—p. 3051.

*Public Health Work in East Indies. C. D. de Langen.—pp. 3056 and 3064.

*Syphilitic Disease of the Kidneys. W. A. Weisfelt.—p. 3073.

*History of Conceptions of Insanity. H. Breukink.—p. 3076.

Care of the Insane in China and Japan. S. Koster.—p. 3100.

Hippuric Acid Test of Kidney Functioning.—Snapper's tabulated data show that a normal person on a milk and porridge diet, ingesting 5 gm. of sodium benzoate at 9 a. m., excretes nearly the whole as hippuric acid within twelve hours. Healthy kidneys may eliminate it so completely that the hippuric acid may form 2 per cent. of the urine. Patients with croupous pneumonia and retention of sodium chlorid, those with complete obstruction of the common bile duct, and those with a bile fistula, eliminated almost the whole of the sodium benzoate as hippuric acid within twelve hours. In all the tests the elimination of hippuric acid in the second twelve hours kept within normal range. It is evident, he says, that all persons with sound kidneys, irrespective of other conditions, eliminate within twelve hours all the hippuric acid formed from 5 gm. of sodium benzoate, and fully 75 per cent. of it in the first six hours.

Estimation of Coagulation Time of Blood.—To insure precision, Geers has the blood flow by gravity through a glass capillary tube heated to the same temperature as that of the inside of the body of the subject. With hemoptysis, this is assumed to be from 102.2 to 104 F. The moment that the clot begins to cling to the glass wall, the gentle force is no longer able to move the blood along. This arrest of the current is plainly evident, and he accepts as the coagulation time the interval between the emergence of the drop and the arrest of the current. He uses a horizontal capillary tube about 45 cm. long, with one end bent up at a right angle for 3 cm. Each test requires a new capillary tube. He describes the procedure and says that in normal conditions the first drop coagulates in 120 to 150 seconds, while the succeeding drops coagulate in an average of 50 seconds. Geers relates that the first drop of his own blood takes 290 seconds to coagulate, but the coagulating time of the succeeding drops is within normal range. This and some other data cited sustain his assumption that the true measure of the coagulating power of the individual blood is that of the first drops. One of his charts shows the marked acceleration of coagulation which followed after an enema of 500 gm. of milk. Drops 14 and 15 coagulated immediately; they did not even run into the capillary tube.

The Medical and Public Health Service in the Dutch East Indies.—De Langen describes the circumstances which recently made it necessary to accept foreign physicians for

this service, as there were no applicants from the members of the profession in the Netherlands. Fifty alien physicians have thus been appointed for this work in the tropics, but hereafter only those with degrees from Netherlands medical schools are to be accepted.

Syphilitic Disease of the Kidney.—The man of 48 had fever, dyspnea, insomnia, edema, and 11 per thousand albumen in the urine. The albuminuria and edema fluctuated under bed rest, restriction of fluids and digitalis, and then hydrops, ascites and anasarca predominated in the clinical picture, with terminal pulmonary edema. The Wassermann reaction had been 4 plus, but little benefit followed specific treatment.

Mental Disease in Olden Times.—Breukink gives twenty-one reproductions of paintings, mosaics and tapestries portraying subjects with nervous and mental disease, the "possessed of devils" and the driving out of devils. He says that the Vedas, 1500 years before Christ, described sixteen different forms of mental disease, and Hippocrates regarded insanity as a disease of the brain, giving an excellent description of melancholia and alcoholic delirium. One of the illustrations shows the driving out of devils by St. Dymphne at Gheel. According to the legend, he was a Christian prince in Ireland in the seventh century, but had to flee from his heathen relatives and sought refuge at Gheel. Here he performed miracles, healing the "possessed of devils" who congregated at Gheel from far and near. Gheel is still renowned as a colony home for the insane.

Hygiea, Stockholm

June 30, 1921, 83, No. 12

*Spinal Cord Tumors. A. Wallgren.—p. 385.

Present Status of Spinal Cord Treatment.—Wallgren emphasizes that there is no one symptom characteristic of a spinal cord tumor; it is the combination of symptoms that is instructive, and the sequence in which they develop.

Ugeskrift for Læger, Copenhagen

June 9, 1921, 83, No. 23

*Active, Latent-Active and Inactive Syphilis. T. E. H. Thaysen.—p. 759.

Active, Latent-Active and Inactive Syphilis.—Thaysen discusses the cases in which a positive Wassermann reaction does not indicate active syphilis, analyzing active syphilis from both the clinical and the biologic standpoints, and the biologic definition of active as applied to a late latent phase of the disease. He declares that notwithstanding the positive Wassermann reaction in a late latent stage, the syphilis may be regarded as inactive in a large proportion of cases.

June 23, 1921, 83, No. 25

*Peculiar Case of Actinomycosis. J. Riising.—p. 833.

*Bacteriologic Study of Chronic Mucous Colitis. L. Bahr (Copenhagen).—p. 838.

*Isolation in Contagious Diseases. S. Hansen.—p. 841.

Actinomycosis of Spine.—Riising's retrospective diagnosis in the case in a man of 41, here described, is primary actinomycosis of the lumbar vertebrae, spreading to the hip bone and perforating the skin. Harbitz found only one case of primary actinomycosis of the skin among the eighty-seven cases of actinomycosis that have been published in Norway.

Chronic Mucous Colitis.—Bahr describes a bacterium, cultivated from a case of this kind in a woman of 32, which differs from the classic descriptions. He appeals for specimens of stools from such cases.

Isolation in Contagious Diseases.—Hansen gives figures which show that in Copenhagen the number of cases of scarlet fever in children under 5 has dropped from 473 to 279 per thousand since 1876, and the cases of diphtheria from 516 to 343. The cases in older children have increased during this period, and the number of cases in the younger children would undoubtedly have increased to correspond if it had not been for the isolation enforced. This assumption is confirmed by the measles figures. As isolation is not enforced for measles, the figures show a parallel range for the younger and older groups of children, with scarcely any fluctuation in the figures year after year, the number in the younger children being constantly between 500 and 600 and in the older children between 400 and 500 per thousand since 1876.

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GRADUATE TRAINING IN NERVOUS AND MENTAL DISEASES*

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Certain standards have long been set up and generally accepted as necessary to be attained before a license to practice medicine should be granted. These standards are ordinarily understood to imply graduation from a recognized medical school, and a successful examination by a board of examiners appointed by the state or national authorities. The fulfilment of these requirements gives the individual the right to practice all branches of medicine, but, as time has gone on and the amount of information available has very greatly increased, medical men have been forced into more or less restricted fields of practice, and even those who denominate themselves general practitioners rarely practice indiscriminately in all branches. In other words, every one tends more or less toward some special aspect of practice, from predilection, or because chance has given him opportunity along certain lines. In either case the result is beneficial to practitioner and patient, in that both profit by a proficiency born of special experience.

IMPORTANCE OF GRADUATE TRAINING

The development of graduate medical education in the United States is a matter of the utmost importance. The number of men practicing the different specialties has greatly increased in the last few years, and though there has been some improvement in facilities for graduate instruction, these remain, in all except a very few places, poorly organized and administered; but limited use is made of the abundant teaching material really existing, and in few places can students secure satisfactory instruction. As a consequence, much of the special work in medicine is done by men with insufficient preliminary training and with the lack of that clinical experience which alone confers confidence in one's powers of observation and reliance on one's clinical judgment.

COMPARISON WITH GRADUATE INSTRUCTION IN OTHER FIELDS

An investigation of the faculties of arts, literature and science in any of our better universities reveals the fact that a large proportion of the instructors hold the Ph.D. degree; and if graduate training in the special

branches of medicine is to be put on a lasting and acceptable basis, it must at least equal the standards of graduate training in other fields. It is certainly quite as difficult and at least as important to train properly a specialist in medicine as in history, psychology, sociology, physics or chemistry.

Already comprehensive courses have been organized in certain of our medical schools, and there are many indications that the number of these will rapidly increase. Such properly standardized courses, however, must be sharply differentiated from the so-called review courses offered by many of our graduate schools. Though they doubtless served and still serve a good purpose they have certainly failed to develop the great centers of research and teaching which are necessary to provide adequate training for well qualified specialists. Nothing could give more convincing proof of this than the large number of men who felt the necessity of going abroad, up to the time of the great war, for the most satisfactory postgraduate work.

THE ESSENTIALS OF A PLAN FOR GRADUATE TRAINING

In formulating a plan for such instruction, we should first ask ourselves this question: What is the fundamental object of the training? Its object is to turn out medical men capable, not only of practicing their profession with the greatest benefit to their patients and satisfaction to themselves, but also of advancing the limits of knowledge concerning the specialty they have chosen; for many special practitioners are teachers, and, as Osler has said, every great teacher is an investigator, as is also every great investigator a teacher, though not always to his own associates or even to his own generation.

In our particular line, "training must include an adequate understanding of the nature of nervous and mental diseases, encouragement of sound notions of treating them, and stimulation of efforts to increase knowledge concerning them." Yet, with all this, we must keep within the limits of existing facilities for proper training.

THE NUMBER OF SPECIALISTS REQUIRED

The number of men who may be needed as specialists in our line is difficult to estimate. Of the Johns Hopkins graduates, since 1912, 6 per cent. are now engaged in nervous and mental diseases; but it must be recalled that special facilities in psychiatry exist in Johns Hopkins and on that account an unusually large number of graduates would enter psychiatric work. Investigations of similar character among the graduates of certain other schools are now in progress, but the results are not yet available.

* Chairman's address, read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Dr. Bevan estimates that in the United States about 3,000 medical students are graduated each year, and of these something like from 300 to 500 become specialists. Assuming that 10 per cent. of these choose neuropsychiatry as their specialty, and that each determines on a three years' course of preparation, we must provide for from ninety to 150 men as constantly under training. That the country has existing facilities for training a group of this size or considerably larger, there is little doubt. In the United States there are as many beds for mental cases as there are in our general hospitals, and though it may be admitted at once that many of the hospitals in which these patients are housed have no means of directing the study of this group of men, there remains a fair number of state and private hospitals, and, especially, of psychopathic hospitals, now few but steadily increasing in number, where the facilities for clinical observation and for original investigation are excellent and adequate. In neurology the number of beds available is much smaller, but as numerous as those for any of the other specialties, save only internal medicine and surgery, and is probably sufficient for present needs. Many well organized outpatient services also offer abundant material, and the value of this material for teaching purposes is well illustrated in the clinic which Oppenheim built up around such an institution. The continued opening of group clinics throughout the country is calling for an increasing number of well trained neurologists, but it is probable that the increase in material available for clinical neurologic instruction will keep pace with the demand for men.

An adequate graduate training sufficient for university endorsement of qualification to practice as a specialist in neuropsychiatry calls for a minimum undergraduate and graduate course as follows, in the order suggested by the Council on Medical Education and Hospitals:

UNDERGRADUATE TRAINING

The basic general training in the undergraduate course should be at least that of a Class A school, giving laboratory courses in neuro-anatomy, neurophysiology, neuropathology, and instruction in psychology, clinical neurology and psychiatry. Though in the present crowded curriculum it may be accepted that the average student already has more on hand than he can possibly grasp satisfactorily, it is certain that even in schools employing the full number of hours recommended by the American Medical Association (105), undergraduate clinical instruction in neuropsychiatry is not sufficient, especially if the students have not been well prepared in the preclinical branches. As a result, the average general practitioner is lamentably ignorant of nervous and mental diseases and, especially, of functional and behavior disorders, which are those by far most frequently met in general practice, and the prospective neuropsychiatrist has but a limited fund of knowledge in the field he proposes to enter. It might well be emphasized here, however, that important as the time allotment is, much more so is the question of competent instruction. A much closer correlation than usually found is needed between the clinical and preclinical subjects, and work in the latter field should be directed by one at least in sympathy with and able to appreciate the clinician's point of view. In other words, the instructor should teach neuro-anatomy, neurophysiology and neuropathology as applied rather than

as pure science, and should have constantly in mind integration, localization and clinical application. In even greater degree is it necessary to bring psychology, as ordinarily taught, into close relationship with the needs of one who will ultimately engage in the practice of medicine. Research in human behavior as a field of psychology is just beginning; yet it is this which the medical student really needs. Considering the lack of clinicians qualified to teach the laboratory branches, the necessary correlation can probably be better secured by proper cooperation between the laboratory and clinical teachers than through the assumption of the preclinical branches by clinicians.

THE USE OF ELECTIVES IN THE UNDERGRADUATE PERIOD

Courses leading to the specialty, elective in the undergraduate period, may include advanced work in all of the branches named above. Yet it must be borne in mind that with a curriculum as at present constituted, the undergraduate cannot hope to become sufficiently familiar with any one and much less with all of even the preclinical subjects, and a considerable part of the postgraduate period must be set aside for additional work in the fundamental subjects. It must also be remembered that most men select their special field in medicine during the course of their internship or after entering practice, and to such men electives in the undergraduate period will have had no special value. Considering, also, how important it is that specialists in neuropsychiatry should have a good understanding of general diagnostic procedures, particularly as applied in internal medicine, it is easy to see how a student permitted full use of electives may come to his graduate work relatively overweighted in his preparation for neurology, but lacking in sufficient general foundation.

IMPORTANCE OF THE HOSPITAL INTERNSHIP

The hospital internship is an essential part of the preparation for specializing in neuropsychiatry, and should be either a rotating general service or a service in internal medicine. The broader the understanding of general medicine and of pathology, the better specialist will a man be, and the less inclined to see all things medical as if they were neurologic.

Whether a period of a few years, with some experience in other fields of medicine and especially in general pathology, should precede the graduate training is a difficult subject on which to pass an opinion. To me it seems highly desirable; yet many men with experience in graduate instruction insist that such a course usually results in the individual's losing interest in the specialty and being gradually weaned away to other fields; and if he does return for a graduate course, he is usually unwilling to spend the necessary time for proper training or is but an indifferent student. It seems unnecessary to urge, however, that no one whose experience is limited to one field is likely to be a satisfactory consultant or a safe adviser in a difficult situation.

POSTGRADUATE TRAINING

Assuming that the student has completed his undergraduate course and has made the best possible use of the opportunities offered and has served his internship, he enters on his period of special preparation either directly or after an intervening period in general practice. With at least five years' preliminary train-

ing, he ought to be largely beyond the need of didactic instruction, and his subsequent work should be such as tends to cultivate an attitude of independent thought and habit of work, yet so arranged for the first eight months as to cover the following:

1. *Neuro-Anatomy*.—Embryologic development of the nervous system; gross and microscopic anatomy of the brain, the cord and the vegetative nervous system; the origin, course and distribution of the cranial and spinal nerves.

2. *Neurophysiology*.—Physiology of the special senses, of common sensation, of nerve muscle preparations, of the spinal cord and brain, and of the vegetative nervous system.

3. *Neuropathology*.—Finer histopathology of the nervous system, the coarser tract lesions, gross morbid anatomy of the brain and cord, with special application to particular diseases and the serology of the spinal fluid.

4. *Psychology*.—Abnormal psychology and practical experience in psychometric examinations.

5. *Physiologic Chemistry, Legal Medicine and Sociology*.—These should be available at least as electives. Indeed, they should be compulsory; but any prospective curriculum is soon overfilled, and the student is left no time for independent thought and action.

In this period, mere review courses in the anatomy, physiology and pathology of the nervous system are not sufficient. Undergraduate instruction in the pre-clinical subjects, as already pointed out, even when supplemented by electives, does not constitute a sufficient basis for subsequent specialization, and any attempt merely to review these courses must result unsatisfactorily. Only extensive independent investigation in these subjects, wholly different from the didactic work of the undergraduate period, will suffice.

GRADUATE CLINICAL TRAINING

The courses outlined above with, possibly, a limited amount of clinical work, should occupy the full time of the first academic year (eight months); and the ensuing fourteen months, making a total of two years of eleven months each, should be applied to clinical neurology and psychiatry, including, also, work in neurotology, neurophthalmology, physiologic chemistry, serology and roentgenology, along with a continuation of such laboratory work as naturally arises out of the clinical material observed. The clinical courses should be designed, not to attempt a finished training of the applicant in either branch of neuropsychiatry, but to give basic instruction in both, as the range of the two specialties overlaps in practice to such extent that this need must be met. Instruction in this period should be chiefly through bedside work and practical experience, though under proper supervision.

GRANTING OF DEGREES

At the completion of two years (of eleven months each), the student's work, if satisfactory, should be recognized by the degree of Master of Science in neuropsychiatry, if the work is done under such auspices as makes this possible.

The two years' course is designed to give basic general training in the combined fields of neuropsychiatry, and the third year may be a continuation of this work; or, if the student desires to perfect himself especially in either branch, the third year of eleven

months may be applied to that selected. If a thesis is to be included, and this is generally required in any school where the Ph.D. degree is given, it should be completed in the third year. The thesis will deal with either clinical or laboratory material and will constitute a major subject. A minor should be chosen from some allied field. The satisfactory completion of the third year should lead to a degree of Ph.D., if the graduate school of the institution concerned will accept the work offered—otherwise, its completion should be recognized by a proper certificate.

CONNECTION WITH A SPECIAL HOSPITAL

Throughout his three-year course the student should be attached to an institution in which high grade work in neurology or psychiatry or both is being carried on. Such an institution, in addition to an adequate number of beds, will have a competent staff, a laboratory in which neuropathology and psychopathology are studied and taught, and will also have an outpatient and social service department. Opportunity should also be offered for observation of high grade work in neurologic surgery. Internship, or assistants'hip in such an institution, is a *sine qua non* for the prospective specialist.

Many of the men who undertake these courses will ultimately be teachers and, if during the time in the undergraduate curriculum, when the anatomy, physiology and pathology of the nervous system is under consideration, men training as specialists in neuropsychiatry could serve as voluntary assistants in these departments, it would revive their knowledge of these fundamental branches and at the same time impart to the instruction a clinical aspect otherwise often lacking. Such junior instructors, being on more intimate terms with the students, could greatly aid promising individuals by placing at their disposal special opportunities and encouraging personal relationships between them and their teachers. Yet teaching must not be allowed to monopolize the student's time, and most of his work should consist in acquiring greater clinical experience and in studying special problems.

TRAINING FOR RESEARCH

The idea of training men for research should never be lost sight of, but this is not necessarily limited to laboratory fields. In addition to laboratory investigations, men should be taught to weigh clinical evidence, to determine the relative value of symptoms, the facts of observation, and, in general, to distinguish between real science and pseudoscience.

TRAINING AT DIFFERENT CENTERS

Such courses as are referred to above should be offered only by teaching centers having unusual facilities in material and teachers, and each individual teaching center should give complete courses and these courses should be coordinated as much as possible; but some schools or centers offer better opportunities for certain lines of work than others, and some men give courses which cannot be duplicated elsewhere. It would therefore be of decided advantage to the prospective neuropsychiatrist if he could obtain his instruction in more than one center and thus have contact with as many men as possible during his training. A central bureau of information should be established through which lists of vacancies and other data could

be provided and through which a candidate for a career in neuropsychiatry would obtain the best possible opportunity to become properly trained.

THE USE OF SHORT GRADUATE COURSES

Shorter courses, of a year, for example, with the time divided equally between preclinical and clinical subjects, or in special subjects for specialists, or for general practitioners as in methods of diagnosis, may be useful if the intention is merely to supplement a deficiency in the previous training. If the work is designed to fit the applicant to specialize in either neurology or psychiatry, with due allowance for the deficiency in the undergraduate work, three years is necessary.

DEGREES AND LICENSE

Degrees, if granted at the completion of a full three years' course, should be coordinate with those of other specialties, and there might be separate degrees for neurology and for psychiatry or one for both. The regulations determining the granting of a graduate degree should be left to the institution in which the graduate work is completed.

Qualification for the practice of a specialty, if made the subject of definite regulation, should be left to the state and national boards of examiners, possibly advised by national societies representing those most highly qualified in the specialty.

A too rigidly prescribed course to be required of every one entering the practice of neuropsychiatry is to be avoided. Though courses as outlined above necessarily appear dogmatic and lacking in opportunity for initiative, it is not meant to lay down hard and fast rules to which every one who aspires to be a specialist must submit. Standards are essential, but there will always be those of exceptional ability or whose peculiar experience may have been such as to amply qualify for practice, teaching and research, even though they may not have had the benefit of a well planned and well balanced period of study, and the time required will always vary with the preliminary attainments and native ability of the student. Accomplishment rather than time spent should be the determining factor in deciding as to fitness.

CONCLUSION

In preparing this outline, even with able advice, I am conscious of its defects and realize that only after practical tests of various methods will the ideal one be evolved. It is especially true that in the plans here presented but little allowance is made for the influence of the occasional truly great teacher, such as Louis of earlier years, and Osler of our own times, who by virtue of distinguished professional attainment, high example and powerful personality, draw to themselves the brightest medical minds of their own day and rise superior to all conventional courses of training. Yet all this constitutes no reason why a properly standardized course of study may not be available to those who desire, through this method, to fit themselves for a career in neuropsychiatry.

Effective Tuberculosis Service.—If any real advance is to be made in the organization and administration of an effective tuberculosis service, some adequate system will have to be devised whereby both medical undergraduates and graduates, and especially those who propose to take up the responsible duties of a tuberculosis officer, are thoroughly trained.—G. Woodhead, *Brit. J. Tuberc.* 15:54, 1921.

LARYNGEAL DIPHTHERIA *

JOHN F. HOGAN, M.D.

BALTIMORE

For the years 1919 and 1920 there were 246 deaths in the city of Baltimore due to diphtheria of various types. Of this number, 202, or 82.11 per cent., were laryngeal diphtheria. Prior to 1918 a death certificate reading diphtheria was accepted. Beginning Jan. 1, 1918, a death certificate was not accepted by the department reading diphtheria unless the type of diphtheria was indicated; for example, the certificate must read pharyngeal, tonsillar, nasal or laryngeal diphtheria. This effort was made so that the exact number of deaths from the laryngeal type of the disease could be determined, as it was suspected that a very high percentage of the fatalities in diphtheria were due to the laryngeal type. In the beginning of the year of 1919, an investigation was started to ascertain why so many children were dying of laryngeal diphtheria, and this investigation has been carried on throughout 1919 and 1920 and up to the present time in 1921.

Martin¹ has found in his analysis of records that the highest known death rate per hundred thousand inhabitants from diphtheria was 200 in Berlin in 1883. Paris, he found, had a death rate in 1882 of 100 per hundred thousand of the living inhabitants. William T. Howard, Jr., found a death rate of 263 per hundred thousand of the living population in the city of Baltimore for the year of 1882, which death rate appears to be the highest known at the present time. The death rate in the city of Baltimore from diphtheria has been remarkably low for the past few years. In 1894 the death rate from all forms of diphtheria in Baltimore was 15.7 per hundred thousand people. In the years 1917, 1918 and 1920 it was lower than in any other city in the country with a population over 500,000, with the exception of Los Angeles. The death rate in Baltimore for those years was 9.75, 11.84 and 13.51, respectively, per hundred thousand for all forms of diphtheria, and the death rate for Los Angeles was 7.34, 9.50 and 10.73, respectively, per hundred thousand. If the experience of other cities in 1919 and 1920 with the death rates in diphtheria were like that of Baltimore with a percentage of 82.11 for the laryngeal type of the disease, it appears that our problem in diphtheria is to educate either the public or the physicians, or both, to recognize laryngeal diphtheria earlier, and, when recognized, to give larger doses of antitoxin and to intubate in time, the proper time to intubate being when the recessions of the intercostal spaces occur and not to wait until cyanosis appears.

While the death rate in all forms of diphtheria has dropped since Roux² read his masterly paper before the congress in Budapest, in 1894, from about 30 per cent. to 8 per cent. or less at the present day, it would seem that the result could be lowered even to a lesser degree than this, in a disease with which we are probably more familiar than with any other communicable disease except typhoid fever, and certainly in a disease for which we have a specific remedy, the antitoxin, if this remedy is given within a reasonable length of time

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Martin, L.: *Bull. de l'Acad. de méd.* 82:173 (Oct. 14) 1919.

2. Cited in *A Quarter Century of Serum Therapy in Diphtheria*, editorial, *J. A. M. A.* 73:1943 (Dec. 27) 1919.

of the onset of the disease. The term "reasonable length of time" is indefinite and variable, but it has been the experience of some health departments that in all cases in which antitoxin was administered within twenty-four hours of the onset, the result was recovery.

It would be unpractical to consider that all cases of diphtheria could be diagnosed within twenty-four or even forty-eight hours of the onset. But it appears quite evident that there is a tendency not to diagnose laryngeal diphtheria in time, and, when it is diagnosed, too great a delay is permitted before intubation is resorted to. In most cities today provision is made for the hospitalization of laryngeal diphtheria. It is a great advantage to have these cases in such hospitals where a trained resident is in constant attendance to reintubate when auto-extubation takes place, as many times the child will die of asphyxia before reintubation can be done. In many rural communities it cannot be hoped to hospitalize all patients with laryngeal diphtheria, but it certainly should be done in communities where a hospital is within reach and where such hospital has a man who has been carefully trained in the art of intubation. Unfortunately, exact information in regard to the total number of cases of laryngeal diphtheria and the deaths occurring among those intubated and those not intubated could not be obtained, and the data at hand are insufficient to determine the real value of intubation as practiced generally in Baltimore during these two years.

Of the patients with laryngeal diphtheria who died, only 101, or 50 per cent., were intubated. Five patients died while intubation was being attempted; in one case permission to intubate was refused, and three patients were reintubated, one of these being reintubated five times. In only 170, or 83.74 per cent. of these 202 fatal cases of laryngeal diphtheria, was antitoxin administered. The maximum dose given in the 170 cases was 100,000 units. The minimum dose was 2,000. In sixty-three, or 31.19 per cent. of the laryngeal

TABLE 1.—RELATION OF ANTITOXIN ADMINISTERED TO TIME OF DEATH

Hours	Cases	
	Number	Per Cent.
From 0 to 12	15	8.82
From 12 to 24	86	50.59
From 24 to 36	1	.59
From 36 to 48	24	14.12
From 48 to 72	7	4.12
From 72 to 84	1	.59
From 84 to 96	8	4.71
Days		
From 4 to 5	4	2.35
From 5 to 6	3	1.76
From 6 to 7	6	3.53
From 7 to 8	3	1.76
From 8 to 9	2	1.18
From 9 to 10	4	2.35
From 10 to 11	2	1.18
From 11 to 12	1	.59
From 12 to 13	2	1.18
From 13 to 22	1	.59
From 22 to 23	1	.59
Total	170	

deaths, there was also a pseudomembrane present on the pharynx. The onset of the disease before death in 44.6 per cent. of these deaths was longer than three days. The maximum age of the patients dying of laryngeal diphtheria was 8 years, 11 months and 2 days; the minimum age, 4 months and 5 days.

The most important question that confronts the public health officials and communicable disease workers is to find a remedy which will stop the death rate in this scourge. It would seem to appear obvious that,

since the introduction of antitoxin by von Bering in 1890, and since the invention of the laryngeal tube by the late Dr. Joseph O'Dwyer of New York in 1888, the death rate in this type of diphtheria should be practically nil. In my experience, covering four years in a municipal hospital of infectious diseases and four

TABLE 2.—TIME RELATION OF PHYSICIAN'S FIRST VISIT TO PERCENTAGE OF DEATHS

Hours	Cases	
	Number	Per Cent.
From 0 to 12	15	7.45
From 12 to 24	83	41.09
From 24 to 36	1	.50
From 36 to 48	30	14.85
From 48 to 72	20	9.90
From 72 to 96	12	5.94
From 96 to 108	1	.50
Days		
From 4½ to 5	6	2.97
From 5 to 6	9	4.86
From 6 to 7	6	2.97
From 7 to 8	2	.99
From 8 to 9	..	...
From 9 to 10	10	4.95
From 10 to 11	1	.50
From 11 to 12	2	.99
From 12 to 13	1	.50
From 13 to 14	1	.50
From 14 to 20	..	...
From 20 to 21*	1	.50
From 21 to 22	..	...
From 22 to 23	1	.50
Total	202	

* Complicated by bronchopneumonia.

years in a municipal health department, the death rate from laryngeal diphtheria in intubated cases has ranged from 30 to 35 per cent. Of course, it is true that many of these patients were moribund on admission to the hospital and, although intubated, died within twenty-four hours following intubation, either from toxemia or from aspiration pneumonia.

A most erroneous belief that seems quite prevalent today is that diphtheria of the larynx cannot exist without clinical manifestations of diphtheria of the pharynx, postnares or the nares. It should be remembered that in many cases of laryngeal diphtheria there is no pseudomembrane, and in some few not even a hyperemia of the pharynx. Yet the edema in the larynx may be quite sufficient to cause death by mechanical obstruction unless intubation is resorted to promptly. Although our clinical experience with this disease has compelled us to admit unanimously the great therapeutic value of the antidiphtheritic serum, it must be remembered that, once laryngeal edema develops to such an extent as to cause such marked dyspnea as to bring about recessions of the inter-spaces, antitoxin will not act quickly enough in this type of patients to overcome the necessity of intubation. Therefore, when diphtheria is suspected and the cardinal indications for intubation are manifested, intubation should be performed at once and no chances should be taken as to the length of time it will take after the serum has been given to produce the desired effect of decreasing the edema or pseudomembranous formation in the larynx.

CONCLUSION

As 82.11 per cent. of the deaths from diphtheria in Baltimore city for this period were due to laryngeal diphtheria, and as the fatality was in inverse proportion to the promptness with which the physician was called and antitoxin was administered, and intubation was performed in only one half of the fatal cases and

antitoxin given in only 83.74 per cent., it is clear that the hope of the desired reduction in the death rate lies in earlier recognition and timely treatment with antitoxin and intubation.

7 East Preston Street.

ABSTRACT OF DISCUSSION

DR. SAMUEL W. WELCH, Montgomery, Ala.: The control of laryngeal diphtheria differs in no respect from that of other types of diphtheria from a public health standpoint. There is no control of either type, except by prompt action on the part of the attending physician. The greatest nightmare that comes to me out of the experience of a country practitioner's life has been those cases of neglected laryngeal diphtheria which in my early professional career were called "membranous croup." There are men in Alabama now not much older than myself who still claim that there is a distinction between laryngeal diphtheria and membranous croup. The patient should be isolated promptly. Maximum doses of antitoxin should be given, followed by intubation if distressing symptoms are not immediately relieved. All contacts should be isolated and immunizing doses of antitoxin given. Objection to this procedure is sometimes raised, but since it is the simplest and most effective method of control yet devised, I think it should be followed until its critics discover a better method susceptible of universal use. It may be well to add that especial care should be observed to prevent these patients from assuming the sitting posture. We never know just exactly how much damage has been done the heart muscles by an infection of this nature, and unless the patient is kept in the prone position, disaster may follow.

DR. W. W. TOMPKINS, Charleston, W. Va.: The importance of the use of antitoxin cannot be overemphasized. We know that through its use we may reasonably hope to avoid the more serious consequences arising from infection, and we also know that if physicians do not explain to the families in regard to what they know of its working in specific cases, we shall cast doubt even on our own reputation. To say that diphtheria has a specific in antitoxin does not mean that all cases of diphtheria will be cured by antitoxin; but I believe this, that it is our duty to emphasize the fact that more patients get well under the administration of antitoxin than by any other form of treatment, and I believe, furthermore, that if we will explain matters to the community we shall do away very largely with the opposition on their part to receiving this form of treatment.

DR. H. J. CARTIN, Johnstown, Pa.: It is encouraging that a physician with Dr. Hogan's experience advises early intubation. The majority of deaths in my cases were due to extension of the process downward and not to lack of trained help in emergency. I intubate when the diagnosis is made, remove the string, allow the patient to eat any food he can swallow, and usually extubate on the fifth day.

DR. JAMES A. HAYNE, Columbia, S. C.: I am particularly interested in the control of diphtheria because it is the one arguing point before legislatures of the country, that there is not somebody to disprove everything you say. They have been unable to argue down the facts as to the control of diphtheria. South Carolina probably has as large a morbidity rate from diphtheria as any other state; but through our methods of control we have the lowest death rate of any state except three: Washington, Colorado and Montana. Certain conditions in Montana and Colorado cause this low death rate, but when we can show that Massachusetts has nearly five times the death rate from diphtheria that South Carolina has, one must admit that we have made considerable progress in reducing it. South Carolina was one of the first states in the Union to distribute diphtheria antitoxin free. In 1909 we commenced the free distribution of diphtheria antitoxin. Other states adopted the free distribution of antitoxin, but they limited it and said that a pauper certificate for the patient must be made out or else he could not get the benefit of this free distribution. South Carolina took the stand that the rich man paid all the taxes, and that the poor man could not pay any tax because the

rich man had taken all the money he had to pay his taxes with, and that the rich man was entitled to it because he furnished the money with which it was bought, and the poor man was also entitled to it because he had no money and the state should take care of him. Very simple, and the legislature agreed to it. In 1900 the death rate for diphtheria in the United States was 43. In 1918 it was 19. Our death rate at that time was 3. Our plan is simply this: We have distributors in every town, the number depending on the size of the town. Drug stores are the distributing points. Any physician can go there and get all the diphtheria antitoxin he wants. The result is marvelous. Twenty dollars is about the average rate paid for state taxes, and it costs every man 10 cents a year to insure his family against diphtheria. This is good insurance. I am sorry that we have such a high morbidity rate. We shall try to reduce that by the Schick test, and by the use of toxin-antitoxin. And we hope next time we shall be able to report a lower morbidity.

DR. CHARLES B. STEVENS, Worcester, Mass.: In the Worcester Isolation Hospital the mortality from diphtheria has not been diminished in the last few years. It is just about the same. Ten or fifteen years ago it was 6 or 7 per cent. One year we had only ninety-seven cases of diphtheria and no deaths until the last patient was admitted. He died, spoiling our record of that year. That was by far the best record we have ever had, a mortality of 1 per cent. Of late it has been about 9 per cent. I think that is due to the fact that the cases coming into the hospital are more severe, and the reason they are more severe is because the recent graduates of the medical schools wait for the report of the culture. If there is the least question of diphtheria, they should give antitoxin. Furthermore, it is a good plan for a busy physician who is likely to see many patients to carry his antitoxin in his bag. That has been my practice all the time. In that way I waste no time in giving antitoxin, and I give antitoxin without waiting for the culture. Students should be instructed to use cultures only for the purpose of confirming their own diagnosis.

DR. C. C. HUDSON, Richmond, Va.: We have had very successful results in Richmond during the last fourteen years in dealing with this particular problem. The method used by the health bureau in handling laryngeal diphtheria cases was first inaugurated by Dr. E. C. Levy, chief health officer, in 1907. The medical inspector visits all cases of diphtheria as soon as possible after the report is received at the health bureau to determine the type of the disease. If the case is of the laryngeal type, he makes a brief examination to determine the urgency of the symptoms. If the patient shows much obstruction to breathing, the physician is immediately reached and asked to see the case with the diphtheria consultant of the health bureau, who is an expert intubationist. The intubationist then inserts the laryngeal tube where it is considered necessary. He also advises the physician with reference to the amount of antitoxin which he considers necessary. All intubations are done in the home without the aid of a nurse. Only a very few patients are treated in hospitals. During the last fourteen years, 218 cases of diphtheria have been seen by the intubationist, and 146 of these patients were intubated. There were nineteen deaths among the intubated cases, giving a case fatality of 13 per cent., and two of the nonintubated patients died, giving a case fatality of 9.6 per cent. for all cases seen by the intubationist. During 1920, the consultant was called to see nineteen cases of laryngeal diphtheria, in eleven of which intubation was performed. There were no deaths among cases which he saw during the year. Most of the deaths among intubated patients have been due to toxemia, the laryngeal symptoms being secondary to tonsillar diphtheria. Nine patients died within twenty-four hours after intubation of general toxemia. Other complications have included myocarditis, two cases; whooping cough, pneumonia after intubation, pneumonia before intubation, nephritis, plugged tube, and suffocation after removal of tube, one case each; suffocation after coughing up tube, two cases. From our experience in Richmond we would conclude that good results in the treatment of laryngeal diphtheria may be secured by

intubating patients in the home, provided an expert intubationist is in charge of the work and the health department follows closely all cases of diphtheria.

DR. JOHN F. HOGAN, Baltimore: Laryngeal diphtheria may be neglected diphtheria or it may be a primary affair. It is the primary laryngeal diphtheria that is dangerous. Of course, all forms of laryngeal affections are dangerous to life, but I mean dangerous from the public health standpoint. It must be remembered that many of these cases of laryngeal diphtheria are primary and are often confused with spasmodic croup and various other conditions. I quite agree with Dr. Cartin in what he said about nurses. Few nurses have been trained in laryngeal diphtheria. Nurses are not of much value in the treatment of any other infectious disease, as very few of them take postgraduate work in infectious diseases. In regard to Dr. Stevens' statement about the medical graduates diagnosing laryngeal diphtheria, medical students are not taught much about communicable diseases. They receive didactic lectures, but not bedside instruction, in communicable diseases. It might be well to advocate including questions on communicable diseases in state board examinations. Then the medical schools would teach communicable diseases. Laboratory diagnosis in laryngeal diphtheria is not dependable.

In Baltimore our officer sees practically every case of diphtheria, and if the child is dyspneic he gets in touch with the physician and arrangements are made to send the child to the hospital to be intubated. Without a laboratory we cannot diagnose diphtheria. Those of us who have been trained understand that diphtheria can be anything from a simple hyperemia to sloughing. If 84 per cent. of the diphtheria deaths in Baltimore were due to the laryngeal type of diphtheria and if it is the same in other municipalities, your problem is the same as ours. They are dying from the laryngeal type. Therefore, it is to be recommended that all death certificates should be classified and should not be accepted unless they contain information as to the type of diphtheria. The word "diphtheria" alone should not be accepted.

SEQUELAE OF THE COMMUNICABLE DISEASES OF CHILDHOOD AS A PUBLIC HEALTH PROBLEM*

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In considering this subject let us discuss, first, the nature and cause of sequelae as they apply to the communicable diseases, and, secondly, the functions and interests of public health officers in this particular manifestation of the communicable diseases.

The ordinary conception of a sequela is the occurrence of new symptoms when convalescence seems to have become established. These new symptoms, as a rule, are not manifested in the same way as in the original malady. Among the more common sequelae may be mentioned the various palsies after diphtheria, and the joint and cardiac complications after scarlet fever.

In the acute communicable diseases, we are dealing in every instance with infections, though often the nature of the invading organism is unknown to us. We know that certain acute infectious diseases tend to be followed by certain definite disorders. A number of the chronic infectious diseases are followed by corresponding effects. In the great majority of cases the acute infectious diseases run their course without sequelae of any kind. It may be assumed that the occurrence of disease manifestations after the original disorder has disappeared may depend on the virulence of the organism,

the immunity of the individual as a whole, or the immunity of the individual organ. It is really difficult to estimate the remote consequences which result from the acute communicable diseases. While it is true that the majority of human beings have suffered from these affections, nevertheless it is difficult to estimate the damage, slight or severe, which has occurred to some of the tissues or organs, and which possibly will not give rise to symptoms until the original disease has been forgotten. The consequences of infections may at times be of greater importance than the infections themselves.

It may be recalled, briefly, that disease as a result of bacterial action may be produced by toxins, as in the case of diphtheria and tetanus; in other instances, the organisms gain access to the blood and multiply, causing bacteremia or septicemia. In the case of pneumonia and erysipelas, the organisms are found in the blood and are capable of producing toxins. Many pathogenic bacteria do not produce enough soluble toxins in the usual culture fluids to account for the symptoms and changes in the affected body. It is thought that such pathogenic substances are attached to the bacterial cells, and are set free as the bacteria undergo destruction in the host. These substances are called endotoxins. The organisms, after their entrance into the body, meet with certain degrees of resistance, depending on the presence of antibodies in the blood, and on the process of phagocytosis. If the blood of a given host is rich in these substances, he becomes able to resist the infection of the microbe and to neutralize the toxic products.

SPECIFIC NATURE OF SEQUELAE OF CERTAIN DISEASES

The occurrence of sequelae after certain diseases depends on the virulence of the organism, the resistance or the immune power of the individual patient, and the nature of the organism. The invading organism may produce toxins or endotoxins or it may circulate freely in the blood, producing multiple foci of infection. The specific nature of sequelae depends also on the affinity that certain organisms have for certain tissues. Thus, we know that whooping cough and measles tend to produce bronchial disorders and to tuberculize the patient. A tuberculosis which has been latent in the body of the patient may be stimulated to activity, or possibly a new invasion of tubercle bacilli occurs. In the same way, the toxins of diphtheria and tetanus show an affinity for the nerve structures. The morbid effects of scarlet fever tend, for the most part, to produce kidney, nerve and cardiac lesions. Fifty years ago, the older clinicians thought that sequelae were new morbid processes of some unknown or mysterious nature engrafted on the original disease. It seems evident from recent studies and advances that the sequelae of diseases are but a continuation in some form or another of the original infective process. It is not difficult to understand why a severe anemia may occur after most of the acute infectious processes. We know that, aside from the hyperleukocytosis and hypoleukocytosis and diminution in hemoglobin which occur in the majority of the acute communicable diseases, there is also distinct anemia, diminishing the number of red cells, though in most instances not altering their morphology. We know that many bacteria have a specific hemolytic power and that these organisms may exert their blood destroying action within the living body. It is to be assumed also that the toxins which are made by the

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various bacteria may act in the same way. Similarly, the bone marrow may be permanently altered. Possibly some of the postinfectious leukemias and anemias may be explained in this way.

If we consider the infections of the kidney produced by the various acute communicable diseases and especially the sequelae which occur on the part of this organ, we may illustrate to some extent the nature and origin of the late manifestations. We know, for example, that the kidneys may be damaged in various ways. In scarlet fever the injury usually occurs late in the disease; in diphtheria it may occur somewhat earlier. Kidney sequelae may also occur in variola, and more rarely in measles and chickenpox, even to the extent of producing chronic nephritis. The infectious organism may damage the kidney by the deposit of emboli. In addition to such infections, the kidney is frequently disturbed by the effect of fever, and by toxic and abnormal metabolic processes. Frequently, too, the kidneys, in attempting to eliminate the toxins which are circulating in the blood, are subjected to a severe degree of irritation, and inflammation may follow.

In scarlet fever, streptococci are not infrequently found in the urine. The nephritis following scarlet fever may become chronic and persist for months or years, or it may last a lifetime. Schick is of the opinion that the organisms producing scarlet fever are not completely destroyed during the febrile period, and that a few continue to be active until convalescence. He thinks the host is hypersensitive, in the second to the sixth week, to the scarlet fever organisms having toxic and infectious properties capable of producing nephritis and other sequelae. It is noteworthy, too, that nephritis as a sequela of scarlet fever may occur in mild as well as in severe cases. Schick expresses the opinion that though streptococci are found in the urine of these scarlatinal nephritis cases, they themselves are not the sole etiologic factors in the production of kidney inflammation.

In the severer cases of diphtheria, the kidneys are usually involved, though the character and extent of involvement vary to a great degree. The cortex is usually most markedly affected, and there are inflammatory changes in the parenchymatous as well as in the interstitial tissues. In either event, whether it be a nephritis of scarlet fever, diphtheria, or other acute communicable diseases, there is an appreciable damage to the kidneys, and the question of restoration or reparation is of importance in considering the immediate as well as the remote sequelae.

The pathologists tell us that after inflammation, injury or operative excision, the kidney tissue shows no evidence of regeneration of the parenchyma. Where there is extensive injury or destruction of the kidney parenchyma, repair occurs for the most part by a replacement with connective tissue. Nevertheless, in certain of the lower animals, new tubules may form from the medullary collecting ducts; but, in the adult animal at least, no glomeruli are formed. On the one hand, repair and regeneration do not occur in extensive kidney lesions because the remaining cells are not normal. On the other hand, early inflammatory processes which have been initial in the organ are progressive, and tend to continue more or less without abatement during the active inflammatory process. Eventually they are followed by fibrosis. In adult life, this may be a tardy result of infectious processes which occurred in infancy or childhood.

NERVOUS COMPLICATIONS AS SEQUELAE

The sequelae affecting the nervous system are of frequent occurrence and great significance in a variety of acute communicable diseases. Nervous complications are characteristic for all acute infections. There is, however, a variation of the affinity of the virus for the different parts of the nervous system in the several diseases; thus, diphtheria has an especial affinity for the peripheral neurons, and the exanthematous diseases and mumps for the meninges, while a considerable number of the infections tend to produce encephalitis. In 1891, Freud¹ mentioned among the frequent causes of sporadic encephalitis these diseases, in the order named: measles, variola, scarlet fever, röteln, whooping cough, pneumonia, typhoid fever and mumps. Thus, it may be observed that encephalitis may be a sequela of the acute communicable diseases. Encephalitis usually produces hemiplegia, but it may also be associated with convulsions, contractures, choreiform and athetoid movements, posthemiplegic epilepsy and idiocy. Encephalitis is a process which causes inflammation of the nerve cells. At the onset there is usually an associated cerebral edema and an increased vascularity. The initial symptoms are characterized by coma, fever and diffuse paralysis. When these subside, a residual paralysis remains, more or less permanently. It is well known that, where the whole neuron undergoes destruction, there is no regeneration in man or in the lower animals. After the initial edema and congestion disappear, the inflammatory area becomes replaced by fibrous tissue, and the nerve cells which lose their fibers degenerate; hence the permanent disability in those individuals in whom extensive brain inflammation has taken place.

In the peripheral nerve paralyzes of diphtheria there is an involvement of the nerve sheath, with occasionally some encroachment on the axis cylinder. It is a clinical observation that, in peripheral nerve paralyzes following diphtheria, complete recovery usually occurs after a shorter or longer period of time. Notwithstanding this, however, there may be degenerative lesions in the cells of the cortex, pons or medulla, leading secondarily to changes in the tracts of the spinal cord and causing complete and permanent paralyzes. Lesions of the vagus or phrenic nerve, or of the contained cardiac ganglions, may lead to severe cardiac or respiratory symptoms, usually terminating in death. The point to be emphasized in relation to the nerve sequelae of diphtheria is that, in peripheral nerve paralyzes, regeneration is possible. In central and vagus nerve paralyzes as well as in the cardiac ganglion degeneration, permanent disability or death ensues.

Meningitis is sometimes associated with scarlet fever and measles. It usually occurs after an otitis media with mastoid involvement. Permanent blindness sometimes results from scarlet fever. This is usually bilateral, and has been observed without the occurrence of albuminuria. Deafness is not altogether a rare complication. It occurs frequently in scarlet fever and sometimes in measles, but rarely in mumps. It is not infrequently associated with epidemic cerebrospinal meningitis. Deafness may be due to middle ear disease, with severe destruction, such as occurs when the organism gives access to the middle ear, producing a membrane in the tympanic cavity and destroying or producing necrosis of the small bones as well as of the

1. Freud, Sigmund: Klinische Studie über die halbseitige Cerebrallähmung der Kinder, 1891.

mucous membrane. Measles and scarlet fever sometimes produce severe middle ear involvement with associated deafness. The deafness may be labyrinthine in origin or it may be central, owing to nerve involvement.

CARDIAC DISTURBANCES AS SEQUELAE

The cardiovascular system is attacked in many of the acute infectious diseases. Mild affections sometimes occur after a more persistent and severe illness. In scarlet fever the so-called myasthenia cordis is frequently observed, and is characterized by arrhythmia and irregularity, with intermittent pulse. This condition is usually transitory, lasting for two or three weeks, though it may continue for months. It is not clear whether this condition depends on degenerative myocardial changes, or whether it is due to toxic disturbances of the cardiac muscle without manifest myocardial lesions or, possibly, to alteration in the conduction system. On the other hand, severe cardiac disturbances may be the direct result of the infectious diseases, and appear during the acute course, though very frequently as sequelae. This is notably true of diphtheria, whose toxin seems to have a striking affinity for the heart muscle late in the disease. In other instances the organisms of scarlet fever or rarely, of measles, and certainly those of rheumatism, gain access to the blood stream and find lodgment in the endocardium, myocardium or pericardium. These changes may lead to death or to more or less total or permanent disability. Arteriosclerosis is not uncommonly produced by the infective diseases; and, though the arteriosclerosis is not often discovered in childhood, it is believed that the sclerotic changes of the vascular system occurring early in life have had their origin in some severe infectious disease in young life.

The fact remains also that complete regeneration of the cardiac muscle after extensive inflammation does not occur. Fibrosis may result and scars may occur and, though eventually apparently restored function may be brought about, more or less permanent injury remains.

PULMONARY SEQUELAE

The pulmonary sequelae of measles, whooping cough, influenza and, occasionally, scarlet fever are frequent and of great importance. Bronchopneumonias occurring after measles, whooping cough and influenza are so frequent that they may be considered manifestations of these diseases. Bronchiectasis and pulmonary fibrosis are sequelae which are familiar to every clinician. Even more serious, however, is the occurrence of tuberculosis after measles and whooping cough. As has already been mentioned, these two conditions may be spoken of as tuberculizing diseases. In consequence of this invasion of tuberculosis, and because of the danger of its propagation, whooping cough and measles have a special interest for the public health officer.

One might go on at considerable length enumerating the common and the rare sequelae of the acute communicable diseases. This would, however, serve no useful purpose and would lead us too far. It is not necessary to enumerate all of the sequelae which may occur after acute infectious diseases. I have endeavored rather to emphasize the most important factors on which their occurrence depends, and to point out the underlying pathologic principles which determine their nature, origin and effect on the organism, and particularly the dependence of sequelae on the processes of infection and reparation.

SEQUELAE IN CONSIDERATION OF VITAL STATISTICS

The acute contagious diseases present a variable mortality rate during the primary stages. It should be mentioned also that the frequently occurring sequelae incapacitate the patients physically as well as mentally.

They tend to establish a mortality rate which it is difficult to state in tables of vital statistics, and which therefore constitutes an unaccounted for death rate, as a result of the remote effects of communicable diseases.

In the death certificate, these patients are reported to have died from heart, kidney, pulmonary or cerebral lesions, whereas the exciting cause of death is most frequently lost sight of.

It is difficult for one not directly concerned in public hygiene to estimate the importance of the sequelae of the communicable diseases from the public health standpoint. It is true that, if a patient who has been ill with diphtheria continues to harbor diphtheria bacilli in his nose or pharynx, or in a discharging ear, he is a carrier and becomes a menace to public health. The same is true of scarlet fever and typhoid, as well as of epidemic cerebrospinal meningitis.

It is possible, too, that the public health officer is interested in the sequelae of disease because whatever tends to the production of chronic invalidism, whatever deteriorates the health of citizens or incapacitates them for their normal vocations, may affect the physical, moral or mental status of the people, and may become an economic, a social and a state problem which would call for the most thoughtful consideration of public health officials.

It would be of great interest from an epidemiologic standpoint if we could be furnished with accurate figures concerning the frequency, nature, sequelae and remote effects of the communicable diseases as well as the mortality rate, as compared with the statistics which deal with the acute stages of these diseases. For example, statistics relating to the extent of the residual effects of poliomyelitis, the frequency of lung, kidney and heart complications, and the number of cases of deafness and blindness; indeed, statistics on all matters referring to the immediate as well as the remote results of communicable diseases, would be of the greatest value.

CONCLUSION

After all, it seems that the most valuable lesson to be learned from the study of the sequelae of the communicable diseases is the need to emphasize the disastrous results not only of the immediate but also of the remote effects, and to urge upon all concerned the great importance of their prevention. The thought must occur to every one that the most important factor in the prevention of the acute communicable diseases is the acquisition of more definite knowledge as to their cause and their mode of transmission. Experience has taught us that intelligent preventive measures can be carried on when exact etiologic factors or modes of transmission are known. The reasons for this statement are obvious and call for no further explanation. A rational campaign for prevention of infection must depend on a definite knowledge of the exciting organism, its method of transmission, and its life cycle within and without the body.

104 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. B. FRANKLIN ROYER, Philadelphia: I wonder whether Dr. Abt or any of you have seen many of the dangerous sequels of measles and diphtheria, the cases of overwhelming nephritis and meningeal affections, except in children whose mouths and throats have been neglected, children having adenoids, enlarged tonsils or bad teeth or all of these affections. If we are to do our part toward preventing the sequels of communicable diseases, we must promote a preventive medicine campaign in the direction of establishing oral health prior to the inception of these diseases. In a clinical experience a few years ago extending to 7,000 cases of diphtheria, scarlet fever, measles and other communicable diseases, I examined carefully the mouths and throats of every patient. The severe sequels were seen in association with bad oral health. Any one who has had such an experience dreads to see a child enter the hospital with great bulging tonsils and nasal blocking from adenoids. They anticipate in advance these dreaded sequels. If there is anything I would urge on health officers along the lines of preventive medicine, it is that of urging removal of diseased tonsils and adenoids very early in life, with the expectation that removal of these diseased structures will do a great deal to avert the incidence of communicable diseases themselves; and it is the most certain guarantee against the sequels of these diseases.

DIPHTHERIA CONTROL *

BERNARD W. CAREY, M.D.

Director, Division of Communicable Diseases, Massachusetts Department of Public Health
BOSTON

The subject of diphtheria control has engaged the attention of public health workers for many years. The results of these activities have without doubt somewhat limited the spread of diphtheria, and have procured a definite decrease in mortality rates. With the development of each new procedure for the control of diphtheria, great hopes were entertained for the complete eradication of the disease; yet we find, as the years pass by, that diphtheria is still present and has in truth become endemic.

In reviewing the mortality rates for diphtheria during the last twenty years, as reported both from the registration area and in Massachusetts, the marked decline in the number of deaths per hundred thousand population from 43.3 to 15.4 is a source of great satisfaction, and we rejoice in the saving of life that has actually resulted. Further perusal, however, of the statistics for this period shows that this marked decline came largely during the first ten years, and that a fairly constant mortality rate has prevailed during the latter ten years, declining only from approximately 20 to 15.4.

A second striking fact is that the fatality rate for diphtheria for a considerable period of years has not varied more than 1.8 per hundred thousand population, ranging from 9.3 to 7.5.

Again, but once during this time has the case rate fallen below 180 per hundred thousand population, the maximum rate reaching 283.4, and the minimum 154.8. With these statistics before us, it behooves us to consider carefully the epidemiologic factors responsible for these continued rates, particularly in the light of the present day methods available for the prevention and control of this condition.

For the purpose of discussion it is assumed that your endeavors to control diphtheria are identical with those

in practice in Massachusetts; that your results are similar, and that, in all probability, your failure to make the progress hoped for is due to the same factors which exist here in this commonwealth.

Granting these premises to be true, we have arrived on the common ground that diphtheria is not controlled to its fullest possible extent.

FACTORS IN SPREAD AND CONTROL OF DIPHTHERIA

It appears that the main factors which may be held responsible for the continued undue incidence with resulting mortality are three: first, and to my mind the most important, the incomplete application of procedures of proved worth for the prevention and control of diphtheria, for in the hands of public health workers has been placed a complete armamentarium with which to wage our fight; second, the failure of early diagnosis, and the tardy and often insufficient use of antitoxin; third, the lack of realization by parents of the seriousness of the sore throats of childhood and adolescence, with the resulting delay in securing proper medical attention. It is on these three points that future effort must be intensified, or from which we must start if we are to attain the maximum results so earnestly desired.

That we may have before our mind's eye the complete picture of the available agents which should be used in the control of diphtheria, it is perhaps desirable to enumerate them and, as we progress, to recall our individual efforts with the result attained, for here we may find a partial solution of our difficulty.

In nearly all of this country there is available, through a morbidity reporting system, the machinery for the notification to the health officer of the existence of the sporadic case or the incipient outbreak. Private or governmental laboratories furnish not only diagnostic aid, but also serum for treatment and immunization; while, through the use of the Schick test, the susceptibles may be determined and their subsequent immunization furnished actively by the use of the toxin-antitoxin mixture. All necessary police power for effective isolation and sustained quarantine is at hand, and it completes our line of defense. Surely here appears to be sufficient means to aid the public health worker in efforts to prevent and control this condition, and one can hardly refrain from asking, Why has it not been entirely accomplished?

Serious reflection on the use made of these agents brings one to the conclusion that not sufficient intensive effort has been applied in epidemiologic investigation of the sources of infection. We have been perhaps too well content in the checking of outbreaks and not sufficiently concerned whence the initial infections have been received.

PERCENTAGE OF RECURRENCES

With deep chagrin it must be admitted that 25 per cent. of the undue incidence of diphtheria in Massachusetts for the past year has been recurrences in the same communities. One of the larger cities of the commonwealth reported, for a period of eighteen months, nearly 500 cases, 32 per cent. of which furnished evidence of multiple household or neighborhood infection. Ninety of these multiple cases indicated a probable exposure to a common source of infection, being reported within forty-eight hours and from thirty-nine households. Seventy-three cases from thirty-seven households were reported four or more days later than the initial case in the household, and

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

fifty-one cases in forty-four families gave a history of contact with a case in an adjoining or nearby house.

It is not an extravagant thought that, were proper and adequate measures instituted promptly on the discovery of the initial case, the number of secondary infections might be greatly reduced.

For this particularly distressing picture of probably needless exposure and illness, and perhaps death, one may well ask what remedy might be offered that is adequate and at the same time within the range of the average appropriation of the public health worker.

MEASURES FOR CONTROL

Experience has proved the answer to be cooperative effort on the part of family, physician and public health worker, and that it occasions little or no additional financial outlay but does call for considerable effort. Full realization of the value of isolation and the maintenance of quarantine by the householder, culturing and passive immunization of family contacts by the physician, and epidemiologic investigation by the public health official seeking the carrier, missed or unrecognized cases in school or in the neighborhood, will do much to limit the spread of the infection.

It appears to be true that there is insufficient thought given to the importance of the neighborhood contacts and the large factor they may be in the continued spread of diphtheria. It is possible that personal contact between children of the preschool age group is more intimate than among older children and, though more circumscribed, furnishes a source of infection sufficiently important to receive the same attention as would be given to the infection within the school group.

The sine qua non of the control of diphtheria is, of course, found in the use of the Schick test, with the immunization by toxin-antitoxin of those who do not possess a natural immunity. Prevention was ever better than cure, and in this procedure one sees this truth magnified to the *n*th power. Byard writes, "The Schick test has made the use of antitoxin in exposed subjects an intelligent and impressive procedure." The simplicity of technic, its absolute harmlessness, and the correctness of reaction as it portrays the presence or absence of immunity, places it well in the foreground of all preventive measures.

Experience has taught us that diphtheria will never be controlled by the use of antitoxin and by culturing alone. Our further reliance for prevention must be placed in the Schick test, with proper immunization for those who may have need for it.

That the epoch-making work of Park and his associates has done much to introduce and to popularize the use of the Schick test and of the toxin-antitoxin mixtures among physicians and public health workers is well recognized, and all of us must now assume our share of their endeavors, carrying to the farthest corners of our respective states the knowledge that simple, safe and effective means are at hand for the prevention of diphtheria.

We believe that we are making reasonable progress in this state in introducing this preventive procedure. Several of the state institutions have been completely Schick tested, with active immunization given where needed. Two cities are maintaining Schick clinics for the schoolchildren. One city cared for more than 700 children last month. All nurses before entering on their duties in contagious hospitals receive the benefit

of this test; and, cooperating with the Public Health Committee of the Massachusetts Medical Society, demonstrations have been held in local hospitals, that the local physicians may become acquainted with the procedure.

It may be said in passing that we have made approximately 5,000 Schick tests in Massachusetts on various groups of people. Our statistics show substantially the same percentage of susceptibles as has been demonstrated elsewhere, and we have had but one person develop diphtheria who has received the full course of toxin-antitoxin mixture.

If more evidence is needed as to the efficacy of these procedures, we may add the experience of one of our state institutions for young boys, in which diphtheria outbreaks were almost as recurrent as are the months of the year. Nearly five years ago this institution was completely Schick tested and immunized, and all new admittances are tested on entrance, with the result that there have been no further diphtheria outbreaks in the institution, and but two cases reported, with patients having been infected before admittance.

Because of the frequent inquiries made as to the use of the Schick test and of the toxin-antitoxin mixture in infected households, it is necessary once more to remind public health workers that active immunity is produced only after a considerable number of weeks have elapsed, generally from eight to twelve weeks; and that passive immunity is procured at once by antitoxin, and will protect only for three to five weeks. The proper procedure, therefore, in the face of an outbreak is to administer antitoxin to all known contacts, securing immediate protection, and later to apply the Schick test and immunize those who are proved susceptible.

IMPORTANCE OF PROMPT DIAGNOSIS

The bacteriologic laboratory has been of tremendous assistance in the diagnosis of diphtheria, and yet through no fault of its own has at times impeded the control measures. Some physicians have been slow to put into practice the dictum that "a sore throat needing a culture for diagnosis needs antitoxin for safety," and they persist in waiting for a laboratory report of culture before administering antitoxin. We must reiterate this fact until it becomes second nature for us to think of swabs and antitoxin rather than antitoxin and positive laboratory reports, as is now the habit.

Bacteriologists must give as rapid a diagnosis as possible. The experience of our state laboratory is most interesting, and the procedure is as follows: All swabs received are examined at once with an approximate immediate return of 60 per cent. to the physicians. At three and eight hour intervals, cultures are again examined and 90 per cent. are reported. A final examination is made after twenty-four hours has elapsed, confirming all previous diagnoses. As all positive reports are telephoned or telegraphed to the physicians, no undue delay is experienced and immediate treatment is assured.

There can be no question that many parents do not realize that sore throat with mild constitutional symptoms may possibly be diphtheria, and an appreciable number of our deaths each year are attributable to this delay in seeking proper medical attention. There is but one solution to this problem, and even though our efforts to educate them have given only partial success in the past, we must continue our efforts, seek-

ing at every opportunity publicity through lectures, newspapers or bulletins, together with work done with the schoolchildren.

SUMMARY

While there has been a marked advancement made in the treatment of diphtheria with a corresponding decrease in the mortality rate since the introduction of antitoxin, there has not been the reduction in the morbidity that might reasonably have been expected.

This constant high incidence becomes more remarkable when it is realized that all necessary laboratory aid and epidemiologic knowledge is at hand to prevent and control diphtheria outbreaks.

Reaching beyond this, however, is our knowledge of the Schick test for the determination of those susceptible to diphtheria infection, and of the toxin-antitoxin mixture for the immunization of the nonimmune.

In spite of the fact that all agencies necessary for the eradication of diphtheria from the community are available, we still have the infection mostly in endemic form.

A careful study of the various factors entering into our failure to make much progress in the prevention of diphtheria brings to light the fact that not sufficient intensive work is done by public health authorities, save under epidemic conditions.

Little or no effort is expended to find the source of infection in the sporadic case, and carelessness in culturing for release of quarantine adds many cases to our yearly total.

Often effort is directed to the school age group, with resulting school cultures, while perhaps the preschool age group is far more likely to be the source of infection.

What is the remedy for this condition?

1. Education of physicians and the laity to the fact that all agencies are available for the immunization of the susceptible, and for the diagnosis and the treatment of the disease.

2. Intelligent study and treatment of the "carrier" or, perhaps more correctly, the "missed case."

3. Education of the laity to the fact that diphtheria is often insidious in onset and mild in course, and recovery is uneventful for the patient, yet serves as the focus of multiple infections of a far more virulent type.

4. Education of local health officers as to the necessity of intensive investigation of the source of each case, and of the necessity of immunizing other members of the infected household.

CONCLUSION

It is only by the closest sort of cooperation with physician, householder and the public health worker that diphtheria is to be controlled. All must join forces to spread the information so concisely expressed by Professor Winslow, who says:

We possess a more complete knowledge of diphtheria and a more complete power over diphtheria than in the case of any other communicable disease. We can detect the incipient case and the carrier. We can measure natural immunity by the Schick test. We can produce passive immunity by the use of antitoxin and active immunity by the use of toxin-antitoxin mixture.

Every weapon which could be needed to fight this enemy is in our hands, yet diphtheria continues to occupy third place among the communicable diseases and kill eleven or twelve thousand persons in the registration area each year.

State House.

ABSTRACT OF DISCUSSION

DR. JOHN T. BLACK, Hartford, Conn.: Unquestionably diphtheria is increasing, although it is often stated that the increase is not actual, being merely the result of better diagnosis. But I think that in the more thickly populated states it is increasing, although the fatality rate is lessening. Still, that should not be satisfactory, and from the standpoint of administration and control of diphtheria, the local health officer wants light. The control methods in the school can be made most effective. Every child entering school should be Schick tested as a routine; so that in five or six years you practically have control of all the children of school age, and with the reduction of the foci among these you will certainly reduce the foci in the preschool age. This is the strongest factor for control at the present time. The scheme of education is ideal, but it is not practicable, especially when we have so much educating to do as we have at the present time. In the average community we have one lone health officer promulgating diphtheria propaganda, and offsetting it are the Christian scientists, the chiropractors and a dozen other cults.

DR. EDWARD L. BAUER, Philadelphia: The possibility of diphtheria eradication in a large community is well brought out in the paper. Yesterday Dr. Zingher of New York presented a formidable array of figures, the results of work done on 50,000 New York schoolchildren, which has been preceded by other valuable statistics published by Drs. Park and Zingher. Their work, plus work like Dr. Carey's, and my own work in Philadelphia with 5,000 children personally tested and immunized and other observers working with large groups of children, show a consistency in results that places Schick testing and active immunization well beyond the experimental stage. The work done in Philadelphia has been done largely in orphans' homes and asylums where we could watch the children carefully until their discharge from the institution. About 60 per cent. will be available for fifteen years. We have already come to some very definite conclusions in regard to these children because of the immunity granted them during the last few years. Those that had an immunity maintained it. Occasionally a child is not immunized with one series of injections, say 1 or 2 per cent. The Schick test should be performed from three to six months after active immunization, and if still positive, reimmunization is indicated. This will prevent the embarrassing situation referred to by Dr. Carey. In large communities the work on an extensive scale must be started somewhere, and the public schools where the children can be handled most easily furnish as good a place as any to make the start. However, other places must not be neglected. Because of the greater number of susceptibles, the child of preschool age should not be overlooked. Therefore, trained workers should be stationed in dispensaries and clinics. With the aid of social service workers who will carry out advertising and other neighborhood campaigns, great inroads can be made on this young population. Health centers, milk stations, public playgrounds and other such community centers can be used as prophylactic stations to reach the young child. We could certainly reach a far greater number of susceptible children by using these skilled workers systematically than by merely passing out materials to physicians promiscuously with almost certain indifferent results. The recipients of freely distributed materials are habitually careless with it, and would so do harm and bring criticism to the work and its technic. This would deleteriously influence the ultimate success of this work.

DR. C. A. EARLE, Des Plaines, Ill.: It is almost unbelievable that in Boston only 6,000 Schick tests have been made. The Schick test and toxin-antitoxin immunization are the greatest potential agents we have in the control of any infectious disease. I scarcely know why the Schick test is not more generally employed than it is. It indicates with almost certainty the existence of immunity to diphtheria. The immunity resulting from three injections of the toxin-antitoxin mixture is certainly very encouraging. In my own experience it has been successful in 87.5 per cent. I have given more than 2,700 injections of toxin-antitoxin with only one unpleasant result. This was in a nurse. It was four or five months

before the arm healed. No loss of limb nor deaths have occurred in Chicago as a direct result of the injection of the toxin-antitoxin mixture.

DR. ABRAHAM ZINGHER, New York: During the last four months we had the opportunity of applying the Schick test to more than 52,000 children in the public schools of Manhattan and the Bronx. Children giving positive reactions received the injections of toxin-antitoxin. We found that among the children of the more well-to-do classes of the population there was a much higher proportion of susceptible individuals than among the children of the poorer classes. The ratio was as high as 3 to 1. On the one hand, relative segregation of one group of children, and, on the other hand, crowding and repeated exposure of the children of the second group explain these interesting findings. Another important point that came out in this work was the frequency with which negative pseudoreactions were noted among the children of public school age. In some schools we found as high as 25 per cent. negative pseudoreactions. These individuals are not only immune to diphtheria, but they are the very ones who show fairly severe local and constitutional symptoms after toxin-antitoxin. It does not seem, therefore, to be advisable to inject all children under 10 years of age with toxin-antitoxin, as was suggested by Dr. Jones yesterday. We should limit the age period during which the Schick test can be disregarded to the preschool age, that is, from 6 months to 5 years, and to the children just entering the public schools. In this age group a very high proportion are susceptible to diphtheria and very few give a negative pseudoreaction. The injections of toxin-antitoxin are well tolerated, and very few of these children show painful local reactions. By omitting the preliminary Schick test and giving toxin-antitoxin to all children in this age group, the work will be greatly simplified for the general practitioner and for the school physician. We must, however, be very cautious not to certify to the fact that a child is immune to diphtheria after toxin-antitoxin injections unless he has been proved to be so by the Schick test. This safeguard should never be omitted, as otherwise children who have been injected with toxin-antitoxin and have been pronounced immune without a Schick test may later develop diphtheria, and the work will be thrown into disrepute. The literature that we use in connection with the work in our public schools can be obtained by writing for it to the Research Laboratory of the New York City Department of Health.

DR. BENJAMIN T. LORING, Watertown, Mass.: I want to call attention to an instance showing one reason why the mortality rate does not go down further, namely, the lack of efficiency of persons having the care of children. A child, aged 7 years, was suffering from a sore throat. The parents did not call a physician, and the child had no treatment. The child was out of school, recovered, and came back to school. It was only after a week, when a younger sister died from diphtheria, that we knew what the trouble was. But the child who recovered had been allowed to return to school, and that illustrates a second point in the lack of efficiency, the teacher. The rule in our town is that a child absent from school by reason of contagious disease or from unknown cause shall be inspected by the board of health or the school physician before being allowed to return. This child returned after a vacation week, with all the rest, and somehow slipped by without being noticed. Perhaps the teacher was not without excuse, but she did not enforce the rule. From that child the disease spread to others. We have had three deaths, although only one was that of a pupil, the others being in younger children. The third point in the lack of efficiency is the attending physician. The school nurse went to the home of every child absent from school and called attention to the fact that the pupils had been exposed to diphtheria, and that caution should be observed if sickness appeared. We took cultures of the nose and throat of every child present in school. The parents of one absent child, who was sick, reported that their physician stated that the child was suffering from ptomain poisoning. The child was out two weeks, and was allowed to come back to school, but two younger children in the family became sick, and we have received positive reports on cultures from both of them.

Until we have Schick tests done and immunity established in all susceptible children, we must do everything possible to secure greater efficiency at these three points: the parents, the teachers and the physicians, or the present mortality will continue.

DR. BENJAMIN WHITE, Boston: Massachusetts has been carrying on a vigorous campaign in the interest of the Schick test and injections of toxin-antitoxin. We have not confined our attention to the cities, however, but have worked throughout the state. I can add to Dr. Carey's figures 2,000 or 3,000 Schick tests which I have recently analyzed, and it is very interesting to know how closely the figures for the city population correspond with Dr. Zingher's figures. However, when we come to the rural communities, we find a very much higher percentage. We find in some instances, in thinly populated regions, that as high as 50 per cent. of the adults will react to the Schick test. These individuals, however, show very little pseudoreaction. Our experience has shown us that it is inadvisable to give toxin-antitoxin to individuals who give a strong positive or a pseudoreaction. These individuals will have a constitutional reaction which is never dangerous, so far as I know, but is very disagreeable, and therefore we do not advise it. There recently appeared an article by Dr. Blount of New York which tends to discourage the Schick test. He reported eight deaths. Dr. Park asserts that these children did not have diphtheria, but a streptococcal infection. What is the danger in toxin-antitoxin injection? So far as I know there is no objection to its use. As far as we have seen there have been no bad results.

DR. JOHN D. McLEAN, Philadelphia: I notice in the discussion of diphtheria control that it has had to do entirely with the control of this disease in institutions and schools, a problem not as difficult as that in communities where the disease exists to a greater degree. One speaker stated that this disease will be controlled when they can control the children of preschool age, and that is true. As to toxin-antitoxin: Never will that message be brought to the attention of the public to a degree which it deserves until those experimenting with toxin-antitoxin train the medical profession to the belief that it is a thing worth while, and especially train the professors of medicine teaching in the medical schools. One of the speakers stated that there is value in taking cultures and in the use of antitoxin, but not to the degree that there should be. We have not yet educated the public—and when I say "the public" I mean the medical profession—to the value of antitoxin. In Pennsylvania we give the antitoxin treatment free. It costs about \$75,000 a year, but it is well worth while. We are getting cases of diphtheria reported today that were never reported before. Therefore, we are not assuming that we have reduced the mortality, because we are getting more cases reported. We had a story of 800 or 1,000 words published in the newspapers of the state in every section. In the antitoxin package is placed a little circular which had this statement on it, taken from our morbidity reports: "Out of 100 patients who did not receive antitoxin treatment, forty died. Out of 100 persons who received antitoxin treatment forty-eight hours after being infected with diphtheria, seven died. Out of 100 persons who received antitoxin treatment within forty-eight hours of the beginning of the disease, only two died." It is practicable. Try it. We think we have reduced the mortality rate nearly 50 per cent.

DR. F. G. CURTIS, Newton, Mass.: We decided that we would try the Schick test on the schoolchildren of our city of 47,000. We put out a small circular of fifteen lines in the schools and directed our school nurses to talk up the Schick test. May 1 we began our work with volunteers. We have a school population of 7,000 and up to today we have Schick tested 700. And before we finish, which will be next month, we shall probably have been 850 and 900 Schick tested. One thing that has impressed me very much is the cooperation of the physicians. They have taken it up and urged their patients to have their children tested, and they are doing the immunization work for us. We notify them or the parents that the child is susceptible and should be immunized, and advise them to have their physician do it. Later, if the physician does not, we shall take it up and do it. But the

thing which has impressed me most is, as I say, the cooperation of the physicians and the interest which the children have taken in the results. They ask whether they can take it, and go home and urge the parents to have the work done.

DR. BERNARD W. CAREY, Boston: Our efforts in Massachusetts have been solely directed toward giving assistance to the physicians in this state in the administration of toxin-antitoxin, and in the use of the Schick test. The figures I have quoted, 5,000, represent very small groups, done at various times. Our physicians have been invited to be present when the method was demonstrated, the reaction read, and a talk given on the use of the toxin-antitoxin mixture. Were we to stop at 5,000, I should feel that the department had failed in its duty. But that is just a demonstration to physicians as to the method. Under our present law, it is utterly impossible for the department to go out and do this work completely. We have been especially assisted in this procedure by a committee of the Massachusetts Medical Society which had a small sum of money which was devoted to this purpose, and I think as time goes on this sum will probably be enlarged and applied in this one direction, to educate the physicians to adopt this procedure in their own practice.

HEART DISEASE IN CHILDREN OF
SCHOOL AGE *

ROBERT H. HALSEY, M.D.
NEW YORK

The many and various surveys of the children attending the public schools of New York City have aroused increasing interest in the children with heart disease, so that, when the Association for the Prevention and Relief of Heart Disease was organized in 1915, one of the first efforts was to obtain the interest and cooperation of the board of education for a study of the problem. It was in this way that my interest, and that of my associate staff at the New York Post-Graduate Medical School and Hospital, was aroused to accept the task, which was begun in the early months of 1917, but discontinued during the war. On our return in 1919, we found that the Public Education Association had formed a cardiac committee and obtained funds from the board of estimate with which to undertake the formation of special classes for the segregation of cardiac children. The efforts of the chairman of that committee aroused the interest of the Children's Aid Association, and instigated that association to provide a building with ideal class rooms where three ungraded classes of twenty-five children each were organized as an annex to Public School 64.

The Public Education Association provided funds for an experienced social worker, who has had the executive work of supervision and follow-up. The principals and teachers of the schools in the vicinity have all cooperated in the task of finding the children having, or suspected of having, heart disease and referring them to us for examination. The section on child hygiene of the department of health promptly examined the children entering the schools, so they could be the earlier sent to us. From this enumeration, one may realize that it has required the cooperation of a very large number of departments and individuals; and as one cannot give to all individuals by name the credit due, I may state that it is a pleasure to acknowledge and at this time to express appreciation of the work done by the many who must of necessity be unnamed.

To learn something of the size of the problem or the relative proportion of children with heart disease in the schools, seventeen schools were selected in the vicinity of the school at Eighth Street and Avenue B on the lower east side, and during the period of study there have been registered in these schools 44,000 children. The principals and teachers of these schools have referred to us all children in class and school having, or suspected of having, any cardiac defect, for examination and disposition. The number of children examined has been 946, and they have been classified according to the method adopted by the Association of Cardiac Clinics (Table 1). Of this number 403, or 42.5 per cent., have been found to come within the classification, and 543 were not found to have heart disease. Of the 403, 228, or 24.25 per cent. of 946, or 56 per cent. of the 403, had signs of organic heart disease. Thus, from the children registered in the area, we found on examination less than 1 per cent. to come within the classification adopted by the clinics, and only slightly more than 0.5 per cent. to have organic disease. One hundred and sixty-three of the children were found to have signs, which, while abnormal, were not believed to be due to disease. The sum of the Classes I to IV is 391, or 0.89 per cent. of the children attending school in the area. Comparing the group in Classes I, II and III with those in IV, it is apparent that for every three children having organic heart disease there are two who have signs which can be explained by accidental signs. The occurrence of infections, such as rheumatism and chorea, has been considered in arriving at a decision as to diagnosis. The children in Class IV have been followed up to learn whether any case develops signs of organic disease. Of necessity it will require several years to know what alterations or corrections in this respect may have to be made in our history sheets.

The parents of 125 children who have been segregated because of organic heart disease were questioned carefully in detail as to the occurrence of infectious diseases (Table 2). In this way it was found that in these

TABLE 1.—CHILDREN EXAMINED, ARRANGED BY CLASS, SEX AND AGES

	Class										Non-			
	I		II		III		I-II-III		IV		V		classified	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
6-7	7	3	3	4	13	9	23	16	23	14	0	0	...	..
8-10	2	0	6	11	14	28	22	39	27	35	2	3	...	..
11-13	8	8	7	16	23	36	38	60	19	30	2	4	...	..
14-16	0	2	3	2	10	13	13	17	4	11	0	1	...	..
Total....	17	13	19	33	60	86	96	132	73	90	4	8	266	277
Gross by class	30		52		146		228		163		12		543	
Gross.....	946													

children tonsillitis occurred in 64 per cent., rheumatism in 45 per cent., measles in 36 per cent., pneumonia in 18 per cent., diphtheria in 17 per cent., chorea in 14 per cent., pertussis in 13 per cent., and scarlet fever in 12 per cent. Influenza, bronchitis, typhoid, nephritis, jaundice and otitis media occurred in a few isolated instances. To learn how this history incidence of infectious disease compares with that of normal, well children we obtained the detailed history of 300 normals. In this group (Table 2), tonsillitis occurs in 18 per cent., or only two-sevenths as frequently as in the cardiac; rheumatism appears in 5 per cent., or one-

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

ninth; measles occurred in 58 per cent., or one and two-thirds more often; pneumonia in 5 per cent., or one-third as frequently; diphtheria in 9 per cent., or one-half as frequently, while chorea appeared only once. Pertussis occurred in 33 per cent., or two and one-half times, while scarlet fever occurred in 5 per cent., or one-half as often. Thus, in the cardiac group tonsillitis, rheumatism and chorea had a distinctly higher incidence, while measles and pertussis occurred much more frequently in the noncardiac group. Such a very high incidence of measles and pertussis in the

TABLE 2.—COMPARISON OF HISTORY OF OCCURRENCE OF INFECTIOUS DISEASE OF CARDIACS AND NONCARDIACS

	Cardiacs		Noncardiacs	
	Number	Per Cent.	Number	Per Cent.
Tonsillitis.....	82	64	55	18
Rheumatism.....	57	45	16	5
Measles.....	45	36	176	58
Pneumonia.....	23	18	14	5
Diphtheria.....	21	17	27	9
Chorea.....	18	14	1	..
Pertussis.....	17	13	100	33
Scarlet fever.....	16	12	14	5
Influenza.....	2	..	17	5
Bronchitis.....	8	..	0	..
Typhoid.....	2	..	0	..
Nephritis.....	2	..	0	..
Jaundice.....	1	..	0	..
Otitis media.....	1	..	0	..
Chickenpox.....	0	..	12	4
Polyomyelitis.....	0	..	4	1
Total.....	125		Boys 164, Girls 133 297	

well group, who live under similar conditions in the same section of the city, suggests that damage to the heart may act as a partial isolation to prevent exposure and infection.

The physical examination of the children has been made with bared chest, the child standing and then lying, and the heights and weights were recorded on admission. Decayed teeth were present in 90 per cent. of the cardiac group. Enlarged tonsils and cervical glands have been present in 93 per cent. of the same group. In this group sixty-one tonsillectomies have been done at the New York Post-Graduate Medical School and Hospital without the occurrence of any untoward accident. In the same group, twenty-three were found to have errors of refraction and to need glasses. Only one child has given a positive Wassermann reaction, and in this instance the parents, too, gave a positive reaction. The department of health tested sixty-seven of the group for diphtheria and found eighteen to give a positive Schick reaction. All were given the toxin-antitoxin by Dr. Abraham Zingher.

To facilitate the care and management, the children were classified according to the method adopted by the Cardiac Clinics (Table 3). Preference for segregation has been given to Class II (Table 4), since this group may possibly become Class III, or with improvement may become Class I. It is recognized that the restrictions cannot be hard and fast, since there are individual exceptions. We have transferred back to their original schools a number of cases that have so markedly improved as to be fit to return to the regular school—they have become Class I cases. A few potentials were accepted because of recent chorea or rheumatism. It has been observed frequently that minor infections decrease the exercise tolerance of the heart of these cardiac children very promptly, and we are convinced that cardiac children should not be permitted to exercise while they have increased temperatures. For an

exercise test the standard for ordinary exertion of children¹ of a rise of 30 feet in twenty seconds has been accepted for the purposes of this study. Grouped according to valvular defects (Table 5), mitral disease is accountable for 77 per cent. of the cases, while aortic cases alone are only 7 per cent.

Acquired valvular disease account for 85 per cent. of the cases, while congenital defects account for 14 per cent.

The children arrive between 8:30 and 9 a. m. and receive a cup of hot water containing half a bouillon cube, and remain at the school until 4:30 or 5 p. m. The luncheon is supplied for a very small fee (from 5 to 10 cents). The temperature and pulse are recorded each day, and general observation is made of each child soon after arrival in order to prevent the child taking part in any exercises, if fever is present or there is evidence of any infectious disease. When fever, noticeable fatigue or apathy are found, the child is sent to a quiet room where more careful observation may be made. The child is not sent home until late in the afternoon, as it is believed that he will receive better care, and a definite diagnosis may be obtained before night. If the increased temperature persists when the child is dismissed at night, the child is instructed to remain in bed at home the next day until the nurse can call and learn the condition. Word is sent also to the parents to see that the instructions are observed.

The luncheon at the school is followed by a rest period of one hour, and then the school work is continued until 3 o'clock. From then on the physical exercises and recreational and vocational teaching occupy the time until dismissal.

The eighty-two children following this regimen had their attendance improved 13.5 per cent. over what it had been in the preceding term. This means practically three school weeks. The control group attending schools in their usual neighborhoods showed improve-

TABLE 3.—THE CLASSIFICATION OF PATIENTS ATTENDING A CARDIAC CLINIC

CLASS I.—Patients with organic heart disease who are able to carry on their habitual physical activity.
CLASS II.—Patients with organic heart disease who are able to carry on diminished physical activity. A. Slightly decreased. B. Greatly decreased.
CLASS III.—Patients with organic heart disease who are unable to carry on any physical activity.
CLASS IV.—Patients with possible heart disease. Patients who have abnormal physical signs in the heart, but in whom the general picture or the character of the physical signs leads us to believe that they do not originate from cardiac disease.
CLASS V.—Patients with potential heart disease. Patients who do not have any suggestion of cardiac disease, but who are suffering from an infectious condition which may be accompanied by such disease; e. g., rheumatic fever, tonsillitis, chorea or syphilis.

ment of 5 per cent., or one school week, over the preceding term. The segregated group, therefore, showed an attendance of 8.5 per cent. more than those attending the regular schools. It would seem justified to infer that weather conditions could not account for all the improvement in attendance of the segregated group, since those attending outside schools improved only 5 per cent.

The social worker by her tact and sympathy can inspire the confidence of the children and parents and

1. Wilson, May G.: The Equivalent of Ordinary Exertion, J. A. M. A. 76:1213 (April 30) 1921; Exercise Tolerance of Children with Heart Disease, *ibid.* 76:1629 (June 11) 1921.

gain a high percentage of cooperation and, undoubtedly, to her efforts is due a large share of the improved attendance.

The children and parents have been taught, by personal talks with the social worker and at monthly meetings, the value of simple foods which have growth-stimulating constituents. Regular habits and clean personal hygiene have been encouraged by small prizes and diary keeping, which have been incorporated as part of the school work. In this way, too, it has been possible to check up on the habits of the children and family—food, recreation, discipline of parents over children—as well as the child’s compliance with instructions. The loss of a pound or two of weight is often accounted for in this way, as the children tell of helping the family move to new quarters, or of doing the cleaning for the week, or of caring for the baby. It is often in the work of the cardiac child about the house that the explanation of the slump in its condition may be found. Occasionally the games and excursions into the country have been too fatiguing, or the retiring hour has been too late.

To diminish the probability of “catching cold” on wet days, each child was required to have an umbrella, a pair of rubber overshoes and a pair of good stockings, which were kept at the school, so that on arrival in the morning, if their stockings were wet, they could exchange them for the dry.

The children (eighty-two) in the term February-June, 1920, made an average gain of 4 pounds, which is about the average expected gain for the age.

The first period in the afternoon following the school work is devoted to graduated physical exercise, in which all the children other than Class III take part for a shorter or longer period. Some of the children can exercise for only a few minutes, while others can take the whole period of thirty minutes. The type of movement is selected so as to require a larger group of muscles and a greater degree of exertion as the time elapses. The reasons for the adoption of exercises are

TABLE 4.—CHILDREN ATTENDING THE SCHOOL GROUPED BY CLASS, AGE AND SEX

	Class I		Class II				Class III		Class IV		Class V		Totals	
			A		B									
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
6-7	2	0	4	6	2	0	2	0	0	0	0	0	10	6
8-10	2	3	7	15	2	1	3	1	1	2	2	0	17	22
11-13	3	7	12	16	2	3	2	1	0	6	1	0	20	33
14-16	0	0	5	6	2	1	0	0	1	1	0	1	8	9
Totals	7	10	28	43	8	5	7	2	2	9	3	1	55	70
	17		Boys 36 Girls 48				9		11		4		125	

many; and although the time actually consumed per day is not great, yet one notes definite improvement in the children as they become proficient. The heart beats more slowly, and their breathing is not accelerated to such a degree by the ordinary exertion of walking. The grace of movement and posture of the child become very much improved. The children are much more alert, and respond with precision in movement and without awkwardness. Games and dancing with supervision are taught so that the children will have some knowledge of what they may do and learn when to stop, without having to have the verbal prohibitions so frequently heard. The effort is to teach such games

and avocations as to interest the child and afford a familiar recourse when out of school, as well as after graduation.

The statement is often heard that collecting together a group of patients with heart disease is very depressing to them and has a distinctly bad effect on them; but I am, and I believe you would be, convinced that this is not the case with these children. Their outlook on life is much happier now than it was, and they enter into

TABLE 5.—ORGANIC CASES GROUPED BY VALVULAR DEFECTS

	Boys	Girls	Total	Per Cent.
Mitral insufficiency.....	52	89	141	61.8
Pulmonary insufficiency and mitral insufficiency.....	1	1	2	1.0
Mitral stenosis.....	8	11	19	8.3
Combined mitral insufficiency and stenosis.....	3	11	14	6.1
	64	112	176	77.0
Aortic disease.....	13	3	16	7.0
Aortic disease and mitral insufficiency.....	1	3	4	1.7
Congenital.....	13	11	24	10.5
Pulmonary stenosis.....	5	3	8	3.5
	32	20	52	
Total organic.....	96	132	228	99.7

their undertakings with enthusiasm, as they feel that they can yet do something, though they may be handicapped. The parents and teachers, too, have a distinctly better attitude toward the care of the children, as they are thinking of the things which they may teach the children to do instead of denying them all enjoyments. The philosophy is one of teaching them to do within their capacity rather than prohibition from all action. The children are much more alert mentally than when they came to the school.

CONCLUSIONS

1. There is a real problem for the school authorities in the child with heart disease.
2. It is primarily a problem for the medical profession—pediatrican or family physician.
3. Careful, daily medical supervision is an essential for any large group of children with heart disease.
4. A practical, functional classification of the children with heart disease is a valuable aid in differentiating individuals or groups and in management.
5. Graduated, physical exercise can be given to children with organic heart disease, improving the action of the heart, carriage and posture of the child.
6. Segregation does not lower the morale of children handicapped by heart disease, but can increase the days of attendance at school and improve their general physical and mental condition.

152 West Fifty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. WILLIAM ST. LAWRENCE, New York: Dr. Halsey has begun an experiment which will undoubtedly have great influence on the ultimate management of cardiac children in the public schools of New York. He has presented new and interesting facts, and where our work has overlapped, my findings agree largely with those he has given. It would seem, however, that two points deserve further discussion: the exercise tolerance in the cardiac child and the place of graduated exercises in management. In the first group (Dr. Halsey’s tables) the children had a normal exercise tolerance (capacity for exertion) and were able to pursue the

lives of normal children. In the second group, the exercise tolerance was diminished to varying degrees and the children suffered excessive circulatory reaction on exertion. This second group is far larger in Dr. Halsey's series than among cardiac schoolchildren generally. This is due, perhaps, to the fact that his children were selected particularly because of the severity of their condition. In my own series, about 70 per cent. of the children with organic disease of the heart have a normal exercise tolerance on admission to the clinic. After some months of management, this group increases to about 90 per cent., and in only few of the remaining 10 per cent. does the exercise tolerance remain so low as to be an important factor in management. Graduated exercises are useful in the management of cardiac disease in children, for they tend to improve posture, carriage, grace and flexibility and to give a sense of security to patients and parents. As a means of increasing the exercise tolerance (where most needed) the results are, however, least dramatic. Under proper care (diet, hygiene, tonsils, teeth, injections, etc.) the exercise tolerance of the cardiac child tends to increase and often becomes normal. When these measures have been instituted and the exercise tolerance still remains below normal, only little help from graduated exercise may be anticipated. This is probably due to the fact that children tend to seek their own exercise level and to operate at that level as differentiated from adults who do not seek their exercise level and usually operate far below it. In the former case, the children tend to exercise themselves, and the problem is one of the regulation rather than the institution of exertion.

DR. HAVEN EMERSON, New York: Dr. Halsey's paper and the reports of the work of his associates make it clear that this new field of preventive medicine, one of the largest, if not the largest, in sight, will always be exclusively in the hands of the practitioner of medicine and cannot in the nature of things come to be an industry of public health agencies alone. If the private practitioner seizes the problem of prevention and control of heart disease vigorously he will not only make the greatest addition to public welfare, but also keep the entire problem in its clinical and preventive aspects in his own control. While the tuberculosis death rate has fallen, the cardiac disease rate remains steadily at about 200 per hundred thousand of population per annum. The cardiac disease deaths are a measure of our failure to prevent infectious diseases and a token of our failure in many lines of preventive medicine. About 1 per cent. of the population has pulmonary tuberculosis, and about the same proportion has cardiac disease. About 10 per cent. of the estimated cases of tuberculosis attend the public clinics. In New York we find that thirty-one tuberculosis clinics and thirty-one cardiac clinics approximately meet the needs of the community. As in an epidemic of infectious disease we do not know its true extent until physicians report many more suspected cases than true cases, so we shall not reach the full usefulness of cardiac clinics until many more patients apply for diagnosis and treatment than really have active cardiac disease. In many tuberculosis clinics, twice as many patients attend for diagnosis as are found to have tuberculosis. This is an ideal state of affairs, and is desirable in proportion to the approach to an ideal in which all persons in the community should have an annual medical examination to determine whether they are as well as they think they are. The medical profession now can, if it has the opportunity, detect cardiac disease before the patient knows he has it. If physicians tell their patients to come for an annual examination they will not only pick up early tuberculosis but early heart disease and obtain the same superior results that have been obtained in tuberculosis by treatment of heart disease in its incipient stage. At present patients often fail to obtain medical care at the clinics until from four to eight years after they have themselves recognized a cardiac difficulty. This is a distinct reproach to the medical profession and is repeating the old experience with tuberculous patients who used to make the rounds of the clinics to find where they could get the most palatable medicine. A cardiac patient must be treated with the same especial clinic supervision which we have found invaluable in tuberculosis, and in this way we can prevent many of the periodic attacks of decompensation through which they pass.

DR. G. D. SCOTT, New York: It is almost impossible to use any one system of treatment in cases of heart disease in children. Judging from twenty years' experience in the east side of New York, the great melting pot of this country, regulatory treatment must fall under these heads: In acutely severe cases the children should be put to bed; in the functional, if such exist, chronic or milder cases, the children should be placed in bed only as long as absolutely necessary and only when the positive diagnosis is obscured. It is not necessary to enlarge on the condition of the latter class to guardians or patients, as in both classes cardiophobia may develop. Certain rules are to be observed. The heart is a muscle and is developed as such. Patients with no acute symptoms should enjoy regulated moderate exercise, and natural play is the best form of such exercise. In my mind there are many potential heart cases not founded on diseased tonsils or on rheumatism, nor are they incidental to chorea, but spring from malnutrition and fermentation of animal proteins, potential or true heart cases in children who are not taught the eating of vegetables or fruits. They show distended stomachs, meteorism, constipation or diarrhea. Such children should not be relegated to heart disease classes. The mother or patient should not be made apprehensive in the mild cases. Many patients given a bad prognosis years ago are alive and active today.

DR. C. F. WAHRER, Fort Madison, Iowa: These heart cases are sometimes very serious. They are pitiable, but the patients should not be given up to die. These cases are very hopeful in a large majority of instances, and in some of those which seem absolutely hopeless the patients will make a recovery with a little knowledge and a little common sense and a little hope. If you don't know heart disease, don't call in a general specialist, but call in a man who has some common sense; and if you have nothing else to help you treat these sad cases but that little book on heart disease at the American Medical Association exhibit, do not go to sleep until you know about the heart, and hang on to those patients persistently and conscientiously, because I know that they will live.

DR. HERMANN SCHWARTZ, New York: I think it is due to Dr. Halsey and his associates to explain in a few words just what he is trying to do for the cardiac child in New York City. It is surprising to see the difference, how the child in good circumstances has a better chance for life as contrasted with the child that comes to the various dispensaries in New York City. For several years it was a terrible thing for me to see one cardiac child come after another and all we could do was to send them home. Now we are glad to see that everybody is interested in these children and how to help them. The question is how to do it. We have tried, first, the convalescent home, which was one step. We have too few of them. Now we have cardiac classes in the schools, and these classes, through Dr. Halsey's instigation, have tried to supervise the child all through the day. It is no use to tell these children to go home and tell the mothers to let them rest so many hours. The mothers do not have time, and so the cardiac classes take care of these children from 9 a. m. until 5 p. m., which is a good step. Saturdays and Sundays have been quite a problem with us, and we have not solved it yet. Another thing which we expect to have soon is the branch hospital, the cardiac hospital, as a branch of the large hospitals in the city, where the child in Group 3 of cardiac decompensation may be put and remain for years, and then, if possible, be graduated to the cardiac schools, and then into adult life with a chance to do good work.

DR. ROBERT H. HALSEY, New York: In the classification I gave you will find the classes defined so that by following that description you will acquire the idea as to how much exercise each patient may be able to tolerate. Dr. Scott is wrong when he says that the cardiac should not know he has heart disease. Imparting this knowledge to the patient is one of the important advances in the management of heart disease. The cardiac can do a great deal if you will tell how far he can go and when he must stop. There can be no objection to placing the cardiac under the care of a man who has made a study of it because it may require highly technical knowledge. The fluoroscope has its place and the

electrocardiograph has its place, but the electrocardiogram does not make the diagnosis of heart disease. A cardiac child needs feeding as far as he can take care of it, but you can overfeed. Do not cut out all meat simply because it is meat. Heart failure cases are not to be considered anywhere except in bed. Children are going to school and getting worse every day, and the special clinics keep them out of school until they are strong enough to attend the regular school, or they can be segregated in a special school.

THE TREATMENT OF INFECTED ABDOMINAL WOUNDS BY THE CLOSED METHOD*

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Some time ago obstetricians, notably Williams, demonstrated that physiologic sodium chlorid solution was preferable to solutions of mercuric chlorid for intra-uterine irrigation in case of puerperal infection. The significance of this observation proved not the relative value of the salts but that antiseptic irrigation of infected wounds was harmful. It was later found that all irrigation of wounds was injurious. This knowledge has become so generally disseminated that douches in puerperal infections have become obsolete in modern obstetrics. These findings were later corroborated by research investigations using control cases, which proved that the use of antiseptics in infected wounds injured and delayed repair; that antiseptics injured the tissues more than the bacteria. It is not necessary to go into a detailed description of this here.

An early study of the acute cases of infection of the fallopian tubes demonstrated that the pus became sterile. Extensive and valuable research corroborated this observation and determined much knowledge of infection and immunity. There seems to be general appreciation of the modern ideas of infection and immunity relative to infections of the various organs of the body, and the treatment has been much modified accordingly. This modification of treatment has not so well extended to the treatment of infected wounds.

The problems involved in the treatment of infected organs and in infected wounds are nearly identical; for example, in cases of acute infection of the fallopian tubes and in cases of infected abdominal wounds, little or no local improvement occurs while fever and leukocytosis exist. When the fever and leukocytosis disappear, which means acquired general immunity, recovery of the local lesion is rapid. There is no more reason for radical treatment of infected wounds than for the radical treatment of acute salpingitis; in fact, there is less danger from the wounds than from the tube, because in the case of the wounds suppuration extends along the line of incision, while in the tube the suppuration extends along the path of least resistance. Traumatic interference disseminates the infection, disturbs the local reaction, delays immunity and repair, and unnecessarily distresses the patient in both cases.

Presence of pus is not so important as was formerly considered. Some infections that do not suppurate are more serious than some in which suppuration takes

place. The pus often becomes sterile. The presence of pus produces an autovaccination—a delight to devotees of vaccines, if not of much value to the patient.

Observation of the treatment of infected wounds often suggests a confusion of cause and effect, the pus instead of infection being mistaken for the disease. The disease is infection; pus, the result of infection. Infected wounds continue to be overtreated as a result of tradition, certainly not as a result of accrued accomplishments in the study of infection and immunity.

TREATMENT

The treatment, not original, which I am advocating for infection of abdominal wounds is the "closed method:"

1. No sutures are removed until the wound is healed.
2. No drainage material is inserted.
3. No probing or manipulation of the wound is permitted.
4. Moist dressings are kept continuously over the wound as long as it remains reddened or indurated, care being taken not to macerate the tissues excessively.

The moist dressings accomplish efficient drainage. A large amount of drainage will take place through small openings if the discharge is not permitted to desiccate and close the openings. Proof of efficient drainage can be obtained by turning the patient so as to test the drainage by gravity. Drainage occurs through small gapings at the edge of the wound and at times along the sutures. No exception to this treatment is made when intestinal fistulas or sinuses are present. There is no danger of premature closure of the wound at the surface. It is impossible to obtain permanent closure as long as a foreign body remains, which is the condition present in case of fistulas and sinuses.

RESULTS

I have observed the results of this treatment for some fifteen years. The technic of the treatment is practically the same as was given by me in a paper read in 1907 before the Chicago Medical Society.¹ I have had opportunity to compare the results of the treatment of infected abdominal wounds by the open and closed methods. For some years it had been my custom to remove sutures, establish drainage and actively treat infected wounds as soon as the presence of pus was suspected. The results of the closed method have materially shortened the time required for complete healing of the wound. With the closed method the wound is almost invariably completely closed at the end of two or three weeks from the time of operation. This saving of time results because, when suppuration ceases with the closed method, no wound remains to be closed by granulation or secondary suture. It has been a matter of considerable surprise that the febrile disturbances have seemed to be about the same with the closed and open methods of treatment. An important feature of the closed method is the slight disturbance of the patient, as the treatment occasions no pain, and assurance can be given that the suppuration is of minor importance.

HERNIA

The most important observation has been the absence of hernia with the closed method of treatment. We have been much surprised at the strong abdominal wounds which we have observed in cases of infected wounds treated by the closed method. In the follow-up work which we have carried on in our office and at St.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* On account of lack of space, this article is abbreviated in THE JOURNAL by the omission of case reports. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Watkins, T. J.: Illinois M. J., September, 1907.

Luke's Hospital, we have encountered no hernias. The experience has been very different in cases treated by the open method, as in these it is exceptional not to find a hernia. The absence of hernias following the "closed method" cannot be attributed to excellence of closure, as we occasionally have the misfortune to have hernias in cases that do not suppurate. The inference is that suppuration diminishes the danger of hernias when the wound is treated by the closed method. If the fascia remains in apposition, infection increases the amount of connective tissue formation and consequently strengthens the union of the wound. We have rather actively pursued this question of possible hernias from infected wounds treated by the "closed method," as the results seem to be too good to be true; but have been unable to find any hernias.

SCARS

The scars that result seldom indicate that the wounds have suppurred.

The increased length of time which patients with infected abdominal wounds have been required to stay in the hospital when treated by the closed method is seldom more than one week.

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ABSTRACT OF DISCUSSION

DR. RICHARD R. SMITH, Grand Rapids, Mich.: For many years I have followed this closed method of treatment of infected abdominal wounds. It has a distinct advantage over the older method of treatment of removing stitches, freely opening the abdominal wound, and allowing it to heal by granulation. By the closed method of treatment normal convalescence is not distinctly prolonged, the healing of the wound is distinctly shortened, and the ordeal of daily dressings is largely eliminated. However, I have made certain exceptions to this plan of treatment. In cases that do not do well under it, it has been my habit, after giving this method a fair trial, to remove one or two stitches, as few as possible, open up the wound partially, and procure drainage. I do this for two purposes: (1) to prevent a sloughing of the fascia, and (2) to prevent the burrowing of pus along the fascial planes or along the natural lines of cleavage of the abdominal wall. These may otherwise occur in cases in which the bacteria are of such a nature that they cannot be controlled properly by the patient, and in those patients who are in such a plight that their healing power is markedly diminished. Hernias of the abdominal wound, incisional hernias, are after all but partial ruptures of the abdominal wound which have occurred early in the postoperative course, that is, within the first ten days, due to straining, coughing or vomiting. The fascia of the abdominal wall gives way, and there is laid the foundation for the hernia which appears later. There are one or two exceptions. In the first place, the opening up of suppurating wounds, which is avoided by the closed method, is one of the reasons why we have these hernias. And secondly, it may be due to a pronounced sloughing of the fascia, which we avoid in the occasional case just mentioned by draining the wound.

DR. CHARLES T. SOUTHER, Cincinnati: I thoroughly agree with Dr. Watkins. The importance of not opening up these wounds is certainly evident from the results we get in treating cases by the closed method. The danger to the patient from absorption of the fluids and pus accumulating in these wounds is from the supernatant liquid and not from the pus cells themselves. The watery element will escape through an extremely small place, as Dr. Watkins has said. Two years ago I presented the ointment treatment of wounds. This method is exactly analogous to the wet treatment presented by Dr. Watkins. If the wound is not allowed to dry and the pus discharge is not allowed to dessicate, the wound is not sealed up at any time, so that we get a continuous

drainage of the supernatant liquid, and this is the only element in the pus which is dangerous, because it has to become absolutely fluid before it can be absorbed. My practice in these cases is to put in interrupted stitches, an inch apart, sufficiently far apart to draw the fat layers together, and in that way there is drainage between the sutures of all the exudate that occurs in the wound postoperatively for the first twenty-four hours. After that there is usually no accumulation, except that which is more or less septic or hemorrhagic in character. If it is hemorrhagic, it will usually find exit through the point of least resistance, which is between the sutures. I do not close the intervening space with clips, except in rare cases, and almost never in the lower abdominal incision. By suturing wounds without drainage and putting on an ointment dressing, I have not had an infection in five years. Necrosis occurs as the result of the primary injury. By keeping the ointment dressing on in preference to a wet one, these patients never get too cold in going about in winter as ambulatory cases.

DR. HUGO EHRENFEST, St. Louis: The difference between the open method and the so-called closed method is not so great as it would seem. It seems that, as a rule, the surgeon believing in the open method, as soon as he has opened the wound widely, draws it together again with adhesive strips. I maintain that I save myself the trouble of bringing the edges together again by preserving broad skin bridges.

DR. GEORGE ERETY SHOEMAKER, Philadelphia: Those who have tried Dr. Watkins' method will find value in it. Of course, there are severe cases in which other methods must be used. The worst infected abdominal wounds which I have had to deal with have been those in which my suspicion was not aroused early enough to lead to a dressing, or in which the resident physician had dressed the wound and had in excess of zeal removed all the sutures and left the wound open. Healing is then a long process. Suspicion is aroused by a continuing temperature elevation in the first four or five or six days, and we are suspicious of what is underneath the apparently healed skin, remove one stitch, make a culture, and with the greatest gentleness let out any fluid present and then apply a wet dressing. I like a few drops of tincture of iodine in a watery solution. When I do that myself I do not get those gapping wounds with the slow healing in which it is necessary to sterilize with surgical solution of chlorinated soda and resuture. Nearly every wound can be saved in this character of infection by this wet dressing method and early drainage.

DR. W. M. BROWN, Rochester, N. Y.: Dr. Watkins said that no drainage material was used; no sutures are removed at all. It takes a lot of courage to open an appendix abscess and close it without drainage. In fact, I doubt the wisdom of that. When I spoke to Dr. Watkins, he said he did put in a soft cigaret drain temporarily. Over thirty years ago I operated on my first pus appendix. I put in three heavy rubber drainage tubes and sewed it up with silver wire, and in spite of the rubber tubes no hernia followed. I have attended this woman in six confinements since then, and she has no abdominal hernia after leaving those three heavy drainage tubes in for three or four weeks. I have in mind a recent case in which there was a postpartum tube infection with a large exudate; and after watching it for more than a month and being convinced that an operation was imperative, I operated and after liberating the adhesions and getting out the tube, I found in the lower portion of the sigmoid an area of about 5 cm. that was gangrenous with a small white area in the center. It was perfectly evident it was going to be a fecal fistula. I put a soft drain in and removed it at the end of thirty-six hours. About forty-eight hours afterward a small amount of fecal drainage came through. The woman is doing well. It seems as though this was a case that must have some drainage.

DR. THOMAS J. WATKINS, Chicago: I am inclined to believe that the danger of burrowing pus is feared more than is justified. I can appreciate that the anatomy in some parts would make the burrowing of pus dangerous—for instance, infections in the hands. This has not occurred in my

experience in the abdominal wall. I agree with Dr. Smith that many of the hernias are probably due to strain from coughing and vomiting, breaking of catgut or slipping of a knot. Dr. Shoemaker emphasized the important part of the treatment of these wounds; that is, to treat them gently. It does not make much difference what you do to these wounds as long as you do not traumatize them with your fingers, your hands or with antiseptics or remove sutures. In reply to Dr. Brown, when I stated that I did not insert drains, I meant I did not insert drains in the treatment of infected wounds. I sometimes insert drains when doing a primary operation. Then if we feel that there is assurance that suppuration is probable insert a cigaret drain and leave it until suppuration occurs or until we are satisfied that suppuration is not going to result.

RETROBULBAR NEURITIS, SECONDARY TO DISEASES OF THE NASAL SINUSES*

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Owing to the fact that cases of retrobulbar neuritis caused by diseases of the nasal sinuses seldom come to postmortem examination, the pathology is not so well worked out as that in diseases in other parts of the body; therefore, the diagnosis is usually made on symptoms. Though the symptoms are mainly confined to the eye, there is usually such a close connection with the specialties of neurology and rhinology, that the findings should also be in harmony with the teachings of these branches of medicine.

A case presenting itself in its simplest form is that of sudden monocular impairment of vision, varying from partial to total blindness, with a central scotoma for color, combined with a normal fundus. There may be, in addition, one or more of the following symptoms: interference with the cranial or sympathetic nerves located in the orbit, resulting in variation in the size of the pupil; interference with the action of the extra-ocular muscles, or ptosis; exophthalmos, varying from a degree that is detectable only by measurement with an exophthalmometer, up to proptosis, plainly discernible by inspection; swelling of the lids; pain and tenderness in the orbit; engorgement and tortuosity of the retinal veins, with an occasional thrombosis; optic nerve involvement, shown by paling of the disk; neuritis, varying from simple blurring of the edge to the stage of greater elevation, known as choked disk; variation in the field of vision, consisting of enlargement of the blind spot, central and paracentral scotoma for white and color, and contraction of the field of vision. Frequently both eyes may be involved, in which case there is a combination of the symptoms in each. All of these symptoms have been found and reported by men of such recognized ability that there can be no question as to their correctness.

The pathology must explain cases in which pus is found in the sinus and cases in which it is not. It must explain the cases resulting from either tumor or other growths in the sinus. It must explain both the cures and the failures. I have always considered the condition to be due entirely to pressure, either sudden or gradual, still holding the same views that were expressed before this society six years ago, when

I reported three cases of this character.¹ In order to refresh your memory, I will review briefly one of the cases which is typical of this disease.

A man, aged 40, a physician, reported at my office within a few hours after having sudden impairment of vision in the right eye, while driving his automobile, forcing him to turn into the curb until he could readjust himself. Vision in both eyes previously was normal. At the time of the examination, the vision of the right eye was reduced to 20/30. There was slight tortuosity of retinal veins; the fundus was otherwise normal; no exophthalmos could be detected by inspection; double vision was not complained of, but was demonstrated by colored glasses; the peripheral field was normal; there was absolute central scotoma for red and green. On prompting, by questioning, he remembered having had a sinus infection twelve years before, but no symptoms indicating nasal trouble since that time. Nasal examination revealed the right middle turbinate tightly pressed against the lateral wall, with no pus present; the Wassermann test, urine examination, and roentgen-ray examination of the sinuses were all negative. Diagnosis was made of retrobulbar neuritis, due to nasal sinus infection.

The patient was told that a nasal operation might eventually be necessary, but he refused to consider it. While he was under observation for eight days, the vision of the affected eye was reduced to counting fingers at 10 feet, and the pupil became widely dilated, with no reaction to light or accommodation. This condition remained stationary for several days. There was then a spontaneous discharge of about half a teaspoonful of foul smelling pus from the right side of the nose, with immediate improvement in the vision, which returned to normal within a few days with no further recurrence of the trouble up to the present time.

The symptoms found were those of sudden blindness, engorgement of the veins, interference with the action of the extra-ocular muscles, dilated pupil, and central scotoma for color, with a possibility of exophthalmos had measurement been made. The trouble came on so rapidly and was relieved so suddenly that there could be no doubt that it was due to the giving way of the orbital plate of one of the sinuses, producing pressure on the contents of the orbit, the pressure gradually increasing up to the time when there came a spontaneous discharge from the sinus through the natural opening into the nose, resulting in complete recovery. Other cases of similar character since that time have confirmed the opinion originally expressed.

As I see it, the pathology is based on two factors: primarily, the infection of one or more of the nasal sinuses, usually the posterior, with interference with drainage through the natural opening caused by anatomic obstructions or swelling of the soft parts. This condition may exist for many years without the knowledge of the patient, the result of which is the thickening of the mucous membrane, the development of periostitis; osteosclerosis, or thickening of the bone; osteoporosis, or rarefaction of the bone, being in fact that condition found in other parts of the body, termed osteomyelitis. Rhinologists classify this as hyperplasia.²

The second factor is the sensitization of the tissues of both the sinus and the orbit by the bacterial proteins, producing an allergy resulting in a localized anaphylactic reaction each time the individual comes in contact with a fresh infection of the same bacteria in the nose, and possibly in other parts of the body. For that reason many of these cases give a history of attacks resembling hay-fever, or acute coryza, shortly previous to the eye trouble. Add to this the variation from the normal anatomy of the nasal sinus (or, as Sluder²

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Stark, H. H.: Sudden Blindness Due to Suppuration of the Accessory Nasal Sinuses, J. A. M. A. **65**: 1513 (Oct. 30) 1915.

2. Wright, Jonathan, and Sluder, G.: Concerning Some Headaches and Eye Disorders of Nasal Origin, 1918.

aptly puts it, "if there is a normal anatomy of the nasal sinus"); which brings the diseased cavity in closer proximity to the optic nerve, and we have the factors necessary to produce all the symptoms found in cases of this type of retrobulbar neuritis. We are therefore not dealing solely with a localized process, but with one depending in certain ways on systemic changes. The pressure may be of two kinds, sudden, as illustrated in the case just reported, or gradual, owing to a low grade cellulitis, produced by repeated localized anaphylaxis.

That the condition is caused by pressure is borne out by Bordley's³ experiments in producing similar symptoms by packing the sphenoid with cotton.

In considering this pathology, we must remember that milder types, without the classical symptoms of retrobulbar neuritis, may be present, and that the other extreme may also occur, in which there is a localized infection in the neighborhood of the nerve which may subside or produce an orbital abscess or meningitis.

The diagnosis of these cases should be considered from two angles: the symptoms of the eye, and the pathology of the nose.

The eye symptoms are the first to call attention to the trouble, and as they are more pronounced and alarming to the patient, the oculist usually makes the diagnosis. I have always felt that a study of this disease should be made primarily from a monocular point of view, as the diagnosis is then more simple, leaving fewer diseases to be eliminated in the differential diagnoses. Having mastered the monocular condition, we can more readily apply our knowledge to those cases in which both eyes are affected, or in which one eye is affected from an involvement of a sinus on the opposite side.

The diagnostic symptoms depend to a large degree on whether the involvement of the nerve is slow or sudden. Where there is a sudden involvement, the symptoms are usually so pronounced and numerous that the diagnosis can be easily made. Where there is slow development, the problem is more complicated.

No less an authority than Fuchs⁴ reports a recovery from a monocular blindness, following a nasal operation, in which the diagnosis was made on central scotoma for color alone. It seems to me unwise to base the diagnosis on one symptom without a more than ordinarily careful search to exclude other diseases. However, central scotoma for color is of primary importance in making the diagnosis. Next in order is enlargement of the blind spot. The fact that enlargement of the blind spot is found in nasal diseases without any other eye symptom is, to my mind, simply added proof that it may be the first symptom present, without coming to the knowledge of either the patient or the oculist. The most convincing symptom when combined with others is that of exophthalmos, for in no other disease of similar nature have we this symptom reported. It is undoubtedly due to an increase of the orbital contents, caused by an excess of blood in the vessels, as the result of a localized anaphylaxis and interference with the return flow in the veins. This symptom is frequently overlooked, owing to lack of investigation, but it is a very important one, especially in cases of slow development. Interference with the action of the extra-ocular muscles is also an important

symptom, frequently overlooked unless given special attention. Interference with the pupil, particularly if sudden, is of great importance. There is no question in my mind that many cases have slight interference or variation in the size of the pupil, which goes undetected.

In making our differential diagnosis, we should exclude hysteria, intracranial disease anterior to the chiasm, and especially, in binocular cases, amblyopia from other causes, including tobacco, alcohol, pellagra, brain tumor, syphilis and insular sclerosis. The last named disease shows in 50 per cent. of the cases a central scotoma for color as the first symptom; secondary symptoms appear, according to Oppenheim,⁵ as long as fifteen or twenty years later. Many of the symptoms are so similar to retrobulbar neuritis caused by the sinuses that, a number of years ago, I⁶ tabulated them for publication, advancing the theory that infection of the nasal sinuses might be one of the causes of insular sclerosis, one being but the advanced stage of the other.

Shortly previous to this publication, Shumway⁷ advanced the same idea, and reported a case which apparently proved the theory.

In a study of the pathology of insular sclerosis, Parsons⁸ states that "the blood vessels are greatly altered, increased in number, and there is a widening of the lumen of the finer ones. The pathological condition is suggestive of the presence of a circulating toxin as the cause of the disease, but there is no proof that such is the case."

This pathology could be readily applied to retrobulbar neuritis caused by the nasal sinuses, it being the primary stage, with the secondary changes occurring much later.

From a nasal standpoint, we must not expect to find the common symptoms of sinus infection—pus, polypus, history of nasal discharge, etc.—as we are dealing in most cases with a closed sinus; otherwise we would not have the pressure. The deflected septum and middle turbinate tightly pressed against the lateral wall should always be suspected. Both transillumination and roentgenography should be used. The latter, however, in many cases gives little aid in the diagnosis. In White's⁹ report, at least 70 per cent. of his cases had negative roentgen-ray findings. Notwithstanding this fact, some of the most rapid and brilliant recoveries were obtained as the result of operation. This may be readily understood when we realize that we are not dealing altogether with a localized condition, but that an anaphylactic reaction can be set up in a sinus whose content is only serous fluid, which cannot be detected by a roentgen-ray examination. In addition, an acute osteomyelitis, even in the long bones, cannot be demonstrated by the roentgen ray in less than twelve or fourteen days. Occasionally we have cases out of the ordinary, in which the differential diagnosis is complicated, unless the usual routine examination is carried out. One of these I will report:

A man, aged 34, apparently healthy in every way, reported to me that the vision of his right eye had materially decreased in the last few days. Examination disclosed central scotoma for color, pupil slightly larger than normal, no double vision,

5. Oppenheim: Text-Book of Nervous Diseases, Edition 5, Part 2, p. 378, 1908.

6. Stark, H. H.: Suppuration of the Accessory Nasal Sinuses as a Possible Etiologic Factor in Multiple Sclerosis, *Ann. Otol., Rhinol. & Laryngol.* 25:710 (Sept.) 1916.

7. Shumway: Acute Axial Optic Neuritis as an Early Symptom in Disseminated Sclerosis, *Ophth. Rec.* 24:385, 1915.

8. Parsons: Pathology of the Eye, 4:1346, 1908.

9. White, L. E.: The Diagnosis and Prognosis of Loss of Vision from Accessory Sinus Disease, *J. A. M. A.* 74:1510 (May 29) 1920.

3. Bordley, James, Jr.: Ocular Manifestations of the Diseases of the Para-Nasal Sinuses, *Arch. Ophth.*, March, 1921, p. 140.

4. Fuchs: Case of Eye Disturbance in Accessory Sinus Disease, *Lehrbuch der Augenheilkunde*, Edition 10, 1905, p. 766.

disk elevated 5 D., with the usual venous stasis; otherwise, it was normal. Nasal examination disclosed the middle turbinate tightly pressed against the lateral wall; otherwise it was negative. Roentgen ray, teeth and tonsil examination was negative, with no history of nasal trouble. Venereal disease was denied, and not suspected, as the patient was married, and had a healthy wife and two children. It seemed very clear in my mind that I was dealing with a case of retrobulbar neuritis due to nasal sinus infection. Suction treatment* was commenced, and, while no pus was obtained, it produced a decided improvement in the vision. This was continued for two weeks, when, owing to the patient's absence from town for ten days, no treatment was given. On his return his vision had been reduced to counting fingers at a few feet. This again cleared up with suction, but an operation was proposed. This was refused. After continuing the treatment for a number of days and finding that there was no improvement in the nerve condition, the case was reopened by questioning, at which time it was discovered that six or seven years before he had had a suspicious sore. This was treated by a physician, who assured him there was no possibility of syphilitic infection. A Wassermann test was made which gave a ++++ reaction. The case cleared up in a short time under antisiphilitic treatment, leaving normal vision. To my mind this must have been a case of syphilitic involvement of one of the posterior sinuses; otherwise we could not account for the improvement with suction.

Each year's literature adds greatly to our knowledge of retrobulbar neuritis caused by the nasal sinuses. Judging by the German literature of last year, the question has excited more than ordinary interest in that country. One evening was devoted to the subject by the Vienna Ophthalmological Society.¹⁰ A list of the men discussing it contains many familiar names. The closing discussions were by Hajek and Mueller. Mueller took the position that there was no doubt about the existence of such a condition and that, in cases of negative nasal findings, the rhinologist must act as the agent of the ophthalmologist, the latter deciding when operative procedure should be carried out. Hajek agreed with him, but held that clinical experience had not yet shown, in a scientific way, the connection between the nasal sinuses and retrobulbar neuritis, basing his conclusions on twelve cases which he reported in a subsequent paper.¹¹ In four of these cases, there was no result after operation; three, he did not consider, as they had not been under observation two and one-half years; one case, with good and lasting result, was followed by involvement of the other side, which was cured spontaneously; one case was followed with improvement after operation on one side, and with spontaneous healing on the other; one case, with great variation in the findings, showed improvement without operation; and one case, caused by mucocele of the sphenoid, was cured by operation. He says that the results following operation are more or less transient and do not indicate clearly that a pathologic condition of the nose is the cause. Two points worthy of note are that Hajek does not consider three cases which are of less than two and one-half years' standing, and, also, that he is not convinced that a pathologic condition of the nose is the cause of the condition. With the latter statement, I do not agree.

In our country, the literature of last year has been enriched by the writings of Ellett,¹² Bordley,¹³ and

White,¹⁴ the latter reporting twenty-nine of his own cases—by far the largest number reported by one man in any language. His conclusion, based on a study of these cases, is that an early operation is indicated, otherwise there will be great danger of permanent injury to the optic nerve.

Of the three patients whose cases I reported in 1915, one has remained entirely well, with normal vision up to the present time; one had normal vision, but a central scotoma existed for several years, which finally disappeared; the other, a nurse, had a brief attack while serving overseas, which lasted a few days, with a spontaneous recovery, and normal vision at the present time. Since reporting these three cases, I have had nine others, some of them being among a race of people found in our clinics, from whom I was unable to obtain sufficient data to warrant reporting them. The private patients who were treated have dropped out of my observation, so that while the immediate result was good, no definite data could be obtained.

The present method of handling these cases seems to be common to all working along this line—that is, a preliminary nasal, teeth, Wassermann and neurologic examination, with investigation of the nasal sinuses. I myself treat all acute cases for a number of days with the suction apparatus, and, when improvement is shown, this treatment is continued. If there is no improvement, I do not hesitate to advise an operation even when the nasal findings are negative, attention being first directed toward relieving the pressure, with as little damage to the nose as possible, by operating on the middle turbinate. When this is not successful, the suspected sinuses are opened. Undoubtedly, the earlier the pressure is relieved the better the chance for complete recovery. After thorough investigation, if we have excluded other diseases, to risk the danger of an ordinary nasal operation is in no way to be compared with the danger of losing the sight. The result depends to a large degree on the stage of the disease. When the pressure is relieved early, provided previous attacks have not caused an exudate around the nerve, there is a good chance for complete and apparently permanent recovery. When the pressure has been in existence for some time, and especially when there is localized inflammation with exudate, even if it be relieved, we still have to contend with an allergy and subsequent shrinking which may destroy the function of the nerve.

I believe that this condition explains cases of amblyopia in the adult who has vision varying from partial to total loss which cannot be classed as amblyopia ex anopsia due to strabismus. Occasionally we have patients with a history clearly pointing to this pathologic condition. I have recently examined a man, aged 35, who had normal vision in the right eye and 20/100 in the left, and no improvement with glasses. Retinoscopy disclosed a very slight hypermetropia. There was no fundus change except a paleness of the nerve. Both eyes were in normal position. On close questioning, he gave a perfect history of having had a nasal sinus infection a short time before the sight of the left eye became impaired, at the age of 15. His

10. Diskussion über die Frage der retrobulbären Neuritis rhinogenen Ursprungs, *Klin. Monatsbl. f. Augenh.* **64**: 561 (April) 1920.

11. Hajek, M.: Kritik des rhinogenen Ursprunges der retrobulbären Neuritis, *Wien. klin. Wchnschr.* **33**: 267 (March 25) 1920.

12. Ellett, E. C.: Optic Neuritis Associated with Disease of Nasal Sinuses, *J. A. M. A.* **75**: 1805 (Sept. 18) 1920.

13. Bordley, James, Jr.: Optic Nerve Disturbances in Diseases of Posterior Nasal Sinuses, *J. A. M. A.* **75**: 1809 (Sept. 18) 1920.

14. White, L. E.: Loss of Sight from Posterior Accessory Sinus Disease, *Boston M. & S. J.* **176**: 891 (June 28) 1917; Retrobulbar Neuritis from Posterior Accessory Sinus Disease, *Ann. Otol., Rhinol. & Laryngol.* **28**: 793 (Sept. 19) 1919; The Diagnosis of Accessory Sinus Disease Causing Loss of Vision, *Laryngoscope* **30**: 551 (Sept.) 1920, *Boston M. & S. J.* **183**: 93 (July 22) 1920; Loss of Sight from Retrobulbar Neuritis Due to Accessory Sinus Disease, *Boston M. & S. J.* **174**: 790 (June 1) 1916.

condition is undoubtedly the result of a sinus infection, and illustrates the danger from neglected cases. The ultimate result in cases with immediate and apparently permanent improvement must not be allowed to pass out of our minds, as it is doubtful just when the danger of recurrence is past. In addition to this, if my deductions are correct that nasal infection is one of the stages of insular sclerosis, not only the present generation of neurologists, but also the future generation, may be checking our work.

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ABSTRACT OF DISCUSSION

DR. LEON E. WHITE, Boston: The symptoms mentioned by Dr. Stark are a sudden monocular loss of vision with a central scotoma for colors, in which perimetric charts may prove of great diagnostic value, should the vision be sufficient to permit their being made. If not, the history of the blurring being more pronounced directly in front of the eye, with some ability to see sideways, may prove helpful. In several cases, there was vision for finger movements over a restricted area on the temporal side. The symptoms following involvement of the sympathetic and cranial nerves in the orbit are important. Variations in the size of the pupil and sluggishness, even complete immobility to light, are frequently observed. Interference with the action of the extra muscles, lameness on moving the eye or sensitiveness on pressure should always be considered. While I have noted an occasional case with exophthalmos, others might have been discovered had resort been had to the exophthalmometer. I do not remember seeing cases with swelling of the lids. Dr. Stark says that the pathology must explain cases in which pus is or is not found in the sinuses, and believes the condition to be due to pressure, either sudden or gradual. While this may be true, I have tried to reason what caused this pressure, and it has seemed to me, from what I have been able to get from sections made from the tissues removed from the posterior sinuses and the middle turbinate, that an infective process was invading the regions about the optic nerve or the nerve itself, and that this infection reached this region either by direct continuity from some infective process in the adjacent sinuses or by way of the blood stream and lymphocytes in the form of toxins or bacteria. I agree as to the factors as explaining the pathology—interference with drainage caused by anatomic obstructions and swelling of the soft parts, a condition gradually brought about by changes in temperature and the engorgement caused by many attacks of acute rhinitis. Hyperplasia plus infection seems to account for many cases. His views are new, at least to me, on the sensitization of the tissues of both the sinuses and the orbit by the bacterial proteins producing an allergy resulting in a localized anaphylactic reaction each time the individual comes in contact with a fresh infection of the same bacteria in the nose, and possibly in other parts of the body. A history of attacks resembling hay-fever or acute coryza shortly previous to the eye trouble is given by many of these patients.

DR. GEORGE HUSTON BELL, New York: Toxemia from focal infections is the most important subject before the medical profession today. I hold that focal infections can produce a general toxemia which may have a local manifestation in the eye in the form of uveitis, optic neuritis, choroiditis, retrobulbar neuritis, thrombosis of retinal veins, panophthalmitis and orbital abscess. I saw a case of papilledema of both eyes, associated with a lesion of the kidneys, secondary to an empyema of the sphenoid and ethmoid sinuses and antrum of Highmore. The only symptom complained of at first was a severe headache which the patient could not stand any longer. On examination, I found marked choked disks of both eyes with many hemorrhages. There were nine diopters of swelling in the right eye and eight diopters in the left. The edema and hyperemia were so great that the entire papilla, the borders of the disk, including the scleral and pigment rings, had all disappeared and the whole picture presented the

appearance of a solid mound. There were many hemorrhages in the surrounding retina. Blood pressure at this time was: systolic, 200; diastolic, 110; vision in the right eye, 20/30; left eye, 20/30 when first seen. This vision, however, rapidly fell to 20/70 both eyes. Examination of the teeth and tonsils was negative. The Wassermann reaction was negative, and the urine showed albumin, and hyaline and granular casts. The roentgenogram showed cloudy ethmoids, sphenoids, frontals and antrum on the right side. A neurologist suggested brain tumor. On account of the roentgen-ray findings I had the patient's sinuses opened up and drained. The patient began to improve, but irrigation and treatment of his sinuses were kept up. I contended all along that it was a case in which the clinical picture suggested the action of some severe toxin circulating in the blood, produced by the empyema of the ethmoid and sphenoid sinuses. The patient now has normal vision and normal fields for form and an enlargement of the blind spots. The hemorrhages in the retina and the edema of the nerve have gradually been absorbed. The surfaces of the optic disks appear untransparent and dense, and the nerve heads look larger than usual. The fundus of each eye, considering the severe inflammation, presents a beautiful picture, and one that is seldom seen. The patient has returned to work. His urine is normal. This patient had no treatment for his choked disks and kidney trouble, except the removal of the pus from his sphenoids, ethmoids and antrum of Highmore and irrigation of his sinuses.

DR. E. S. THOMSON, New York: One point of practical importance in Doctor Stark's paper I wish to emphasize, concerning the class of cases of which the case cited by Fuchs is representative: central scotoma for color alone, with diminution of vision and no other symptoms whatever. There are unquestionably cases that give no other symptoms. Examination of the nose with the roentgen ray reveals nothing. When the sinuses, the sphenoid particularly, are opened by a rhinologist, he finds apparently normal conditions, and yet after the operation vision returns to normal. A case that illustrates the point is that of a girl, aged 16. Vision of the left eye had been blurring and getting worse for ten days, and when she presented herself she had no perception of light. In the course of routine examination we found that the vision varied a little from day to day, at times showing feeble light perception. We finally opened the sphenoid, and as the case cleared up, which it immediately proceeded to do, a characteristic central scotoma for colors developed. If we had seen her earlier the diagnosis would have been more suggestive. After three weeks her vision was 20/20. The point is that in these cases we must open the sinuses without any rhinologic symptoms. You feel as though you were opening a normal sinus. To open the sinus when you have sufficient grounds for doing so is absolutely the only thing to do.

DR. JOSEPH C. BECK, Chicago: I have not had many of these cases of blindness from this disease, but those that I have had, and in which I have removed the tissues of the posterior ethmoidal and sphenoidal region, showed a non-inflammatory rarefaction of the spicules of the sinuses, without any inflammatory conditions, and roentgen-ray examination verified these findings. If the men who operate in these cases will take these particles to the laboratory and study them with the pathologist, they will get a great deal of satisfaction in realizing that there is no need of our having any infection. The anaphylactic theory is a very interesting one.

DR. HARRY H. STARK, El Paso, Texas: Dr. Bell's case is self-evident and described so fully that there can be no doubt about it. Dr. Thomson's statement regarding the class of cases he has referred to is important from the fact that the blindness may come on so suddenly that there is no chance to determine the presence of a central scotoma until after improvement takes place, at which time a central scotoma can be demonstrated. Regarding Dr. Beck's discussion of the pathology, too much attention has been given to the microscopic pathology and not enough to the gross pathology, which I believe to be due to an osteomyelitis. Both rarefaction and hyperplasia of the bone can be, and to my mind, are produced by an anaphylactic reaction repeated year after year with each fresh attack of coryza, or they may possibly be produced by an infection in other parts of the body.

With regard to the inheritance of B or Not B, exactly the same three possibilities exist.

If we represent apparent or dominant qualities by capital letters, recessive ones by small letters, and abbreviate Not A, Not B, to NA, NB, na, nb, we can then represent the hereditary constitution of the four classes of human blood as in Table 2.

It is clear at once that Group I (the most numerous group representing over 40 per cent. of the community) can never be hybrid. Group II (the next most numerous, representing about 40 per cent. of the community) can be hybrid only with regard to its dominant quality A, so that there are two kinds of persons belonging to Group II, pure A-A, transmitting only A to offspring, and hybrid, A-Not a, transmitting these two qualities to offspring in equal numbers. The same is true for Group III (from 12 to 15 per cent. of the community); it can be hybrid only with regard to its dominant quality B. Group IV, on the other hand, (the rarest of the groups, only 2 to 5 per cent. of the community) has four possibilities. It may be pure with regard to both dominant qualities A and B, or pure with regard to one, while hybrid with regard to the other, or hybrid with regard to both.

A detailed analysis¹ of the offspring resulting from unions of persons belonging to the various groups shows that in certain instances the possible kind of offspring are sharply limited. These are tabulated in Table 3.

The unions tabulated in this chart comprise over 80 per cent of all unions, and are the instances in which under certain circumstances deductions of medico-legal value may be drawn.

On the other hand, all unions containing a member of Group IV and unions of II and III may give rise to offspring of any of the four groups.

Suppose, then, that the blood of a child and the alleged parents have been tested, what conclusions can be drawn? If the child's blood is the correct group for the alleged parents, then we can say that the child *could* be their offspring, not that it of necessity must be. But, on the other hand, if the child's group is wrong for the two asserted parents, then one can say with absolute certainty that the child must have a parent other than one of those asserted.

The commonest instance, of course, is that of disputed paternity. Here we can readily tabulate the instances in which it is possible to be sure that the child is illegitimate or is not the child of an asserted father

TABLE 3.—LIMITATION OF OFFSPRING

Unions of	I and I	give only I
Unions of	I and II }	give only I and II
Unions of	II and II }	
Unions of	I and III }	give only I and III
Unions of	III and III }	

(Table 4). It is noticeable that Group I is absent from the third column of Table 4 because a child of Group I can be the offspring of any combination of parents.

The same kind of evidence (Table 4) can be used, either to prove the illegitimacy of the offspring or (circumstances being reversed) to prove the innocence of a correspondent asserted to be the father of a given child.

Likewise, in the rarer cases of disputed maternity or

of alleged substitution of one child for another, Table 4 shows the instances in which it can be stated with certainty that the child is spurious; i. e., a child of one of the groups in the third column cannot be the offspring of the parents on the corresponding lines in the first two columns.

TABLE 4.—INSTANCES IN WHICH THE CHILD MUST BE ILLEGITIMATE, OR NOT THE CHILD OF THE SUPPOSED FATHER

Known Mother	Supposed Father	Child
I	I	II
I	II	III
I	III	IV
II	I	III
II	II	IV
III	I	IV
III	III	IV

In practice, of course, it may be difficult to obtain the consent of all three parties (or at times four), to the blood test. The test can be easily done with a few drops of blood obtained from a painless prick with a small needle. In view of this, and the importance of the questions often at issue, it seems as though some legal means could be devised by which the persons concerned could be compelled to allow the examination at the hands of a representative of the court.

15 West Eighty-Ninth Street.

FOOD ACCESSORY FACTORS IN BACTERIAL GROWTH

VI. FURTHER OBSERVATIONS ON THE SUBSTANCES NECESSARY FOR THE GROWTH OF PFEIFFER'S BACILLUS*

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CHICAGO

Several years ago I¹ called attention to the fact that in the cultivation of hemophilic bacteria (*B. influenzae*) there are necessary two substances, one being a heat stable substance and closely identified with the iron containing pigments of the blood, namely, hemoglobin and hematin; the other factor residing in fresh animal and plant tissues and in many bacteria, including yeasts, blastomyces, sporotricha, etc. The latter substance is more heat labile than the first factor mentioned, autoclaving for fifteen minutes or boiling for a longer time being sufficient to destroy it. The interaction of these two substances is somehow necessary for the growth of this organism. Presumably the second factor in some way renders the iron more available and, in view of the nature and function of this element in life processes, one is tempted to interpret the phenomenon as related to oxidation, and possibly catalytic in nature. In 1907, I² pointed this out, basing my conclusion on the fact that very minute quantities of blood (1-180,000) were sufficient to induce growth of these bacteria.

This work was done some years before the recent epidemic of influenza. The strains of so-called influ-

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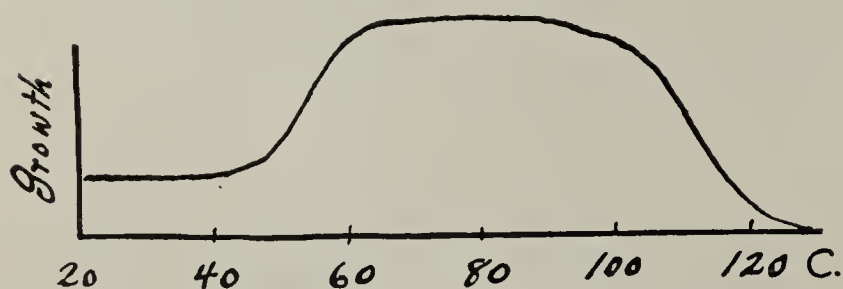
1. Davis, D. J.: Food Accessory Factors (Vitamines) in Bacterial Cultures, with Especial Reference to Hemophilic Bacilli, *J. Infect. Dis.* 21: 392 (Oct.) 1917.

2. Davis, D. J.: Hemophilic Bacilli: Their Morphology and Relation to Respiratory Pigments, *J. Infect. Dis.* 4: 73, 1907.

1. The full data on which these conclusions are based are published in a paper which will appear in a forthcoming number of the *Journal of Immunology*.

enza bacilli then used in the investigations by me were isolated from a great variety of respiratory infections, including measles, whooping cough, bronchitis, meningitis, varicella and pneumonia; and since all efforts to demonstrate an epidemic strain of influenza bacilli during the last epidemic failed, and since it is now quite generally conceded that epidemic influenza is not caused by Pfeiffer's bacillus, I think the results obtained with these hemophilic organisms isolated before the influenza epidemic are comparable with the results obtained with similar organisms isolated during or since the epidemic. My own data,³ as well as the results of many others, do not indicate that these bacilli now are in any way different either in their biologic properties or in their distribution from what they were before the epidemic.

The work referred to above regarding the growth accessory factors in the cultivation of Pfeiffer's bacillus has now been corroborated by a number of workers both here and abroad. Fildes,⁴ Thjötta and Avery⁵ and Rivers⁶ have all found that the growth of Pfeiffer's bacillus depends on the existence of two substances, the one related to the blood pigments being the more heat stable. These workers, too, have generally interpreted the reaction as one related to vitamin



Growth of Pfeiffer's bacillus on blood medium heated to various temperatures.

activity, though Fildes suggests that the phenomenon centers about the reaction between peroxidase and the blood pigment.

I have recently corroborated my work done several years ago, using fresh strains of Pfeiffer's bacillus.⁷ Pfeiffer's bacillus isolated from epidemic influenza, from influenza meningitis, from normal throats or from throats the seat of various respiratory diseases behaves alike in that there is required for its growth, in addition to plain medium (peptone medium is sufficient) the two substances already referred to. In addition, I have noted certain other observations which deserve mention.

When ordinary unheated blood (defibrinated or whole blood) is added to plain mediums, the growth, though definite, is not abundant. When heated to 55 C. even indefinitely, growth also is slight or at times apparently negative. At 60 C., growth is not profuse unless this temperature is applied from two to five hours. If continued for two to three days, no growth will result. At 80 C., growth is profuse if the blood medium is heated from five to ten minutes. By continuing the exposure for from twenty-four to thirty-six hours, the medium becomes valueless unless reactivated by fresh fluid or tissue. At 100 C., a few moments' exposure, or simply bringing the medium to this temperature, is sufficient to allow profuse growth; but exposure for one

or two hours will destroy its growth promoting value. At 120 C. (autoclave), a few minutes' exposure of the blood medium will render it valueless. Thus, with increasing temperature the time necessary to obtain a favorable medium becomes less and less, and also with increasing temperature the time necessary to destroy its growth value becomes gradually less. It should, of course, be understood that the growth promoting value of the heated blood can be restored by adding thereto fresh unheated plant and animal tissue extracts, or bacterial or yeast extracts.

It is readily seen that the heat resistance of this second factor may be represented in the form of a simple curve which would gradually descend to the base line at a temperature of about 120 C. A curve representing the growth of the bacilli on blood medium heated to varying degrees would be more complex because of the several factors involved. Roughly it would be represented as in the accompanying curve. The curve does not take into consideration the time element.

The first factor is apparently hematin or a close derivative. Pure hematin (Merck according to Nencki) medium behaves like the autoclaved blood medium. No growth of Pfeiffer's bacillus appears unless the medium is activated by the addition of unheated plant, animal or bacterial products. According to Olsen,⁸ hemin behaves in the same way as hematin.

The effect of hydrogen peroxid was tested on the activity of the heat labile factor. For this purpose, fresh filtered carrot juice, which I have found to be an excellent activator, was treated with small but varying quantities of hydrogen peroxid for one hour. Medium made by the addition of this treated juice to autoclaved blood yields very scant growth compared with the controls. On some of the tubes a growth was just visible, but in none did a profuse growth appear. In others there was no visible growth. Similar experiments were made by the addition of small amounts of hydrogen peroxid to ordinary blood medium. The medium becomes bleached with the addition with the addition of increasing quantities of the peroxid. On such medium, growth of Pfeiffer's bacillus is nil or very scant.

In seeking some light on the mechanism of the reaction between these two substances, one may suggest the possibility that the second substance may somehow control or make available the iron in the pigmented portion of the hemoglobin molecule. The question naturally arises, Do vitamins or vitamin-like substances influence or to some degree control the metabolism of other elements in the body, such as phosphorus, iodine and calcium? In the cultivation of the gonococcus, phosphate added to tissue fluids makes a most excellent medium. Dorothy Lloyd⁹ has interpreted the favoring action of body fluids in the growth of meningococcus and other organisms as one comparable to vitamin activity in animal nutrition. I raise the question as to the possible action of the accessory bodies on phosphorus as one comparable to the action of the labile tissue substance on the iron containing pigment in the nutrition of Pfeiffer's bacillus. Or does the phosphate in the medium function simply as a body favoring growth through its buffer action?

3. Davis, D. J.: Proc. Inst. Med., Chicago 2: 142, 1919.

4. Fildes: Brit. J. Exper. Path. 2: 16, 1921.

5. Thjötta and Avery: J. Exper. Med. 34: 97, 1921.

6. Rivers: Bull. Johns Hopkins Hosp. 32: 202, 1921.

7. These results will appear in detail in a series of three articles in the forthcoming issue of the Journal of Infectious Diseases.

8. Olsen: Zentralbl. f. Bakteriöl. 85: 12, 1920.

9. Lloyd, Dorothy: J. Path. & Bacteriol. 21: 113, 1916.

Again, McCollum and Simmonds¹⁰ have pointed out the interesting relation that exists between vitamins and phosphorus in the causation of rickets. From their results with rats it would appear that the phosphate ion plays an important rôle in the causation of this disease and perhaps kindred diseases. They point out that the level of blood phosphate is in all probability determined in part by the amount of the fat soluble A available for the needs of the organism. Thus, an interplay seems to exist between the vitamins and phosphorus in the body, a deficiency of either leading to defective nutrition. I merely mention these processes as being possibly analogous to the interplay between the two substances necessary for the growth of Pfeiffer's bacillus. We may be dealing here with a principle in nutrition of fundamental significance in relation to life processes.

ENDOSCOPIC REMOVAL OF SAND SPURS FROM LARYNX AND TRACHEO- BRONCHIAL TREE*

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One of the indications of the progress of endoscopy is that its dicta no longer are laid down by one individual, but are the result of the combined experience and thought of numerous students of this branch of surgery. Only through the observations and citations of those interested in this work has this science developed to its present degree of accuracy, and in only this way can its advancement continue. This fact encourages me to discuss a type of foreign body in the air passages which, when considered from its point of frequency, has not received the attention due it.

NATURE AND DISTRIBUTION OF SAND SPUR

In the family *Gramineae*, commonly referred to as the grass family, there are a number of noxious weeds, and of these none are more troublesome than those belonging to the genus *Cenchrus* (from the Greek *κένχρος*, kind of millet). The common names applied to these plants vary in different parts of the country, bur grass, sand bur, cockspur and sand spur being the ones most frequently applied. In Florida, the name in common use is sand spur.

The species which I have seen most frequently as a foreign body in the air passages is *Cenchrus tribuloides*. This is widely distributed, occurring from Ontario and Maine to Florida, westward to Minnesota, and south to Colorado and Texas. In the South, particularly in Florida, it is a common plant, sometimes covering considerable areas with its matted growth. In addition to this species, four others, *C. macrocephalus*, *C. gracillimus*, *C. echinatus* and *C. incertus*, are found in the lower south, and about seven others are found in the tropical regions.

These grasses thrive in sandy soils, and, since they root at the nodes or joints, they frequently form dense mats. They are easily killed by frost and, consequently, are usually annuals; but if weather conditions are favorable they are perennials. They may

be found almost anywhere, on lawns, in cultivated fields or in waste places.

The fruits of these grasses are spiny burs, borne in spikes or heads well suited for clinging to anything which may come in contact with them. The spines are very sharp, barbed, sometimes bristly, and, as in *C. tribuloides*, often recurved. When they penetrate any tissue, they are difficult to remove entirely, for, although the main portion of the spine may be taken out, the barbs and bristles are broken off and remain. While it is possible to find matured fruits in some places at almost any time of year, the seed crop is most abundant from August to November. For the identification of *tribuloides*, I am indebted to H. Harold Hume, professor of botany of the University of Florida.

THE SAND SPUR AS A FOREIGN BODY

The sand spur in the rôle of a foreign body in the larynx and tracheobronchial tree is not a new subject; yet a survey of the literature reveals few references aside from the mere reporting of its extraction and, perhaps, localization. In my experience in Florida, where the sand spur is indigenous and most abundant, it has been the most frequent intruder in the air passages, and in my series of nineteen cases some facts of interest have been observed.

THE LARYNX AS A SAFEGUARD

As an instance of this is the comparative infrequency of the larynx, with its reflexes, to fail to act as a fender and safeguard to the lungs against this type of foreign body. In this series of nineteen cases, in all but three the sand spur was found to be located somewhere within the boundaries of the larynx. In addition to my own experience, I have endeavored to review every article in which the sand spur is mentioned in both this and foreign countries, as well as to glean the experience of the laryngologists of my own state. The result was that, of eighty-five cases, in only seven had the sand spur successfully run that "gauntlet consisting of the epiglottis, upper laryngeal orifice, ventricular bands, vocal cords and bechic blast," to become a foreign body in the lungs.

Jackson has well said that cough is the watchdog of the lungs, and it might be added after this observation that the larynx as well is a faithful sentinel against this type of foreign body entering the bronchial tree. Another fact of interest which may impress one is that, in the consideration of the etiology of foreign bodies in the air passages the flora of the immediate section of residence is a definite factor.

CASES IN THE LITERATURE

It is of interest to note in this connection that Jackson, in his analysis of his 882 foreign bodies in the air and food passages, does not mention the sand spur. Furthermore, in my review of the literature I could find a report of only sixteen cases of the sand spur as a foreign body, while in Florida, where the sand spur is so abundant, I have collected statistics which include sixty-nine cases. These statements are made to emphasize a fact which I have never seen mentioned in any article on the etiology of foreign lodgment: that the flora of a locality is a definite etiologic factor of foreign bodies in the air passages.

The accusation that the surgeon is prone to speak of his successes and not mention his failures is relevant

10. McCollum and Simmonds: Bull. Johns Hopkins Hosp. 32:160, 1921.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

to the statistics which I have collected relating to this foreign body. In the literature reviewed, there was not a death reported as a result of a sand spur in the air passages, while in reply to a questionnaire sent out I have learned of five fatalities in which it was the etiologic factor. Another fatality will be mentioned in my series of nineteen cases.

CASE CHARACTERISTICS

The sand spur as a foreign body in the air passages, in this series considered etiologically, presents a few points worthy of mention. Age was a factor to the extent that in all but one instance, that of a woman, aged 22, the patients were less than 12 years of age, seven being between the ages of 8 and 12, and the youngest aged 3 years.

To account for the frequency of this foreign body, I have endeavored to get a definite history from the patients, which is not always an easy matter in children. The interpretation of the histories in the greatest number is as follows: The child notices the sand spur sticking to some part of his clothing or perhaps to his bare feet. With his fingers he attempts to remove it. The bur pricks his fingers, and, child-like, when in pain, he carries his hand to his mouth; the sharp spines of the bur penetrate the highly sensitive mucosa of the tongue, causing a quick cry. The sequel of the cry is a deep inspiration, and the sand spur is drawn in. The sudden inspiration is the etiologic factor.

Of the eighteen cases in which I have removed sand spurs from the air passages, sixteen of the spurs were found to be located at some point in the larynx, and two in the right bronchus. In every case which has come into my hands, the child or parent had made a correct diagnosis, giving the history of inspiring the foreign body, and citing the occurrence of the laryngeal spasm. Those which were laryngeally lodged immediately developed an aphonia, and pain on swallowing, and eight of the patients complained of pain, referring to both ears. Four cases showed a constantly increasing embarrassment of respiration and pending edema.

Those cases in which the sand spur had been in the larynx for more than twenty-four hours presented a picture in some respects resembling laryngeal diphtheria. There was a dirty, grayish exudate elevated above the surrounding mucous membrane. The neighboring area was inflamed, and sometimes edematous. A toxemia was manifested by a temperature varying from 100 to 102 F., pulse ranging from 100 to 120, and a mild cervical adenitis.

DEDUCTIONS

In my earlier cases, in my endeavor to account for this type of inflammation and to exclude any inherent property in the sand spur, I questioned the analytic chemist and bacteriologist. Prof. Charles LaWall, dean of the Philadelphia College of Pharmacy, informed me that the plant family *Gramineae* was singularly devoid of active chemical principles. As a matter of further interest, cultures were made from the sand spurs found in open fields by Dr. B. L. Arms of the Florida State Board of Health. He reported that no fungi or pathogenic organisms were grown. My final deduction was that this inflammation was due to trauma and invasion of bacteria through the wounds. A microscopic examination of one of these individual

spines shows that along its shaft there are numerous small retrorse barbs. I examined several of these spines from the sand spurs which I had taken from larynges and discovered that these small barbs were missing, having been left in the laryngeal mucosa. This, perhaps, explains the prolonged hoarseness which, in some cases, persists over a period of several weeks.

TECHNIC

My technic in the removal of these foreign bodies from the larynx differs in but one respect from that advocated by Jackson.¹ This consists of the change of the position of the patient's head in relation to the operating table. This has been done for the reason that, often times, it has been impossible to have an assistant who had had the necessary training required when the head and shoulders project over the end of the table. The method which has proved satisfactory in my hands consists of putting the head in extension, with the occiput resting on the table. This insures the extension at the occipito-atloid joint, and gives one a satisfactory view of the anterior commissure, which has been the most frequent point of lodgment of the sand spur.

SAND SPUR IN BRONCHUS

Of the two cases in which the sand spur had invaded the bronchus, there was little evidence aside from the history of getting the sand spur in the mouth, and a severe but brief laryngeal spasm. One of these patients was seen within two hours after the accident the other within five hours. In neither of these cases did an examination of the chest reveal any well defined physical signs, which was accounted for by the fact that the duration of lodgment had been too short to cause any active inflammatory changes. In one of these cases a roentgenologic study was made which was of no aid in the localization. In each of these cases, with a 5 mm. bronchoscope the sand spur was located in the right main bronchus. Both patients made an uneventful recovery.

While the one fatality which occurred in this series may not be relevant to the title of this paper, its importance in the consideration of the sand spur as a foreign body in the air passages would seem to permit its introduction here.

REPORT OF CASE

A boy, aged 10 years, resided in the country 7 miles from the nearest physician. Seven weeks before I was called to see him, he ran to his father, saying that a sand spur was sticking in his throat. His father stated that, on looking in the child's throat, he saw the foreign body embedded in the right tonsil. While the boy was struggling, the father made an unsuccessful attempt to remove the sand spur with his fingers; immediately the child seemed to choke, and then had a paroxysm of coughing, lasting but a few moments. He showed no evidence of trouble for the next three weeks, and it was concluded that the sand spur had been swallowed, and the matter was dismissed.

On the twenty-ninth day after this accident, the child developed what was diagnosed by the family physician as a lobar pneumonia of the lower right lobe. On the eleventh day of the pneumonia and the fortieth day after the sand spur was inspired, instead of a subsidence of the acute symptoms, the temperature became higher, with marked remissions, chills, profuse sweats, and a picture of general sepsis. On the sixteenth day, the character of the sputum changed, the patient expectorating a quantity of pus having an offensive

1. Jackson, Chevalier: *Peroral Endoscopy and Laryngeal Surgery*, St. Louis, Laryngoscope Company, 1915, p. 236.

odor. On the seventeenth day, I was sent for by Dr. J. B. Bennett, who had made a diagnosis of an abscess of the lung secondary to a foreign body. I arrived at the bedside the following morning to be told that five hours previously the patient, in a paroxysm of coughing, had coughed up the sand spur, and with it what was estimated by the parents as 2 ounces of pus. The patient showed a generalized cutaneous emphysema, which appeared at the root of the neck in the intercostal spaces, along the anterior abdominal wall, extending into the scrotum.

The child was moribund, and died within an hour. Unfortunately, a roentgenologic study in this case had not been made, and necropsy was not permitted.

COMMENT

The case which I have just reported was my first experience with a sand spur in the air passages. On account of its tragic history, it is now recalled in every case which comes to me, and it has caused me to respect this type of foreign body far more than I should had my experience been limited to the eighteen cases in which I have successfully removed spurs from the larynx and bronchi. While the three cases in which the sand spur invaded the bronchi are too few to allow deductions, they may furnish us sufficient evidence for thought. These three cases gave a similar history: the presence of the foreign body in the mouth followed by a choking sensation, which constituted the laryngeal spasm.

In the two cases in which the patients recovered, bronchoscopy was done on the evidence of the history alone, in the absence of any definite physical signs, and in one case with the negative findings of the roentgenologist. The case which proved fatal gave the same history: a bronchoscopy was not done, and the patient succumbed seven weeks later as the result of an unrecognized foreign body in the lung.

CONCLUSIONS

1. The flora of a locality is an etiologic factor in foreign body lodgment.

2. The larynx is the most frequent point of lodgment of the sand spur when aspirated.

3. The sand spur as a foreign body in the air passages is seen most frequently in children.

4. The sand spur has no inherent property. It should be placed in the category of a foreign body producing only mechanical effects.

5. The study of a series of the same type of foreign body in the air passages, from the standpoint of etiology, diagnosis, localization and pathology, will aid the endoscopist to arrive at conclusions relative to them. Such conclusions are more accurate than those arrived at when a series of foreign bodies of various types and of different physical characteristics is considered.

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ABSTRACT OF DISCUSSION

DR. RICHMOND MCKINNEY, Memphis, Tenn.: The type of foreign body called a sand spur is probably indigenous to warm, sandy beaches. We have a somewhat similar type of bur, called cockle bur, but it is larger and with more pronounced prickles. The cockle bur is found in the fall, when the foliage is dead, and is blown about by gusts of air. This type of foreign body occurs in the cotton fields, the only beaches that we have being the sand bars along the Mississippi River, and in my experience it always lodges in the larynx—I have never seen one below the larynx. It is usually inhaled when the individual is running through a

field, with open mouth. It could not quite fill the glottis, but is caught by the vocal cords and becomes firmly embedded. It is very painful, and exceedingly difficult and disagreeable to remove. As to the method of getting it out: I first cocaine the larynx, then, passing a Jackson heart-shaped speculum, lift the tip of the epiglottis, when the bur will readily be seen. Then, by using fenestrated forceps that will grasp the bur, it can easily be removed from the larynx. This is a very simple technic. In children it is necessary to use a general anesthetic, for it is hard to dislodge the bur, it is quite painful, and the child's struggling renders the case difficult to handle. Then, too, in children one has to be exceedingly careful, because asphyxiation might develop, because of an accumulation of fluid in the trachea. The sand spur is small enough to be inspired into the trachea or a bronchus, and I can see how difficult the problem of removal would be under such circumstances.

DR. CHEVALIER JACKSON, Philadelphia: This is a very valuable paper, not only on the subject of sand spurs, but as an example of the importance of a thorough study of the problems of bronchoscopy for foreign body in the air passages and lungs. The matter of age incidence is interesting. As a rule, foreign bodies occur most frequently in young children, but in this series no case in an infant is reported. I have never encountered a case of sand spur. In the Bronchoscopic Clinic we have had just two cases of cockle bur, one in the larynx; the other was coughed up. Another very important point brought out by Dr. Taylor is the simulation of diphtheria by a foreign body in the larynx. We have had a number of such cases. A child was sent in for a chronic laryngeal stenosis. Antitoxin had been given and a tracheotomy had been done for a supposed laryngeal diphtheria. Dr. Manges, the roentgenologist, found a safety pin that had evidently been in the larynx for nine months.

DR. L. C. INGRAM, Orlando, Fla.: The sand spur grows almost entirely in the South, and is most abundant in Florida. The plant grows from 1 to 3 feet high and resembles very much some of the grass that is cut for hay. In the fall, the hay in the orange groves and on other cultivated land will contain a great many of these sand spurs. When the burs are ripe they come off the stems, and, being very light, a blast of air will carry them about like any other litter from the hay, and in this manner they can be inspired and carried into the respiratory passage. Fortunately, however, the majority of these burs stop in the larynx. The cases that I have had occurred during early September or October. The bur in all the cases except one was in the larynx. The patients were children, mostly of school age. Two boys, while playing ball, each had a bur stick to the hand. They pulled the bur off with their teeth, and before it could be expelled from the mouth an inspiration carried it into the larynx.

DR. E. G. GILL, Roanoke, Va.: The chemical and bacteriologic work done by the author stamps the sand spur as non-toxic, thus acting in a mechanical way in the production of a pathologic condition. I wish to commend the essayist for the excellent judgment exercised in using the bronchoscope in order to establish a diagnosis in two of his cases in which the physical and roentgenographic findings were negative. I feel that in any case of suspected foreign body in the air passages, when the physical and roentgenographic findings are negative, one should not hesitate to use the bronchoscope in order to establish an intelligent diagnosis.

DR. HENRY L. LYNNAH, New York: Dr. Taylor brought up the point of dyspnea, a very important one when considered in connection with direct laryngoscopy for diagnosis in children suffering from croup. As to the absence of physical signs and roentgenographic findings, Dr. Samuel Iglauer has mentioned the ballooning of the lung, as has also Dr. Jackson, which may cause compression on the opposite side of the chest. The pathologic condition in this case is on the side which is not so dense in the plate. The diaphragm may also be depressed. Dr. Taylor mentioned one case in which subcutaneous emphysema developed. We have several cases of diphtheritic tracheobronchitis and food foreign bodies in which the same condition developed when no instrumentation had been performed. In these cases the lung on the side of the obstruction keeps on ballooning, air leaks through at the

hilum and follows the deep cervical fascia, causing generalized subcutaneous emphysema. It can occur without producing pneumothorax.

DR. J. B. PORTS, Omaha: In Nebraska and Kansas we have both the sand bur and the cockle bur, although our sand bur is apparently a little different from the bur that grows in the East. The sand bur that we have grows on rather a stiff grass which keeps very close to the ground, being a species of creeping grass. The bur is about the size of a small pea, oval in shape. Its incidence in the larynx has been common ever since the people populated that part of the country. Not long ago one of our general surgeons, Dr. J. E. Summers, called my attention to a paper published twenty years ago in which he reported the removal of six or eight of these burs with a laryngoscope and an old-fashioned curved forceps. We have frequently seen cases of both the sand bur and the cockle bur in the larynx, and since Dr. Jackson brought out his bronchoscope I have been in the habit of removing them with that. My experience is different from Dr. McKinney's in that I have not found it necessary to give a general anesthetic to children in order to remove the bur. In the case of foreign body, I do not believe it is good practice to administer a general anesthetic if one can possibly avoid it.

DR. JOSEPH W. TAYLOR, Tampa, Fla.: Comparing the sand spur of Florida with the cockle bur referred to by Dr. McKinney, it is smaller, but the prongs are much longer and sharper; it sticks to the fingers, and frequently in attempting to pull it off the prong will penetrate the flesh and stick there. One method of getting the sand spur into the larynx is that frequently the older children put the spur between the lips and by means of expiration produce a whistling sound; then they take a deep inspiration and the spur is carried in. During the last few years one laryngologist in one city has had twelve cases, showing the relative frequency of this accident.

THE BORDERLAND OF RHINOLOGY, NEUROLOGY AND OPHTHALMOLOGY*

GREENFIELD SLUDER, M.D.

ST. LOUIS

The clinical borderland of these specialties has an obvious anatomic basis.

With this common anatomy it is easily understandable that their problems overlap, as emphasized by Dr. Ernest Sachs¹ and Dr. Harvey Cushing² in recent papers. They have raised issues of importance to rhinologists, and they agree on the mechanism of choked disk.

Dr. Cushing's texts deal with trigeminal neuralgias and other morbid cephalic sensations. He indicates five painful disorders of the nerves supplying the face which are designated "neuralgic" but which must be distinguished from the more common trigeminal neuralgias, to wit: (1) neuralgias accredited to the sphenopalatine ganglion (Sluder's neuralgia); (2) post zoster neuralgias (trigeminal and geniculate); (3) neuralgia facialis vera (Hunt's neuralgia); (4) painful tic convulsive; (5) neuralgias from tumor involvement.

Lastly, he described major trigeminal neuralgia, tic douloureux, for which the gasserian operation is indicated, the differentiation of "major" and "minor" representing degrees. His essay is a careful effort to separate pure tic douloureux from other pain projected into this field. In this he has most generously considered observations which I made on the nasal (sphenopalatine-Meckel's) ganglion, beginning in 1908. The first of these attracted Dr. Cushing's attention, and he most kindly invited me to see some of his cases, in which the result after a perfect gasserian operation was not satisfactory—much pain remaining. They were atypical for him, and strange for me. He outlines these experiences, and gives the warning, "Beware of atypical cases." I, too, have learned this in cases of disorders of the nasal ganglion; and I have learned that there are patients who suffer violently from pain in the head, whose disorders cannot be classified at present. I often see patients who have been through all conceivable treatment. For these reasons, a comparison of ideas will be helpful.

NEUROLOGIC SYNDROMES

Typical lower-half headache, which Dr. Cushing has alluded to as "Sluder's neuralgia," may be produced in two ways: (1) from irritation of the nasal ganglion, and (2) from sphenoidal lesions irritating the nerves which supply that ganglion, i.e., central to it (the maxillary nerve in the foramen rotundum and the vidian in the vidian canal). It does not require a large sphenoid cell to approach these nerves. These facts should be very clearly borne in mind.

"Lower-half headache," when complete, is pain in and about the eye, the upper jaw and teeth, extending back about the zygoma into the temple, the ear, mastoid, worst usually 5 cm. back of the mastoid, with tenderness to pressure, to the occiput, neck, shoulder, shoulder-blade, arm, forearm, hand and fingers, with often a sense of pepper or mustard burning in the nose. Other manifestations of like cause are hydrorrhea, with sneezing, nausea, vertigo, photophobia, lacrimation, and less often, nodular headache, blepharospasm, asthma, eye pain, as of intense light when no light was present, professional cramp, and rarely, red external nose. These phenomena are seldom seen at once. They may alternate.

Dr. Cushing raises the question, "Why should this syndrome be attributed to the nasal ganglion?" He thinks it rather referable to the adjacent maxillary nerve trunk.

The pathology of most conditions in which our understanding rests on a clinical basis only is open to challenge. No postmortem pathologic material has been secured from one of these cases. When, however, the same symptoms are found repeatedly associated with the same clinical lesion, and are relieved by treatment of the pathologic condition, it becomes accepted that they bear the relation of cause and effect. This argument holds here. In most of these cases an inflammatory lesion exists. The syndrome ("Sluder's neuralgia"—Cushing), known to the surgeon, justifies the experiment of cocaineization of the nasal ganglion. Should this relieve the symptoms, injection of alcohol into the sphenomaxillary fossa is usually followed by relief, oftentimes complete, but a second or third may be necessary. Dr. Cushing suggests that this happens by virtue of the alcohol spilling over the maxillary

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Owing to lack of space, only the author's abstract of this article is printed in THE JOURNAL. The complete article will appear in the Transactions of the Section and in the author's reprints.

1. Sachs, Ernest: The Importance of More Intimate Cooperation Between the Various Specialists Who See Neurological Cases, *Ann. Otol., Rhinol. & Laryngol.* 28: 76 (March) 1919.

2. Cushing, Harvey: The Major Trigeminal Neuralgias and Their Surgical Treatment Based on Experiences with 332 Gasserian Operations, *Am. J. M. Sc.*, August, 1920, p. 157; Accessory Sinus Disease and Choked Disk, *J. A. M. A.* 75: 236 (July 24) 1920; The Role of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia, *ibid.* 75: 441 (Aug. 14) 1920.

nerve, which might occur. I do not think this, however, because there is never a paralysis of sensation in its distribution. Experiment on the cadaver proved that alcohol with ferric ferrocyanid injected into the sphenomaxillary fossa from under the middle turbinate, and through the sphenopalatine foramen in 0.5 c.c. amounts, was limited to the ganglion area, and did not reach the maxillary nerve. Some years ago, I did a faradic stimulation in two of these cases, and reproduced the pain, although the ganglion was cocaineized. Twice lately I have tried this experiment again, but failed. The failures were in patients to be injected for other reasons than "lower-half headache."

Dr. Cushing also advances the opinion that this neuralgic syndrome is pain spilled over from the trigeminus; and reports a case of major tic douloureux (Gasserian Series No. 265), in which there was present this lower-half headache (Sluder's neuralgia—Cushing) at the time of severe paroxysms; and all was relieved by a gasserian operation. This case must be rare, as I have questioned nine neurologists³ on this point. One of them, Dr. S. I. Schwab, had seen a typical lower-half headache behave as a recurrent stabbing pain of this distribution. He sent the patient to me, and I relieved him (five years ago) by injection of alcohol into the nasal ganglion. He says he has often seen trigeminal tic douloureux cause pain in the back of the neck, shoulder, and arm, and he thinks it is explained by segmental overlapping.

It is impossible for me to accept the trigeminus as the origin of pain in the neck and shoulder when there is no pain in the trigeminus; yet this is frequent in this lower-half headache. The anterior half may be absent, the posterior half severe and be relieved from the nasal ganglion.

The injection of alcohol into it or its vicinity is followed by pain which takes the distribution of the lower-half headache. Charles H. Frazier,⁴ reviewing the neuralgias, asks the pertinent question, "Why is the relief from the pain not immediate after the injection?" Sometimes it is, in a few hours; but not as a rule. I do not know enough, as yet, to answer Dr. Frazier's question.

Against the idea of this nasal ganglion neuralgia being phenomena spilled over from the trigeminus is the case of a patient whom I have in charge at present and in whom the gasserian ganglion was removed eleven years ago, at the Mayo Clinic, for tic douloureux, with relief. Three months ago, she began treatment with Dr. W. H. Luedde, St. Louis, for failing vision in the eye of that side. He recognized a choroiditis with a keratitis, and sent her to me for examination. I found a sphenoiditis. She suffers at times a lower-half headache, and at times a sharp pain in that eye, as of intense light, when no light is present.

In another case in which Dr. Cushing had performed a perfect gasserian operation (No. 157), the patient consulted me several years later because of the most intense lower-half headache. She had a severe sphenoiditis. I drilled a 1/8 inch hole into it. A bloody serum was discharged, with relief to the headache. That small hole, however, closed in a few days. The pain returned in full force. She then passed out of my charge and continued to suffer. These cases cer-

tainly are not phenomena that spill over from the trigeminus. Nor can they be explained by segmental overlapping.

LOWER-HALF HEADACHE

The lower-half headache that I discuss comes into the categories of the migraines. It is quite separate from the neuralgias of the trigeminus. They may, however, be associated as the case reported herewith shows:

Mrs. G., aged 65 years, had an ophthalmic migraine since childhood. Fourteen years ago she developed a tic douloureux of the left side, for which Dr. Cushing performed a gasserian operation, with complete relief of the tic. The migraine has not been influenced, and seven years ago she developed a vulgar migraine of digestive origin. These migraines develop rightsided and leftsided, regardless of the gasserian operation. I relieved the ophthalmic migraine by cocaineization of the nasal ganglion. I injected both ganglions, Dec. 11 and 20, 1920. Her discomforts were worse for four weeks, but she has since been better. For the last ten weeks she has shown marked improvement; the attacks (ophthalmic migraine) are much lighter and farther apart and for the last few weeks have ceased. The vulgar migraine continues.

In reading the histories of Dr. Cushing's atypical cases I am forced to raise the question as to whether there was not a migrainous element in them, and also whether there were not sphenoidal lesions mixed among them. At the time he showed me his patients, I did not know the story of hyperplastic sphenoiditis. These phenomena are often caused by sphenoiditis of any etiology, by irritation of the nerve trunks that supply the ganglion at points central to it.

After the sphenoid is opened, intrasphenoidal cocaineization usually gives relief.

He raises two other questions relative to the nasal ganglion. First, he asks whether there is ever any reason for injecting it; and second, he raises a question of technic.

I have injected it many times with relief of this lower-half headache, sometimes with relief of ophthalmic migraine, asthma, blepharospasm, photophobia, asthenopia and professional cramp. These results are relief, though some of them have stood apparently cured for thirteen years. But they can never be "cured" in the sense of Dr. Cushing's cures of the tic douloureux by the gasserian operation. His cures are absolute by virtue of the fact that he has removed the cause of the trouble; and the break in the nerve tract can never be reestablished. My "cures" cannot rest on this secure basis, for two reasons, to wit: (1) the ganglion cells, according to Dr. Otto May, cannot be destroyed by alcohol injections;⁵ and (2) were they destroyed, the nerve trunks that supply them will remain in their canals in the body of the sphenoid, central to the ganglion. Here the rôle of sphenoiditis referred to before, is obvious. So long as these nerve tissues remain in this district they may be affected by a coryza; and they must remain there until the surgeon is able to remove the body of the sphenoid.

Dr. Cushing, in raising the question of technic, states that should there ever be reason for injecting the nasal ganglion, it may be done safer and better from under the zygoma, and decries the transnasal route. Here it should be recalled that the ganglion lies close

3. Drs. F. R. Fry, M. A. Bliss, Given Campbell, William W. Graves, J. Hogue, James C. Gill, Hugh T. Patrick, George W. Hall and S. I. Schwab.

4. Frazier, C. H.: *Prog. Med.* 1:26 (March) 1921.

5. Dr. Cushing reports a case of accidental injection of alcohol into Meckel's pocket, with resulting paralysis of the entire trigeminus, which is a contradiction of this observation. The trigeminus has never regained function.

to the membrane of the nose covering the sphenopalatine foramen. If one is mindful of this fact, it is difficult to understand why one should not elect to puncture through the foramen with a curved needle, rather than elect the longer route from the zygoma. He mentions the report of a severe secondary hemorrhage following the injection of the ganglion. This must forever be possible, as the internal maxillary artery is close by, and may be wounded primarily, or slough later. In more than 1,000 injections for various purposes I have had severe hemorrhage occur four times. Should the straight needle have been used to puncture under the middle turbinate, it is easily controlled by a small pack under the turbinate where the puncture was made. Once I had a hemorrhage occur following puncture through the foramen. This was more difficult to control, but there was no serious loss of blood. Three times I have seen hemorrhage from two to five days after the injection. Twice it was easily controlled by a pack under the turbinate. In no case was a postnasal pack necessary. Accidents occur also from injection of the maxillary nerve by the transzygomatic route. In one of my *tic douloureux* cases, in which injection was performed by Dr. Cushing, the needle evidently passed through the sphenopalatine foramen, producing bleeding into the nose. But I do not know how often this happens. This hemorrhage might be the same as that from the transnasal route. The same would seem true for secondary hemorrhage. The choice of technic ought to be determined, advantageously, by the surgeon who is to use it. Were Dr. Cushing to inject my nasal ganglion, I should prefer that he use the transzygomatic route.

He refers to Dr. E. M. Holmes' report of patients, in these categories, treated by transnasal injection of the ganglion. I agree with Dr. Cushing that there are points in his reports that we do not at present understand. Here the protean possibilities of this entire problem should, however, be recalled.

According to my understanding of the headaches at the present time, no investigation can be complete without an estimate of the possibilities of the sphenoid cell in their etiology. I emphasize the nonsuppurative lesions of the sphenoid, central to the ganglion mentioned before. Dr. Cushing has most generously considered the possibility of the nasal ganglion as a source of trouble in his experience with atypical *tic douloureux*; but he did not mention a possible rôle for the sphenoid cell. In one of his cases (No. 157), the gasserian operation failed, as related before. In his mention of this case an oversight has occurred. He alludes to it as a failure of the sphenoidal operation also to afford a cure, but he did not mention the relief that was obtained by that small, temporary opening. In reading reports of these cases the question of a possible sphenoiditis often occurs to me, and I regret I did not understand it at the time he so kindly showed them to me. One of his cases that I saw in 1909 and failed to understand, seems to me now, as I read his report (Gasserian Series 43), to be a ramification of one of the posterior cells.

Dr. Cushing,⁶ in his article, deals with the problems concerning choked disk; and the rhinologic diagnosis, surgical judgment, operative procedures, and disasters encountered in the borderland field. It is a philippic in which he denounces the rhinologist's shortcomings.

Further elucidation, however, of our ideas, practices, and experiences, I hope, may mollify his criticism.

He laments the fact that so many patients with meningitis have come to him following nasal operations. This criticism is not only fair but deserved. For years I have felt that such disasters were more numerous than literature records. And I believe that our technic is at fault. Many rhinologists work from in front and below, clearing their way as they go. A better technic is to cut from above and behind, downward and forward. For twenty years I have employed and taught this. I have not yet had a meningitis, nor has one happened in the service of my clinic, nor in the hands of the St. Louis rhinologists who employ this technic. A wider use of it, I think, will be helpful. Six times I have seen the orbit perforated by this method without evil consequences. April 20, 1921, a graduate student apparently perforated the cribriform plate. No unfortunate consequences have followed it. The number of cases in which operation was thus performed is up in the hundreds.

CHOKED DISK

He also discusses the mechanism of choked disk. Neurologists, for the most part, think that choked disk can be produced only by intracranial pressure, and that it is edema of the disk produced by cerebrospinal fluid pressed out in the sheath of the optic nerve. Ophthalmologists recognize what is the same lesion, that certainly arises from other causes also. Dr. Sachs states (March, 1919) that choked disk is, per se, indication for a cerebral decompression. He has since modified this point of view.

In this connection arises the question of hyperplasia of the nasal tissues, especially hyperplastic sphenoiditis. Some years ago, Dr. Jonathan Wright investigated the microscopic pathology of this lesion, as a favor to me. It seemed reasonable to us to argue that this process might and did involve the canals found in the body of the sphenoid; and we advanced it as an explanation of some of the headaches and eye lesions; that is, we think that these canals may be narrowed by the periostitis or osteitis accompanying it. Many times I have had eye cases referred to me with the statement that there is a lesion, usually termed *choked disk*, of from 1 to 8 diopters, and no neurologic or other cause can be found for it. I have been able to recognize in these cases hyperplastic sphenoiditis, often with acute processes added, and have relieved the eye trouble by the postethmoidal-sphenoidal operation.

Dr. Cushing makes a categorical denial of the possible production of choked disk by ethmoidal or sphenoidal lesions without intracranial pressure. He then quotes concerning hyperplasia in the nose, from an article by Dr. Leon E. White.⁷ Dr. White's statement, quoted by Dr. Cushing, is in part a quotation from Dr. Jonathan Wright's "Introduction" to my monograph.⁸ Dr. Cushing's quotation of Dr. White's text is garbled, and so is Dr. White's quotation of Dr. Wright's text. Furthermore, when my monograph is cited, my text as well, should be quoted.

The purport of Dr. Wright's text is that it is not the hyperplastic lesion so much as the situation of it, and he mentions that it would be difficult to find an

6. Cushing, Harvey: Accessory Sinus Disease and Choked Disk, J. A. M. A. 75: 236 (July 24) 1920.

7. White, S. E.: The Diagnosis and Prognosis of Loss of Vision from Accessory Sinus Disease, J. A. M. A. 74: 1510 (May 29) 1920.

8. Sluder, Greenfield: Headaches and Eye Disorders of Nasal Origin, 1918.

adult in the temperate zone who does not show it in some part. He then states that when it involves the region of the optic or sensory nerves, symptoms arise. My statement bearing on this and Dr. White's question is, that it is very frequent, often without symptoms, but that there are patients of all ages and of both sexes who do not show it clinically in the postethmoidal-sphenoidal district; so that it needs careful discrimination in selecting these cases for surgical interference. So it is to be seen that Dr. Wright's observation is complemented by mine. In other parts of the nose, the hyperplastic lesion does not have the same pernicious possibilities.

On page 259 of that text is my comment on the clinical side of the question raised by Dr. Wright, which also concerns the issue raised by Dr. White, namely, "Ought not all sphenoids be opened for intra-ocular lesions when no other causative factor is found?" I have thought much on this problem, as the following statement shows. The frequency of headaches (all kinds) without recognizable systemic or organic neurologic basis is well known. The mystery of many eye lesions is also well known. From experience, I am led to the belief that their explanation is to be found in the hyperplastic lesion of the postethmoidal-sphenoidal district to a high degree of frequency. Dr. White's proposal to operate even in the absence of postnasal diagnosis must be taken seriously when all other factors that might be etiologic have been eliminated. I think, however, that investigation on the part of trained, shrewd observers practically always gives a definite decision on the part of the rhinologists. But I can understand that the difficulties in the way of a conclusion concerning this area may be almost insuperable, as I found in a case of leftsided optic neuritis:

A normal boy, aged 14 years, had lost the sight of his right eye by accident in infancy, and Dr. W. A. Shoemaker, who sent the patient to me, removed it as soon as the left eye became affected. His vision went steadily down until he had to be led. Observation of his nose was negative daily, for two weeks, when I, at last, saw an infinitesimal showing of pus from the right sphenoid. Knowing that such lesions are rarely unilateral, I at once opened the left postethmoidal and sphenoidal cells. His eye improved immediately and became normal. The sphenoid contained a little water secretion in which pus could not be recognized. I have utilized this knowledge advantageously in other cases.

Mindful of this experience, I think it difficult to lay down a rule for practice. We know the seriousness of this surgery, and what it means to have it poorly done, as well as the disasters mentioned by Dr. Cushing. One may readily appreciate the argument of Dr. White; but one must realize the responsibility of laying down such a precept. I feel that such a rule of practice should be the consensus of opinion by the best rhinologists.

Dr. Cushing complains of the frequency with which he finds the nose of patients with brain tumor operated on, thinking them to be paranasal cell cases. Dr. Sachs had this in mind, a year earlier. This was timely admonition, and Dr. Cushing's complaint is just. The problems in this borderland, however, are so difficult that only the most accomplished of us can avoid error, and then only by cooperation. Neglect of neurologic investigation in a frank nasal case is the basis for Dr. Cushing's complaint. Nose and brain lesions may be combined. Neglect of nasal investigation in the presence of choked disk may also be basis

for his criticism, as a case referred to me eight years ago by Dr. W. H. Luedde shows:

A normal woman, aged 30, had had bilateral choked disk with severe headache. A bilateral decompression had been performed, without betterment. Optic atrophy followed with loss of light perception. I found a bilateral sphenoiditis, and operated. The headache was relieved, and light perception returned. This is her condition now.

A patient in my clinic, three years ago, suffered severe headache. Operation was performed for a sphenoiditis by Dr. M. F. Arbuckle, with relief. The patient had had a decompression operation without relief.

Last year, I operated for a frank sphenoiditis in a man losing vision rapidly, with optic atrophy, and then had a neurologic investigation made, which showed a pituitary enlargement. I preferred to operate at once and have the neurologic investigation later, because I had had the experience of turning over to the neurologist for investigation a patient who was losing vision, and, before he finished his examination, which was elaborate but negative, the patient was blind beyond help, from sphenoiditis.

Concerning choked disk and precepts for practice, the case herewith reported seems interesting:

History.—Mrs. H. H. C., aged 23, consulted Dr. W. E. Shahan, Nov. 18, 1914, stating that for five weeks she had had intermittent headache. Three weeks before an oculist prescribed glasses. Two weeks before she had severe pain with swelling of the lids and rightsided photophobia. Two hours later she had a like, but milder attack, on the left side. Since then she had had occasional diplopia, the left eye turning in.

Examination (Dr. Shahan).—Vision without glass was: 20/48 right eye; 3/15 eccentric, left eye; esophoria, 20 degrees at 20 feet. Ophthalmoscope showed swelling of right disk, 6 diopters, a few radial hemorrhages on the swollen disk, and a patch of white exudate toward the macula. There was a like condition in the left eye, disk swelling, 8 diopters. My examination revealed double sphenoiditis, suppurative. The roentgen-ray examination was negative; "Wassermann reaction negative or slightly positive?" (C. H. Klenk); neurologic examination (intracranial tumor), negative (M. A. Bliss); urine, negative. A sphenoid operation was performed on the left, November 25; on the right, December 5. December 14, vision without glass was: 20/38 right eye; 20/60 left eye; esophoria 3 degrees at 20 feet. Feb. 28, 1915, vision without glass was: 20/19 right eye; 20/24 left eye; disk swelling, 3 diopters, right and left.

Course.—At this time the patient was compelled to go to her home, and has not been able to return. March 7, 1921, her sister reports that she often gets letters from her, and that she is apparently in good health; and that she has two healthy children, born since the above-recorded attack. The vision fields in this case were normal, except for an excessively enlarged blind spot, which diminished progressively during the period of observation. Her vision is normal at present. This patient was examined by Dr. A. E. Ewing also. Both he and Dr. Shahan agreed that it, by all appearances, was a case of choked disk. Neurologic cooperation with Dr. Bliss saved this patient from an intracranial operation which had been urged by surgeons.

I have had like cases referred to me by Drs. Joseph W. Charles, A. E. Ewing, John Green, Jr., William H. Luedde, W. A. Shoemaker and Meyer Wiener, all competent ophthalmologists, in which the neurologic examinations were made by competent neurologists. There was no instance, however, of so great swelling as 8 diopters. Many of these were in observation until complete recovery of the eye.

Such borderland cases, however, may become most difficult of classification, as this case shows:

E. D., a strong, healthy man, aged 24, was referred by Dr. John Green, Jr., and Dr. Louis Hempelmann. My diagnosis was: hyperplastic sphenoiditis with subacute suppurative

tion. Dr. Green's report was: "Seen first Feb. 20, 1914. Right vision 6/5; left vision 6/5. For five years complained of lower-half headaches and temporary blind spells.

"Ophthalmoscope showed: right, mushroom-like swellings of disk with swelling starting abruptly at margin and mounting up; margins very much veiled, veins a little dilated and tortuous. Apex of disk measured by C. D. Refraction about 2 D. so that disk swelling amounted to 4 D. Left same appearance. Disk measured by 6 diopters; retinal level by 2 D.; swelling, 4 D.

"Subsequent observation showed slightly greater swellings in right than left disk; no evidence of choroidal change or of peripheral retinitis. Fields show slight peripheral contraction of right with inversion of red and green fields. On the left form field full, blue field contracted, green field larger than red, but interlaces in three meridians. Conspicuous clinical feature of the case is the momentary obscuration of vision followed by rapid restoration. Patient closely followed, vision never got lower than right 6/8; left 6/5.

"March 6: The day following opening of right postethmoidal-sphenoidal cells, vision was raised from 6/6 to 6/4 with the right eye.

"March 12: The day following operation on left postethmoidal-sphenoidal cells, vision was raised from 6/4 missing two letters, to 6/4 missing one letter.

"April 10: Distinct recession of papillary swelling; right apex measured by 4½ D., and left apex by 5.0. From this time neuritis slowly subsided.

"Nov. 6, 1914: Both disks were at level of retina and fairly well tinted.

"Last observation, July 12, 1915: Right and left vision 6/4; fields full. Both disks a little pale, but showing no other evidence of antecedent inflammation."

Clinical Course.—Postethmoidal-sphenoidal operation, right side was performed March 5, 1914; left side, March 11, 1914. The eyes began to improve almost at once (see Dr. Green's report). Six days later, lower-half headache (maxillary and vidian neuralgia) began to lessen and later ceased. July 27, 1914, there was headache caused by coryza, and some increased disk swelling and paresis of the facial nerve of right side. This diagnosis was confirmed by Drs. Hempelmann and M. A. Bliss. This condition lasted seven days. Aug. 27, 1914, another exacerbation of the local inflammation began, and was followed by vomiting for thirty-six hours with some headache. Aug. 27, 1914, paresis of the left facial nerve with a right-sided exophthalmos appeared (Drs. Green, Hempelmann and Bliss). Intrasphenoidal observation with Holmes' pharyngoscope during those periods confirmed the diagnosis of acute exacerbation. By the same means it was known to have been absent before and proved to be absent later (after fourteen days) when recovery of the eye, facial paresis and exophthalmos was established.

Last observation by me, April 10, 1915, confirmed Dr. Green's report of recovery, Nov. 6, 1914. The clinical changes in the sphenoid district had subsided to such a degree as to leave it normal clinically.

Dr. Bliss saw this patient at intervals during the period described from March 21, 1914, and watched the subsidence of the optic disks and the clearing of the seventh nerve palsy. He reports, Oct. 7, 1916: "The disks are quite pale, clearly outlined, the vessels normal in fulness. There is no facial palsy now. The patient reports two 'seizures'—one about Sept. 27, 1916, and one several months previous. In neither, did he bite his tongue nor was he convulsed. The pulse rate is 60." Heretofore it was normal.

Oct. 11, 1916: "The pulse is 57—he has no headache, and no nausea. The disks are as on Oct. 7, 1916."

Aug. 11, 1917: "He has continued to have 'attacks,' but infrequently. The disks are very pale. The pulse rate is 53."

Dr. Bliss was absent from St. Louis during 1917 and 1918, and saw this patient no more. Dr. Hempelmann reported finding a calcification in the right parietal area in September, 1918. Roentgen-ray data in the beginning of the history were negative, according to my memory. My record, however, fails to include this item.

Comment.—Drs. Schwab and Sachs in discussing this case have made the suggestion that the case may have been one

of multiple brain abscess from the beginning and still is. It is interesting, however, to follow the course of this patient's eye troubles and the relief afforded by the sphenoid surgery, in the presence of the brain abscesses should these prove to exist. The clinical difficulties in the case are self-evident. I have had two other parallel cases, in one of which the patient later died of a glioma of the middle fossae of the skull, the other later (three years) of a cerebellopontile angle tumor.

CONCLUSIONS

In closing, I wish to emphasize that choked disk is a lesion that seems to be of more than one origin; that the term describes a swelling of the nerve head and is not specific for its etiology; that the lesion secondary to postethmoidal-sphenoidal lesions is in all probability an optic neuritis; and that by the ophthalmoscope it may be indistinguishable from that produced by intracranial lesions.

The question has often been asked, "Why do I not see those nasal ganglion cases which are in your experience not infrequent?" The explanation, I think, lies in the fact that neurologists are rather apt to be satisfied with a diagnosis of neurasthenia; and rhinologists at present are prone to declare the nose negative that does not show a frank sinus suppuration. The dermatologist recognizes many skin lesions that are not suppurative. His philosophy and methods come into service in these nasal diagnoses.⁹

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OBSERVATIONS ON HEMORRHAGES OF OVARIAN AND TUBAL ORIGIN

NOT ASSOCIATED WITH ECTOPIC PREGNANCY*

EDWARD A. SCHUMANN, M.D.

PHILADELPHIA

Hemorrhage into the abdominal cavity from an ovary or fallopian tube is so generally due to the terminal changes in an ectopic ovum that the recognition of other causes for the bleeding has been rather neglected, even though such other causes are known to exist.

There has been developed recently, however, a fairly voluminous literature on the subject, as is indicated by the list of fifty-four titles included in the masterly review of Richard Smith.¹

Pelvic hemorrhages originating in the reproductive tract independently of extra-uterine pregnancy may have their source in the ovary, or the tube, may result from uterine neoplasms, or rarely from tumors of the round ligament. The last two groups are purely mechanical and traumatic in their nature and are not to be considered at this time.

DIAGNOSIS OF HEMORRHAGES OF OVARIAN OR TUBAL ORIGIN

Those hemorrhages from the tube or ovary of obscure pathology and unknown etiology are still unsolved problems in gynecology and require further study for their elucidation. The points at issue in this

9. For rhinologic details bearing on the foregoing problems, the reader may consult Sluder, Greenfield: *Headaches and Eye Disorders of Nasal Origin*, St. Louis, 1918.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Smith, Richard: *Hemorrhages into the Pelvic Cavity Other Than Those of Ectopic Pregnancy*, Tr. Am. Gynec. Soc. 45: 321, 1920.

connection are the facts concerned with the diagnosis and the details of the pathogenesis of these accidents.

The preoperative differentiation from hemorrhage due to ectopic pregnancy is rarely possible save in those cases in which the virginity of the patient is beyond all question.

The symptomatology and the clinical picture are simply characteristic of sudden intraperitoneal hemorrhage, more or less in amount, and usually associated with acute pain in one or the other iliac fossae, although in a few cases the initial pain is entirely absent, distress only becoming apparent when the irritating effect of the free blood in the peritoneal cavity produces its usually dull, generalized abdominal ache. There follows usually some distention, with signs of shock and severe blood loss, or the sthenic reaction of elevation of temperature, moderate leukocytosis, rectus rigidity, and in general, the syndrome of the "acute abdomen."

The important point in the preoperative diagnosis is that from the personal, as well as the medicolegal, standpoint, a diagnosis of ectopic pregnancy should not be made in cases in which pregnancy should not exist. I feel strongly in accord with Bovée on this point.

Bovée² believes that in the presence of hemorrhage of tubal or ovarian origin, when there is not positive clinical evidence of pregnancy as evinced by the finding of a fetus or chorionic villi, one is not justified in making a diagnosis of extra-uterine pregnancy, unless proved by microscopic examination, supporting his contention by a record of twenty-nine cases of supposed ectopic gestation with free hemorrhage from the ovary and tube, in which microscopic evidence supported the diagnosis in but seventeen. This rather extreme view is counterbalanced by the work of Caturani,³ who examined, from the pathologic standpoint, 100 specimens of suspected extra-uterine pregnancy, finding positive evidences of this lesion in eighty-five, only fifteen proving to be negative.

The one group of cases of this sort wherein a preoperative diagnosis may be hazarded is that fairly common one in which growing girls, during one of their early menstrual periods, display all the phenomena of intraperitoneal hemorrhage. Three such cases have come under my observation recently, the diagnosis being unconfirmed in all, since no operative interference was practiced and all recovered.

One of these may be cited as typical:

Miss M., a healthy and normally developed girl, had menstruated fairly regularly three times. At the expected date of the fourth menstrual period, she was suddenly seized with a violent pain in the right iliac fossa, with rapidly developing, though moderate, shock and fainting. She rallied from the attack within a few hours, but complained of generalized increasing abdominal pain and tenderness, with distention. The temperature rose to 101 F. and there was marked right rectus rigidity. I saw the patient twenty-four hours after the initial symptoms, with Dr. William G. Shields, Jr., her physician. At first glance the picture was that of an acute appendicitis; but an analysis of the anamnesis made it apparent that hemorrhage into the abdomen was the etiologic factor, and that as the symptoms were distinctly those of a lower abdominal lesion,

the ovary was probably at fault. Rectal examination disclosed a tender, doughy mass in the culdesac, and the right ovary was exquisitely sensitive. In view of the age of the patient and the fact that the hemorrhage had apparently ceased, the case was treated expectantly, with uneventful recovery, the clot in the culdesac having been absorbed and being absent to rectal touch some months later.

It is my belief that similar cases are not uncommon and that they rarely result fatally even without surgical interference. The oft quoted case of Scanzoni,⁴ reported in 1845, in which an 18 year old girl died as a result of a menstrual ovarian hemorrhage, is not sufficiently accurately described to affect this view, since Scanzoni states that the ovary contained a sac the size of a hen's egg, through a rent in which 6 pounds of blood had escaped into the abdomen. This case, in the light of our present knowledge, is strongly suggestive of ovarian pregnancy.

It is probable that such ovarian hemorrhages are more or less functional errors, that is, an excess of bleeding from the wall of the mature graafian follicle in the adolescent ovary, and that there is no demonstrable morphologic change present in the tissues.

The type of case that gives rise to the greatest confusion is that in which more or less severe hemorrhage takes place from the ovary of mature women and in which the occurrence of extra-uterine pregnancy is a possibility. Here the preoperative diagnosis is extremely difficult, although the history is sometimes suggestive, in that there has been nothing unusual noted with regard to the menstrual cycle and especially in that there is no associated uterine bleeding.

It is my experience that in the great majority of cases of extra-uterine pregnancy the death of the ovum is signaled by the occurrence of some degree of bleeding from the uterus, even though the amount of blood discharged is extremely small. On examination, the usual softening of the cervix is also absent, though this phenomenon is not an essential accompaniment of ectopic gestation, and its absence is not noteworthy. In addition, there are practically never any evidences of the concomitant signs of early pregnancy. These vague and negative features are practically the only aids to differential diagnosis and, needless to say, it is the rare exception that a correct conclusion is reached as to the etiology of the intraperitoneal bleeding.

The loss of blood naturally varies, thus, as pointed out by Novak⁵ in his analysis, there was a small amount of hemorrhage in the case reported by Jayle and others while the patients of Burge and Cohn each lost 2 liters of blood and in Peuch's fatal case 3 pints were lost.

The treatment, of course, is immediate laparotomy with oophorectomy or resection of the hemorrhagic portion of the ovary.

TYPES OF HEMORRHAGE OF OVARIAN ORIGIN

The pathology and the etiology of these lesions are probably their most interesting and puzzling characteristics. In a careful study of the subject, Wolf⁶ divides



Fig. 1.—Left ovary (gross specimen): R, site of rupture.

2. Bovée, J. W.: The Conflict of Clinical and Microscopical Evidence in the Diagnosis of Tubal and Ovarian Pregnancies, *Am. J. Obst.* **77**: 370 (March) 1918.

3. Caturani, M.: To What Extent Must We Depend upon the Microscopical Examination to Support the Clinical Diagnosis of Ectopic Pregnancy? *Am. J. Obst.* **79**: 716 (June) 1919.

4. Scanzoni, F. W.: *Lehrbuch der weiblichen sexual Organe*, Vienna, 1863, p. 402.

5. Novak, E.: Hemorrhage of Ovarian Origin, *Bull. Johns Hopkins Hosp.* **38**: 736, 1918.

6. Wolf, E. H.: Ueber Hematoma Ovarii, *Arch. f. Gynäk.* **84**: 211, 1908.

hemorrhages of ovarian origin into three types: (1) interstitial; (2) follicular, and, (3) intrafollicular.

According to Pfannannenstiel, these three varieties are of no practical difference, one type running into the other, and, indeed, all three may be present in the same ovary. Savage⁷ divides the sites of the hemorrhage into hematoma of the graafian follicle and hematoma of the corpus luteum. In the first type, he found that in places the wall of the hematoma was lined by a single layer of epithelium which he regarded as the membrana granulosa, lying on a basement membrane, and external to these two layers of tissue which appeared to correspond to the theca interna and the theca externa, both being vascularized, especially the former. The cells of the inner layer showed early lutein formation. Savage also found ill developed graafian follicles near the cavity of the hematoma, and some opening into it. In the second type, hematoma of the corpus luteum, he found that there was an outer shell of ovarian tissue which was for the most part congested. The inner part of the wall showed newly formed fibrous tissue, poor in cells. Near the lining in between the longitudinal strands of the tissue there were blood extravasations, many round cells and many large rounded cuboidal cells containing coarse, yellow granules. The nuclei of these cells were relatively small and in many instances seemed to be crowded toward the periphery of the cell.

In contradistinction to Savage, Vovak believes that the original site of graafian follicle hemorrhage is in the perifollicular stroma, and that it only later breaks into the follicle.

All observers are agreed that true stromal hemorrhage is very rare.

The search for an etiologic factor or factors in this connection is most baffling. Whether sclerocystic degeneration or a true fibrosis is at the bottom of the bleeding remains a matter of conjecture. Bovée⁸ makes the statement that no other organ in the body is so frequently the seat of hemorrhage as is the ovary, and it follows that there must be a varied and sometimes vague morphologic basis on which to account for the bleeding.

Some light may be thrown on this matter by the study of a case recently coming under my observation:

M. P. (7464 a), white, aged 37, married, was admitted to the Frankford Hospital, Sept. 9, 1920, suffering from generalized abdominal pain of one week's duration, with marked weakness.

The previous history was irrelevant. she had had seven normal labors and no miscarriages. Menstruation had always been regular, until thirteen years before, since when she has had irregular bleeding. Two months before admission she missed a menstrual period, after which a fairly profuse flow took place. For three weeks prior to admission, she had more or less constant uterine bleeding. For the last week, there has been considerable abdominal pain with increasing weakness.

The patient was a well nourished woman without lesions of the chest. Vaginally there was a soft, doughy mass in the culdesac and marked tenderness about the right ovary.

The temperature was 100 F., the pulse rate 90. The blood examination was: hemoglobin 45 per cent., red blood cells, 1,800,000; white blood cells, 6,600. The urine was negative as was the Wassermann reaction.

With these finding, a diagnosis of ruptured ectopic pregnancy was made and immediate laparotomy performed.

Upon incising the peritoneum, there was disclosed a massive hemorrhage of several days' duration, and on inspection, the right ovary was found to be the source of the bleeding, a ruptured hemorrhagic cystic cavity being apparent on its inferior aspect. The tube and the left ovary were normal. The ovary was removed, the patient making an uneventful convalescence.

Microscopically the ovary measured 4 by 4 by 3 cm. The surface presented the usual corrugated appearance of the mature ovary, and on the lower posterior surface was the cavity of a ruptured cystic area, measuring in its collapsed state 4 cm. in diameter. There were several minute hemorrhagic areas scattered throughout the parenchyma of the ovary, and there was no gross evidence of perioophoritis. (Fig. 1).

Microscopically, a section transversely through the body of the organ passing about at the place where the hemorrhage occurred, reveals a distorted organ very rich in blood vessels and poor in ovarian stroma. Numerous hyalin scars are seen and several yellow bodies. One recent follicle is lined with lutein cells. All these bodies, save one, seem normal. The one recent follicle is surrounded by a fresh hemorrhage. Aside from ovarian stroma, the interstitial tissue is relatively loose, except about the blood vessels; and in one place it is decidedly hemorrhagic (Fig. 2). The blood vessels are exceedingly numerous and present very wide walls. They vary in size from arterioles to $\frac{1}{2}$ a Zeiss A lens field. Nearly every vessel shows some subintimal and mesial degeneration (Fig. 3). The degree of this change is not greatly in excess of what might be expected in a late adult ovary; but the excessive number of vessels with their marked degeneration is noteworthy. It is possible that a rupture of one of them is responsible for the interstitial

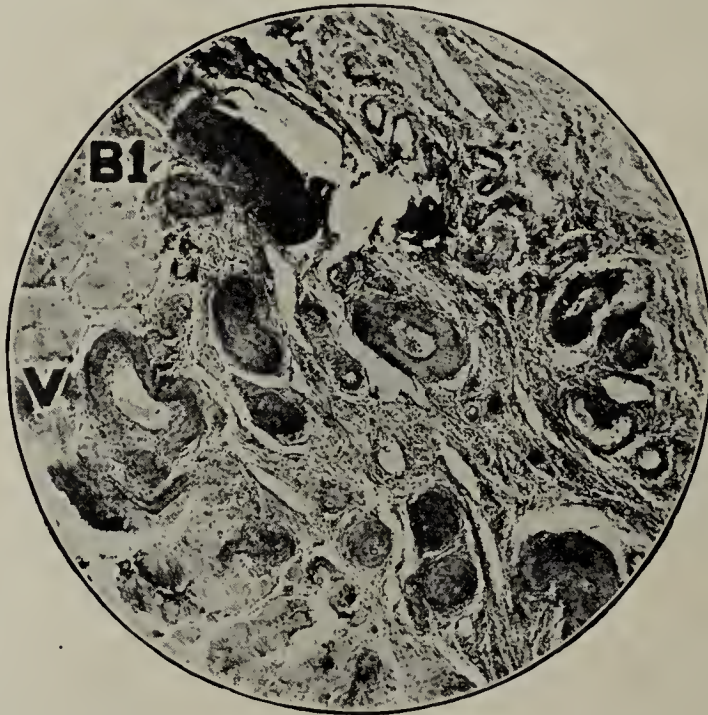


Fig. 2.—Low power view of area near the site of hemorrhage: B1, blood clot; V, vessels with thickened degenerated walls.

hemorrhage; but examination of several sections fails to reveal a rupture connected with a follicle. One area of marked accumulation of cells of the corpus luteum type are arranged in a form to suggest decidual formation; but there are no true villi present (opinion of Herbert Fox⁹).

Summarized, the pathologic condition existing in the case cited above is that of marked proliferation of the normal perifollicular vessels with an excessive degenerative arteritis of these vessels, and it is to this point in particular that attention is directed. While a certain degree of arterial degeneration is physiologic in the vascular network embracing the mature follicle, it is my opinion that such physiologic degenerative change is never responsible for massive hemorrhage, and when such accident does occur, some pathologic process must be present, as, in this case, a degenerative arteritis.

That such change can occur without other evidence of ovarian disease is well known, although the direct cause of the arteritis remains obscure.

7. Savage: Brit. M. J. 21:285; quoted by Hedley, J. P.: Hematoma of the Ovary, J. Obst. & Gynec. Brit. Emp. 18:293, 1910.

8. Bovée, J. W.: Tubal and Ovarian Hemorrhages, Surg., Gynec & Obst. 28:117 (Feb.) 1919.

9. Fox, Herbert, Director, Pepper Laboratory, University of Pennsylvania, personal communications.

Tubal hemorrhage in the absence of ectopic gestation is rare, and though instances are recorded in the literature, few of them withstand close scrutiny. There may be slight bleeding into the tube as remarked by Smith, especially in the presence of acute gonorrheal salpingitis, but even this is uncommon. Bovée quotes two cases, one of Ellsworth's, in which a young girl developed the signs of acute appendicitis on the day before menstruation was due and on operation there was found a notable intraperitoneal hemorrhage with a small laceration of the ampulla and of the tube and without microscopic evidence of pregnancy.

The other case is quoted by Leonard Freeman and is that of an athletic young girl, who, in vaulting over a fence, experienced violent pain in the abdomen and went into collapse. The abdomen was opened and the fallopian tube found torn near its middle. The uterus and other appendages appeared otherwise normal with no evidence of pregnancy. Both these cases are rather vague and do not throw additional light on the subject of tubal hemorrhage.

One case of this sort came under my observation:

An unmarried woman, aged 30, had noted a sharp attack of left sided pelvic pain, one year before admission. The pain gradually subsided, to recur at the menstrual period with increasing severity, each month. There was pain on defecation and slight loss of weight. On examination, a distinct mass was palpated in the left vaginal vault. Operation revealed a greatly distended left tube, the enlargement measuring 5 cm. in diameter, being globular in character and occupying the middle third of the tube. There was a small, organized pelvic hematocele, and the right tube and both ovaries were normal. The left tube was excised, the patient making an uneventful recovery.

On section of the tube the mass was found to consist of old organized blood clot. Microscopically, there was considerable erosion of the mucosa by hemorrhage into the muscular coat, but no evidence whatever of decidual formation, villi or syncytial cells.

CONCLUSIONS

The conclusions to be reached from the foregoing observations are:

First, that a diagnosis of extra-uterine pregnancy should never be definitely made until an embryo is found or evidences of decidual and placental formation are revealed by the microscope. This is particularly true in cases in which the social state of the patient precludes legitimate pregnancy.

Second, that when massive hemorrhage takes place from an ovary, there is usually, if not always, to be found some disease of the ovarian blood vessels. Normal ovaries do not give rise to massive hemorrhage.

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ABSTRACT OF DISCUSSION

DR. EMIL NOVAK, Baltimore: When a surgeon opens the abdomen of a woman and finds it to be full of blood his first thought is of a ruptured extra-uterine pregnancy, and in the

overwhelming majority of cases this assumption will prove to be correct. On the other hand, as Dr. Schumann has pointed out, there is a relatively small but well defined group of cases in which no evidence of pregnancy will be found. The most interesting group of cases is that in which the hemorrhage is the result of the rupture of a small follicular or corpus luteum cyst of the ovary, more commonly the latter. Some years ago I reviewed the literature of this subject. I compiled thirty-five cases of extensive abdominal hemorrhage of ovarian origin. Hematomas of the ovary are very common and are almost always caused by hemorrhage into the lumen of an atretic follicle or corpus luteum. Surrounding the wall of each follicular cyst of the ovary is a perifollicular vascular wreath which is the immediate source of the bleeding. In certain cases, however, the hemorrhage is of the perforative type, the blood breaking through the surface of the ovary and causing abdominal hemorrhage of varying degrees. Not a few fatal cases have been reported, and in one case of my own the patient was almost completely exsanguinated. The importance of this form of abdominal hemorrhage is obvious, and its possibility should always be borne in mind. A rather more glaring type of ovarian hemorrhage is not infrequently seen as a rupture of thin-walled ovarian cysts by bimanual examination before operation. All teachers of gynecology who are at times called on to operate after a number of students have examined the patient under anesthesia have observed this occurrence.

DR. ALBERT GOLDSPOHN, Chicago: I have had little difficulty in distinguishing tubal pregnancy from a beginning ordinary spontaneous abortion, because by bimanual palpation the uterus is usually found to be larger and to have a different shape and consistence in the latter than in the former condition. The features which have been most serviceable to me in the diagnosis of tubal pregnancy have been: (1) some irregularity with the last one or two menstrual periods, in being delayed or intermittently prolonged, usually with more or less pain of an unusual character in the affected side; (2) persistence of turgescence and tenderness of the breasts in those women in whom this is a usual feature during menstruation, and (3) local tenderness associated, in most cases, with some soft swelling which is found by gentle and careful bimanual examination,

in the affected side. The essayist has well said that the literature records quite a number of well authenticated cases of intraperitoneal pelvic bleeding from a corpus luteum or from a cystic graafian follicle. A notable case was reported by Schauta of Vienna, who did a hysterectomy and left a large ovary with a corpus luteum unmolested. During the next day the patient became sick from internal hemorrhage, which was found to have come from that corpus luteum by reoperation. These hemorrhages emphasize the pathologic nature of large and persistent corpora lutea that are not associated with pregnancy and of the cysts arising from them; likewise of the graafian follicle retention cysts, in which the ovule is usually dead and which cause much more pain than do cystadenomas (true neoplasms) of much larger size. The indication is therefore plain that, when an opportunity is afforded during a pelvic section for other reasons, ovaries should also be relieved of these degenerate formations by resection. In severely sick patients who are emergency cases, without an intelligent history, I have sometimes had difficulty in determining whether it was blood or pus that the pelvis contained. I have then made a transverse vaginal cautery incision into Douglas' pouch. Gauze drainage there for a few days adds much to the post-operative comfort of the patient in the ectopic section case; and it can be made to improve greatly and sometimes to cure



Fig. 3.—High power view of area near the hemorrhage, showing clearly the degenerated and thickened vessel walls.

the acutely septic case without a subsequent laparotomy, when the virulence of the infection has died out.

DR. EDWARD A. SCHUMANN, Philadelphia: I regret that my experience based on a study of 400 cases has not corresponded with Dr. Goldspohn's. I find so usual a disturbance of the breasts, minor in degree, associated with the ordinary menstrual period of young women, that a differentiation of that almost physiologic disturbance from the disturbance of the very early weeks of pregnancy is difficult. In Philadelphia, at least, patients usually come to the surgeon within the first five weeks, when the breast changes have not been particularly noteworthy. With regard to the differential diagnosis between blood and pus in the culdesac, we feel that in the majority of cases the diagnosis should be made easily without the necessity for vaginal puncture. I am very loath to do a colpotomy when I suspect blood in the abdomen, feeling that the convalescence can be much better obtained by an abdominal section alone without the added risk of possible introduction of infection by the vaginal route. I have seen few cases in which vaginal puncture is indicated.

THE SURGICAL TREATMENT OF LESIONS IN THE INTERNAL GENITAL ORGANS

ASSOCIATED WITH CHRONIC INFECTIONS *

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By the expression "lesions associated with chronic infections" I mean to imply those lesions which exist when an infection is chronic in its course; that is to say, when it has been chronic always, as in some tuberculous infections, or when an acute or subacute infection has become what we call chronic because the resistance of the patient is then able to neutralize any generalized toxemia, or because the organisms pres-

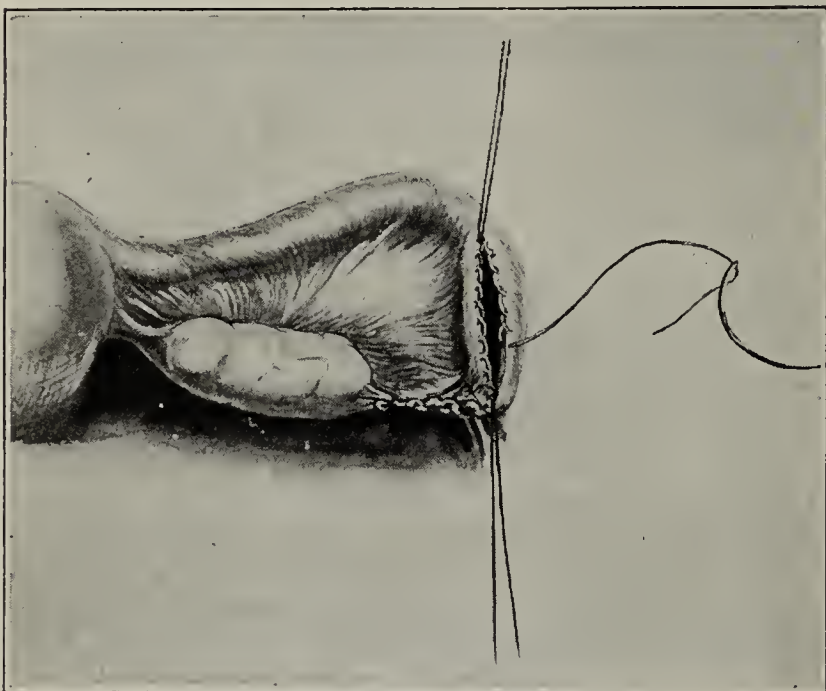


Fig. 1.—Salpingostomy: author's method.

ent have been destroyed. Such a desirable state, or consummation, as chronicity is of immense importance to the surgeon. By the recognition of the great safety of operation in these circumstances as compared with the dangers of extensive interference in acute

and subacute conditions, we have completely altered the mortality rate in regard to pelvic infections. I cannot here discuss the ways and means employed to avoid extensive interference in cases that are not chronic; but I think it is important that I should emphasize the desirability of the adoption, especially for teaching purposes, of some definite clinical



Fig. 2.—Suspension of tube and ovary—author's method—after salpingostomy has been performed.

chronicity test. My own rule is that, if a patient whose temperature has been absolutely normal for some time shows any degree of pyrexia on the evening or day following vaginal or rectal examination, an eradication operation must not be performed. The patient must be able to stand handling without showing any reaction before such an operation is safe. This is of most importance, of course, when we are dealing with lesions primarily due to streptococcal infection; but, as other infections, especially gonococcal, may be complicated by streptococcal invasion this test should always be applied.

It is well known to every scientific surgeon that the commoner organisms infecting the internal genitalia produce somewhat different lesions. Yet, at any rate in Great Britain, I do not think that this pathologic knowledge is often enough taken into account when the surgeon is dealing with the lesion present. Sometimes too much is done; more often, perhaps, too little. Albeit in no other surgical enterprise is the essential principle of scientific surgery seen to so great advantage as when properly applied to the lesions associated with chronic infections in the female pelvis: namely, the removal or treatment of diseased structures, without which the symptoms cannot be cured, with conservation, as far as possible, of function.

PUERPERAL STREPTOCOCCAL INFECTIONS

The streptococcus, unlike the gonococcus, does not usually lead to destruction of the lining membranes of the uterus and fallopian tubes. This organism tends, rather, to pass through the mucosa to reach the lymphatics. Abscesses may, however, result from an acute infection in the uterus, tubes and ovaries; but, in my experience, abscesses in the uterus and tubes require intervention before they can become chronic, whereas abscesses in the ovaries may be encountered in a quiescent state. The chronic lesions, then, may consist of chronic metritis (fibrosis uteri), as a separate pathologic entity, or of salpingitis with the production of a hydrosalpinx or a sealed abdominal ostium, either

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

alone or associated with an ovarian abscess. Such infections are often limited to the appendages of one side.

When the lesion is unilateral it is necessary to remove only the tube and ovary of the affected side, if no conservative operation, such as salpingostomy is indicated.

If both tubes are occluded but not distended, and at least one ovary appears to be little affected, then salpingostomy on one or on both tubes should be practiced. It is useless to perform salpingostomy on a hydrosalpinx, for the uterine end of the tube is blocked.

If both ovaries contain abscesses they must be removed, and a portion of one must be grafted. If this is necessary, conservative operations on the tubes are, of course, unnecessary.

When, usually many years subsequent to infection, a uterus in which extensive fibrotic changes have taken place is encountered, vaginal hysterectomy should be performed to save the patient from the evil consequences of excessive menstrual losses. Generally, in these circumstances, the appendages are healthy.

APPENDICULAR INFECTIONS

Appendicitis in women is always an operation for the gynecologist. Only too frequently the right ovary and tube, if not the left appendages also, are involved. Since the infection, which consists of an invasion by organisms from the large bowel, has spread directly from outside, the lumen of the fallopian tube is but rarely implicated. The tube and ovary, on one or on either side, become bound down, and the abdominal ostium becomes occluded by peritoneal adhesions. The ovary usually becomes cystic. When the infection is severe, suppuration in the ovary and tube may occur; but I do not think this is common. The uterus, of course, practically always escapes.

In a large majority of cases, it is, then, only necessary for the surgeon, after the appendix has been removed, carefully to cut through adhesions which are generally fine, to excise cysts from the ovaries and, when the abdominal ostium is sealed, to perform salpingostomy. Afterward the tube and ovary should be supported by fixation of the ovarian ligament to the round ligament (Figs. 1 and 2).

The functional results of salpingostomy cannot yet be stated with certainty, at least so far as my own cases are concerned; but the fact that conception does occasionally follow this procedure encourages me to hope that with improvements in our technic it will more

often be successful. Moreover, it is consoling to the patient to know that there is a possibility, however remote, of subsequent pregnancy.

TUBERCULOUS INFECTION

There is still need for further observations on the origin and dissemination of infections by the tubercle bacillus in the female genital organs. Here it may be found apparently as the only somatic tuberculous focus in young girls. In adults, quite commonly it follows tuberculous infection of the peritoneum. Is the lesion seen in young girls secondary, therefore, to infantile tuberculous peritonitis, from which the patient has recovered, or is it the result of some obscure blood conveyance, and, if so, whence has it come?

In the few cases in which I have observed this condition in girls, there has usually been complete arrest of the genital functions, with implication of all the internal reproductive organs. In such circumstances, if surgical procedures are indicated, complete removal of the genital organs is necessary. If, on examination, an ovary appears unaffected, it may be left. Happily, these lesions in young girls are rare.

On the other hand, tuberculous infection of the genital organs occurring during the young adult reproductive period is unfortunately common. We have usually to deal with two distinct phases—I say “phases” rather than “types” because I believe the origin of tuberculous infection in adults is almost always the result of previous peritoneal infection. The first phase is that in which there is generalized tuberculous peritonitis often with considerable effusion of free fluid into the abdominal cavity. In these circumstances, thickened peri-

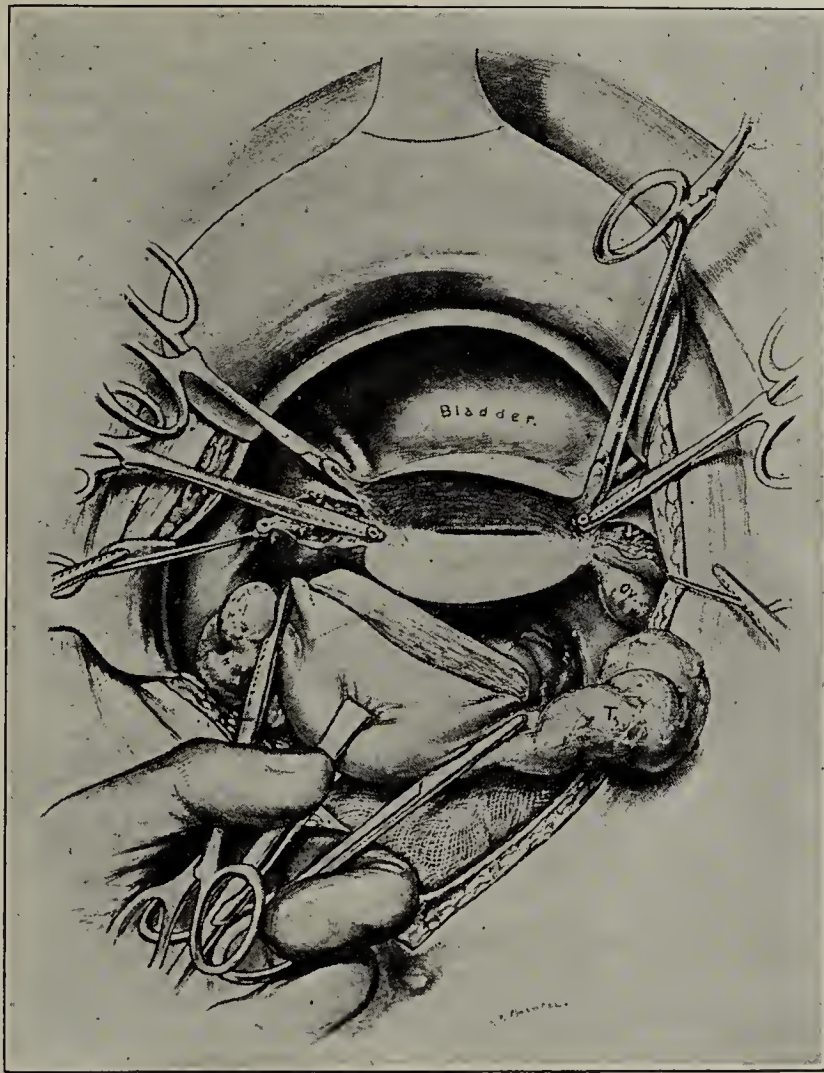


Fig. 3.—Author's operation of achrohysterosalpingoophorectomy, first stage. In the illustration the right ovary is shown to have been retained. This is rarely possible.

toneum, studded with small tubercles in the pelvis, as elsewhere, covers uterus and tubes; the tubes are swollen, but the ostia are open and the lumina may contain no pus; the ovaries are frequently unaffected, and only the peritoneal surface of the uterus is involved.

What treatment are we to adopt? Is it sufficient to evacuate the fluid from the peritoneal cavity and to trust to the recovery of the pelvic peritoneum along with that lining the rest of the abdominal cavity? I do not think it is, although I have in the past sometimes contented myself with evacuation of the free fluid in the abdomen, and have left the tubes in the hope that they might escape luminal infection. But my hopes in this respect have not been justified. The case herewith reported indicates what I believe not infrequently occurs if the tubes are left.

REPORT OF CASE

A woman, aged 34, when first seen, complained of abdominal pain which had commenced after a confinement, six months previously. Her abdomen was full of free fluid, obviously the result of tuberculous peritonitis. I evacuated the fluid and removed the appendix, but did not interfere with the genital organs, which appeared unaffected except on the peritoneal surfaces. Thirteen months subsequently she

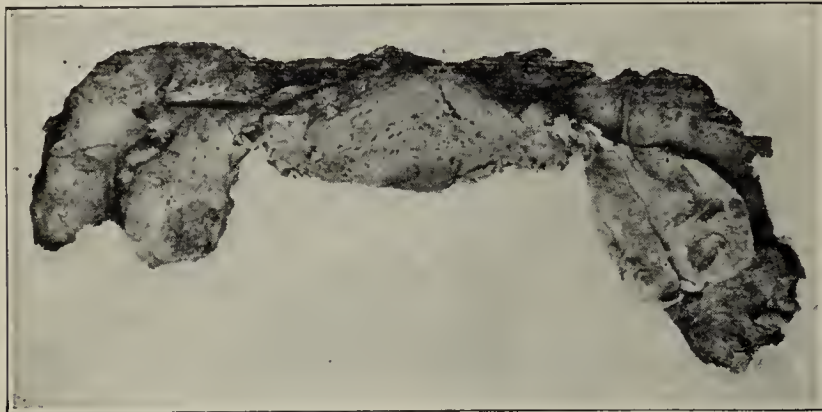


Fig. 4.—Specimen removed at the operation of acrohysterosalpingoophorectomy; a portion of the right ovary has been removed for grafting.

consulted me again, when I found that the appendages were grossly infected. Laparotomy was performed once more, and it was observed that the general peritoneal cavity and the pelvic peritoneum had completely recovered, but that the tubes and uterus were seriously diseased. The ovaries appeared to be normal. I performed panhysterectomy with removal of both tubes and the left ovary. The tubes had been converted into pyosalpinges, and the mucosa of the uterus, including that of the cervix, was diffusely infected.

Some months later, the patient was found to be suffering with tuberculous ulceration of the vault of the vagina. This was scraped and cauterized, and apparently cured. Later, I heard that the patient had been treated by a physician for tuberculous pleurisy.

It appears to matter little, therefore, whether the tubes are obviously involved in the presence of a generalized peritoneal infection or not, for by the time the patient seeks advice and the fluid is evacuated the lumina are infected in almost every case. The practice on which Mayo and others have insisted should be followed: The tubes must be removed when the peritoneal fluid is evacuated, and I think it wise to remove with them the uterine cornua.

The ovaries are unaffected, as a rule, by an infection reaching them from without, that is, from the peritoneum. Hence, it is usually safe to leave one of them if it should show no obvious lesion, or to graft a portion of it.

In those cases of tuberculous infection of the pelvic organs in which the peritoneal infection has subsided, it is, I think, usual to find bilateral pyosalpinges which may be associated with ovarian abscesses. The uterus may be affected; but in many old standing cases, this is found to be so only in regard to the cornua, if this organ is infected at all. Sometimes there is menorrhagia, but more often there is scanty menstruation or amenorrhea. In most instances, especially when the ovaries are involved, the tubes, ovaries and the uterus should be removed. Sometimes it may be possible to graft a portion of an ovary.

GONORRHEAL INFECTIONS

I need say nothing to an assembly such as this of the frequency of ascending gonorrheal infection of the female genital tract.

By the time the patient presents herself for treatment, surgical interference alone usually offers the only satisfactory and sure prospect of relief; but surgical treatment to be successful must, as always, take account of the symptoms and lesions present.

If the infection has been slight and the patient's resistance has been high, the tubes alone may show pathologic changes: hydrosalpinges have formed. The uterus has entirely recovered and the ovaries have never been affected. All that is necessary, therefore, is the division of adhesions and the removal of the tubes. Should an ovary be cystic it may be removed or the cyst excised.

With regard to the more serious lesions produced by the gonococcus, there are four points in the pathology and symptomatology that require consideration. First, the gonococcus tends to remain long localized in the mucous membranes and to destroy that in the tubes. Second, sterility is practically inevitable when the tubes are involved. Third, the ovaries are frequently infected. Fourth, a large majority of all patients so affected suffer with menorrhagia. In many of these cases, there are, then, cervical infection, bilateral pyosalpinges, infection in a lesser or greater degree of the ovaries and of the fundus uteri. The treatment is, therefore, based on the conditions present.

The cervix, if it is lacerated or is still in a state of live infection, should first be amputated; but often it is entirely quiescent, noninfective and in the virgin state.

In sexually active women, who form by far the largest class of patients, when the fundus uteri and appendages are attacked, my practice is to perform the operation I described some years ago. By this operation I excise in one piece the tubes, ovaries and a transverse wedge-shaped portion of the fundus uteri (Figs. 3, 4 and 5). Afterward I unite the uterine flaps, attach the stumps of the infundibulopelvic and round ligaments to the posterior aspect of the reconstructed uterus on either side, and then cover the uterus and all raw surfaces with a flap of peritoneum dissected from the uterovesical pouch and anterior surfaces of the

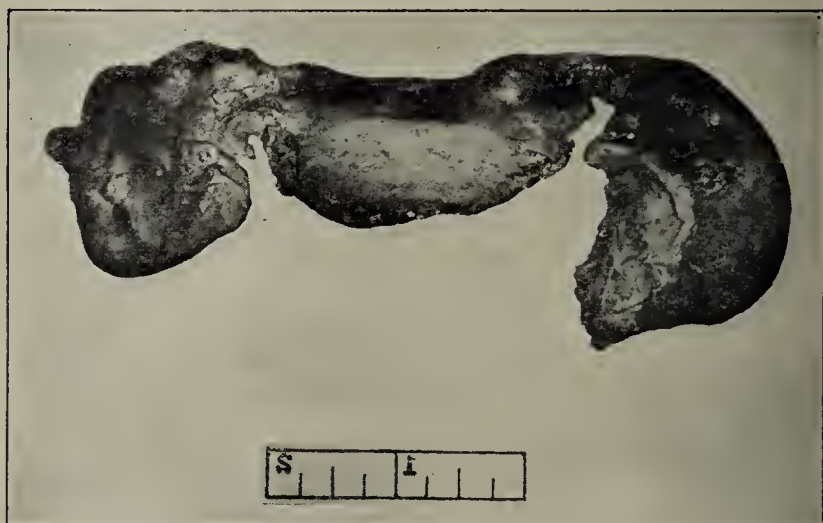


Fig. 5.—Specimen removed at the operation of acrohysterosalpingoophorectomy; a portion of the right ovary has been removed for grafting.

broad ligaments (Fig. 6). Subsequently I make an ovarian graft. A somewhat similar operation on the uterus and tubes—without ovarian grafting—has been independently devised and practiced by Beuttner of Geneva. In the first forty cases published by this surgeon and his assistants there were five deaths—a very high mortality. I have, at the time of writing, per-

formed my operation 125 times with the loss of only two patients, one of whom died from an intercurrent affection.

Functional results have been obtained in over 80 per cent. of all my cases of ovarian grafting. Of the cases in which menstruation has been possible, owing to a portion of the uterus having been retained, menstruation has occurred in 70 per cent.

I regret that time will not permit my discussing ovarian grafting in more detail and at greater length. I wish, however, especially to urge that this valuable procedure be practiced in cases in which it is not safe to leave an ovary in the pelvis lest it become adherent and cystic. There are still some of us who are satisfied by the experimental and clinical evidence at our disposal that the ovary is of real importance to the sexually active women. In women nearing the menopause, I sometimes perform supravaginal or complete hysterectomy, but almost invariably I make an ovarian graft, which even at this time of life is of immense value in tiding the patient quietly over what may otherwise be a stormy climacteric.

CONCLUSION

In the foregoing remarks I have attempted very briefly to outline my own practice in the treatment of lesions associated with chronic infections, and I have tried to explain how my methods are based on a conception of the pathologic actualities and possibilities, and on the importance of the conservation of function when this is practicable.

38 Rodney Street.

ABSTRACT OF DISCUSSION

DR. C. JEFF MILLER, New Orleans: It should not be

necessary to stress the importance of preserving the function of the generative organs, but it is unfortunately true that many surgeons operate in the acute stage of infections, when nothing short of a radical operation could be done. Pelvic infections almost invariably become sterile, exudates disappear, and a fair percentage of cases will never require operation; and, if an operation is eventually necessary, it is surprising how much of the structures can be saved, and how often some plastic measure is possible. Conservative work, however, requires a great deal of experience and a knowledge of pathology, in order to obtain the best results; types of infection must be differentiated whenever possible, and if a conservative operation is contemplated, gonorrheal infection should be eliminated, or results are by no means gratifying. In my experience, conservative work has been more applicable to puerperal lesions than to other types, since we do not find the lumen of the tube so often damaged. The removal of adhesions about the tubes and fimbriae following puerperal infections is most satisfactory, and in such cases the plastic operation devised by Dr. Bell is especially applicable. In tuberculous lesions, conservative measures are to be discountenanced. In 90 per cent. of cases of tuberculosis of the pelvic organs, the tubes are involved, and in 25 or, possibly, 30 per cent., the endometrium is involved. In these lesions, the tubes should always be removed, and in

the majority of instances a hysterectomy is indicated. As to ovarian grafting, I approve of Dr. Bell's stand on this subject. During the last eight years I have resorted to ovarian grafting in about thirty cases, and the results have been most gratifying. It is usually possible to save at least a portion of an ovary, and even a small remnant will frequently preserve menstruation for months or years, and permit of a gradual menopause. I have often deliberately transplanted an ovary, when the condition of the pelvis was such that I felt that adhesions would follow the operation, having found by previous experience that not a single patient subjected to ovarian grafting had suffered afterward during menstruation. With one exception, menstruation was reestablished within four months in every case. Some women menstruated from one to two years; others have menstruated as long as eight years. I believe that many have been disappointed in ovarian grafting because of the technic adopted. The method presented by Dr. Bell is an ideal one, and if followed in detail will be found satisfactory. Excising the fundus of the uterus, together with the tubes is applicable in some cases, but by no means good as a routine operation. I have performed the operation in several instances, but I felt that the convalescence and condition of the pelvis afterward was not so good as when the tubes

were removed thoroughly at the cornua, and the peritoneum carefully closed over the stumps. In two or three instances metrorrhagia developed some time after the operation, and one case required the removal of the balance of the uterus. I think the operation especially applicable in young women, when the uterine structures appear involved, and when a special effort is to be made to preserve menstruation.

DR. ARTHUR CURTIS, Chicago: In a recent study of the bacteriology and the pathology of the fallopian tubes removed from about 300 women, I have been more than ever impressed with the importance of making a differentiation of the etiologic cause of these infections, because the treatment should differ according to the organism which is causing the

trouble. In gonococcal infections, in a study of the entire tube where it has been thoroughly ground so that we are sure we missed no bacteria which might possibly be buried in the tissues, it has been found that we are never able to obtain the gonococcus more than ten days or two weeks after fever and leukocytosis have disappeared entirely. This means that chronic infection in the fallopian tube in case of gonorrheal disease almost never exists. Those instances in which we have heretofore made a diagnosis of chronic salpingitis are really reinfections from the original external source, or recurrence of infection due to ascent of the gonococcus from the infected lower genital tract, especially from the cervix. Again, I have noted that if one isolates the patient from the source of her infection at the beginning of salpingitis, almost never does a lesion of very severe degree follow; the tubes are not markedly altered, and the patient has limited symptoms. In streptococcal infection the story is different. Instead of the bacteria quickly disappearing, one is often able to isolate the streptococcus in considerable numbers, not only months but many years after the origin of the infection. Another diagnostic feature of importance is that in streptococcus disease we are apt to find extremely firm adhesions; the same is true of tuberculous salpingitis, easily amenable to separation by blunt dissection, with either the scissors or the fingers. Indications for operation.

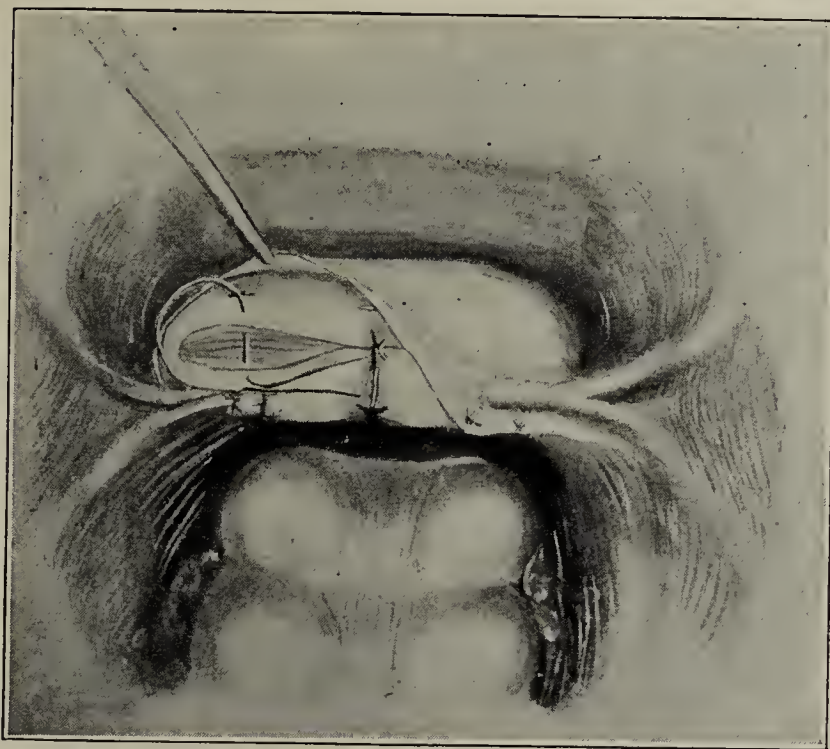


Fig. 6.—Final stages of the author's operation of acrohysterosal-pingoophorectomy.

in streptococcic and in tuberculous infections are quite similar. In the severe infections it is advisable to be rather radical because viable bacteria are often still present. If there is a questionable ovary, it is desirable to remove it, whereas in gonococcic infections with slight ovarian involvement we may leave the ovary because we know the organisms have already disappeared.

DR. SIDNEY A. CHALFANT, Pittsburgh: After listening to Dr. Bell, I realize that my technic has been faulty. I have been in the habit of placing the graft under the skin, but on top of the fascia, realizing that the blood supply was not of the best, and fearing to place it deeper on account of infection. I had one graft that became infected and sloughed out after a few days. Accordingly, my results have not been so good as Dr. Bell's. I have had the same experience, the amenorrhea with all the symptoms of the menopause varying from four to six months; then a recurrence of menstruation persisting for a number of years. I have felt, too, that the graft was of value in cases in which the uterus had been removed and menstruation was impossible. In comparing the number of those cases with the patients who had had a previous complete hysterectomy without graft, I have found that there was a definite lessening of the severity of the menopausal symptoms. The persistence of streptococcic infection has been proved by two tragedies. One patient sustained a fracture of the femur on her way to the hospital for her operation, having been struck by an automobile. For three or four months she had a normal temperature, except during an attack of acute tonsillitis about three weeks before operation. The test, as suggested by Dr. Bell, was negative. Examination made on two occasions preceding her operation was without any resultant rise in temperature. She developed an acute streptococcus peritonitis and died within thirty-six hours. There was a little leakage of the tube at the time of operation, which probably was the source of infection.

DR. GORDON COPELAND, Toronto, Canada: Would you not differentiate genital tuberculosis into two classes? Tuberculosis is a systemic disease, and the genital infection in the majority of cases is only one part of the whole complex. Those of us who have given some attention to heliotherapy, especially following the work of Rollier, have been impressed by its importance. In many cases a thorough treatment by this method will totally eradicate the genital tuberculosis together with manifestations of the disease in other parts of the body. There are certain cases in which the indications would be to use the more conservative methods of heliotherapy first. In the majority of cases, if a cure is not effected, it will at least improve the patient's general condition so that she will stand operative procedures better.

DR. HENRY SCHMITZ, Chicago: In the Cook County Hospital, tubal infections amount to 75 per cent. of all cases that come under observation. While in private work 50 per cent. of tubal infections are operable, in the Cook County Hospital the indications for operation are more numerous. These patients are entirely dependent on the county when physically disabled, and their mode of living is such that if we treat them conservatively they go back to their old ways and return to the hospital with the same infection. The result has been that I have been very radical in the treatment of these conditions. As soon as the patient's temperature has remained normal for one week, I resort to the bilateral operation. I remove the tubes and ovaries radically, no matter what the age of the patient. I save as much ovarian tissue as I can. It remains in the posterior culdesac. The ovarian tissue is cut into cubes. The rectus muscle on one side is split and the cubes are placed within the substance of the muscle. The ovarian tissue very easily slips out unless this is closed. It takes usually four or five months before these patients will begin to menstruate. They rarely complain of any symptoms which may be attributed to menstruation.

DR. W. BLAIR BELL, Liverpool, England: There has been general agreement in the principles of dealing with these lesions. Just one or two points of interest have been raised. When Dr. Miller operates on the tuberculous pelvis he does a supravaginal hysterectomy. My procedure is simply to remove the tubes and the cornua of the uterus. Removal of

the body of the uterus alone is not very good practice. It is better to remove the whole organ. If the fundus is infected, the cervix is also in the majority of cases. I was very much interested to hear Dr. Miller's experience of the menopause supervening after ovarian graft. My experience has been the same. When it does not remain that long, the menopause is a very easy one. I leave the fundus wherever I can, or a portion of it, in order to preserve menstruation. Dr. Curtis' work on etiology will be widely recognized all over the world. I agree with all the points he stated, especially in regard to the streptococcus. The test I mentioned is most accurate for streptococcic infections. Dr. Chalfant spoke of infection. I have put the graft in the internal oblique muscle. I think every one of these patients has menstruated since and has remained well. I agree with Dr. Copeland that the tuberculous infections must be divided into two groups. I was dealing only with local pelvic infections. Chronic infections of the pelvis with free ascitic fluid are, in my experience, almost invariably cured as far as the disease is concerned in that region. Not in one of my cases have I had a subsequent infection. Dr. Schmitz mentioned the question of the conservation of tissue in the pelvis. In very many cases an ovary becomes adherent again and it is no better than a satisfactory ovarian graft which will save the patient a further operation.

TUMORS INVOLVING THE GASSERIAN GANGLION *

WALTER D. SHELDEN, M.D.

ROCHESTER, MINN.

The relative infrequency of involvement of the gasserian ganglion by tumor is my justification for presenting this subject for your consideration.

In 1900, Dercum, Keen and Spiller¹ reported the first case in the English literature of tumor involving the gasserian ganglion and the second to be treated by surgical measures. In 1918, Frazier² reported forty cases from the literature and three of his own. Thirteen of these, including his three cases, were treated surgically.

The literature on the subject has been so thoroughly reviewed by Spiller,³ Hellsten,⁴ Frazier² and others,⁵ that to repeat it seems unnecessary. I shall, therefore, confine my discussion largely to the data concerning the four cases here reported.

REPORT OF CASES

CASE 1 (A 125267).—J. F., a man, aged 26, examined, Feb. 25, 1915, had had tuberculosis of the right knee at the age of 12, the recovery resulting in ankylosis; an abscess of the rectum at 16; typhoid at 17, and an acute otitis media of the right ear at 22. Eighteen months before he began to have pain in the right cheek and in front of the right ear with

* From the Section on Neurology, Mayo Clinic.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Dercum, F. X.; Keen, W. W., and Spiller, W. G.: Endothelioma of the Gasserian Ganglion; Two Successive Resections of the Ganglion; First, by the Extradural (Hartley-Krause) Operation, and Secondly, by an Intradural Operation, *J. A. M. A.* **34**: 1026-1033 (April 28) 1900.

2. Frazier, C. H.: Tumor of the Gasserian Ganglion, *J. Nerv. & Ment. Dis.* **45**: 440-441, 1917; An Operable Tumor Involving the Gasserian Ganglion, *Am. J. M. Sc.* **156**: 483-490 (Oct.) 1918.

3. Spiller, W. G.: Tumor of the Gasserian Ganglion, *Am. J. M. Sc.* **136**: 712-725, 1908; Remarks on the Central Representation of Sensation, *J. Nerv. & Ment. Dis.* **42**: 399-418, 1915.

4. Hellsten, M.: Ein Fall von Ganglion Gasseri Tumor, *Deutsch. Ztschr. f. Nervenhe.* **52**: 290-305, 1914.

5. Cadwalader, W. B.: Significance of Facial Pain in Determining the location of Intracranial Tumor, *Arch. Neurol. & Psychiat.* **4**: 182-184 (Aug.) 1920. Hofmeister and Meyer: Operierter Tumor des Ganglion Gasseri, *Deutsch. Ztschr. f. Nervenhe.* **30**: 206-222, 1906. Sachs, E.: Tumors of the Gasserian Ganglion, with the Report of an Operated Case, *Ann. Surg.* **66**: 152-159 (Aug.) 1917.

radiation toward the chin associated with burning within the cheek and on the right side of the tongue. The pain was almost constant with occasional severe exacerbations; it was intensified by lying on the left side, by pressure in the right auditory meatus or by blowing the nose. For five months he had not been able to open his mouth as wide as usual, and

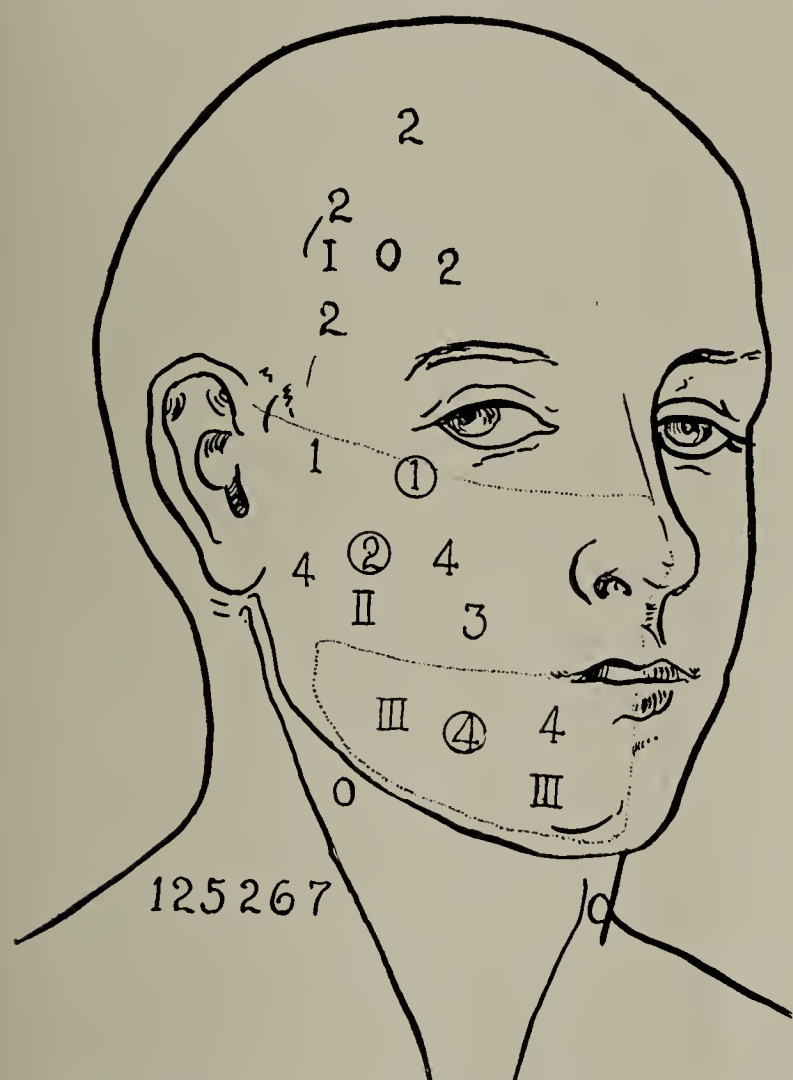


Fig. 1 (Case 1).—Anesthesia chart: tactile disturbance, 0 to 4 in circle; pain disturbance, 0 to 4; temperature disturbance, 0 to IV.

the jaw deviated to the right. During the last month he noticed that the right pupil had become smaller than the left; that the right cheek, chin and the right side of the tongue were numb, that fluids escaped unnoticed from the right side of the mouth, that taste was impaired on the right side of the tongue, and that his voice had developed a nasal quality. Following a cold about six weeks before, the glands below the left jaw had enlarged, and after ten days, incision and drainage were required.

The patient was 20 pounds underweight, but his color was good. The general examination was negative, except for enlarged glands under both jaws, the left the larger. Glands taken from both sides were found to be tuberculous on microscopic examination. The Wassermann test of the blood was negative. The right pupil was smaller, the vision in the right 20/30, in the left 20/20; the light and convergence reactions were normal, the fundi were negative, the right corneal reflex was practically lost, the ocular movements were normal, but there was a slight ptosis of the right lid. The sensation disturbance of the right fifth was of an unusual type. Touch was lost over the chin, and moderately impaired over the cheek, while over the forehead it was normal and equal with the left. Recognition of head and point was lost over the chin and the cheek, and much impaired over the forehead. Temperature was most impaired over the chin but was not abolished; it was impaired but less so than pain over the cheek and forehead. The quite definite dissociation of sensation remained constant throughout the period of observation. Heat and cold were not specified separately. The masseter and temporal of the right side were weak, and the jaw deviated to the right on opening. The soft palate was weak on the right side. The remainder of the central nervous system was negative. Hearing was normal in the left ear. The right drum

was greatly retracted and contained a small perforation, causing a moderate impairment of hearing.

The patient was examined several times during the period from February to July, this interval being employed for a therapeutic test with mercury rubs and potassium iodid. A septum operation was performed for a high deflection with a septal spur. This gave a good functional result, but the pain was not modified. The right antrum was irrigated because of defective transillumination, with negative results. In May, double vision was first noticed; it was due to weakness of the right external rectus. This increased gradually and remained constant. In June, ptosis seemed more pronounced, but transient. By July, the motor fifth was completely paralyzed, as was also the right side of the soft palate. At this time a gland was removed from the left side of the neck; on microscopic examination it proved to be tuberculous.

Notwithstanding the presence of glandular tuberculosis, we believed we were warranted in exploring the gasserian ganglion region. A spherical tumor about 1 cm. in diameter coming directly from the tissue around the ganglion was removed (Beckman). The microscopic diagnosis of the tumor was endothelioma (Fig. 2). Two weeks later a gland removed from the right side of the neck was also found to be tuberculous.

For a month following the operation there was no pain, after which it gradually returned in the same area. In September and October, alcohol injections were given in an attempt to relieve the pain, but with no definite result. Further observation was not made, but information was received that the patient's symptoms gradually intensified until his death in July, 1916.

CASE 2 (A 232362).—Mrs. D., aged 45, examined, May 25, 1918, had had good health except for attacks of diphtheria four years and two years before. About six months before the onset of her present symptoms she received a severe blow on the forehead, which did not cause unconsciousness, nor was there any evidence of fracture. She had had tinnitus, especially in the left ear, for two or three years. One and one-half years before coming to the clinic she began to have severe steady pain in the left cheek, which had been practically constant since onset. All the teeth had been removed, and the left antrum had been opened five months before, without relieving the pain. The last two months, a hoarseness and some difficulty in swallowing had developed. For a considerable period she had had epileptiform attacks at intervals of two weeks. Several alcohol injections had been made without relief, although the numbness in the face was considerably

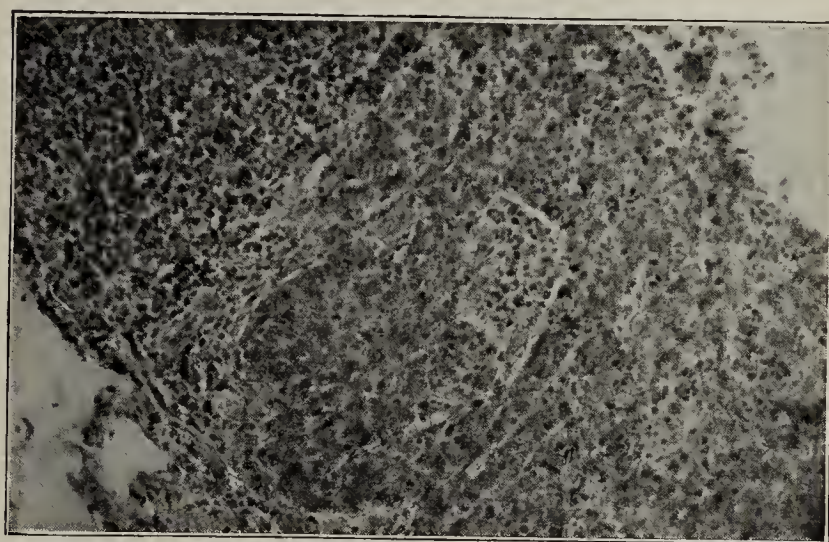


Fig. 2 (Case 1).—Endothelioma (this tumor is indistinguishable from squamous-cell epithelioma of a high degree of malignancy); $\times 100$.

increased by them. The patient was quite weak, emaciated, and suffering from severe pain.

There was complete paralysis of the left external rectus, and also slight ptosis. The left pupil was slightly smaller than the right; the pupillary reaction to light was markedly reduced; the reaction to convergence was normal. The fundi were normal. There was slight nystagmus on looking to the right. The left masseter and temporal muscles were greatly weakened, and the jaw deviated to the left. Tactile sensibility

was lost over the left chin and the angle of the mouth, and it was pronouncedly impaired over the left cheek, the degree gradually lessening toward the forehead, where it was normal. Pain and temperature sensibility were lost over both the chin and cheek, and were moderately impaired over the forehead. The left auditory meatus was anesthetic to pin-prick. The

external rectus was paralyzed. The upward movement of the left eye was greatly impaired. The movements downward and inward were impaired. The movement of the right eye was normal. The left masseter and temporal muscles were weak and atrophied and the jaw could be moved only to the left. There was no anesthesia of the face; touch with cotton was somewhat painful. Hearing in the right ear was normal, but the left ear showed a profound nerve deafness. The tongue protruded to the left, its movements were slow, and pronounced atrophy was present on the left side with fibrillary twitchings. The left sternomastoid showed definite atrophy and weakness.

June 5, the gasserian ganglion was exposed for palliative and exploratory purposes. The site of the ganglion was occupied by a large bluish red tumor, of which only a portion 2.5 cm. in diameter was removed. The tumor was believed to be endothelioma on microscopic examination (Fig. 5). The posterior root was cut. The pain was entirely relieved for one year.

After the patient's dismissal from the clinic, an ulcer of the cornea developed which eventually healed, leaving a dense corneal scar with blindness. In December she had a mild attack of influenza which appeared to have no serious effect. Coincidentally with this she lost her voice; a pronounced hoarseness has persisted since.

December, 1919, the patient returned to the clinic because, during the previous three months, pain had recurred and complete ptosis of the left lid had developed. The pain was now felt not only in the left face but also in the left neck, shoulder and arm. Besides the ptosis, the left eye was practically without movement, and was blind; the record, however, does not state whether or not light perception was lost. Vision in the right eye was 6/5; the fundus and ocular movements were normal. The anesthesia was total and of typical distribution following section of the posterior root. The left vocal cord was paralyzed, which explained the persistent cough and hoarseness. A few small, hard lymph glands were found behind the left lower jaw; they were not removed. These additional signs indicate that extension of the process had occurred along the middle and posterior fossae. Only palliative measures were advised.

CASE 4 (A 213637).—H. M. D., a man, aged 28, examined, Nov. 13, 1917, had had convulsions during the first two years of his life. When he was 4 a congenital convergent strabismus of the left eye was noticed; he was operated on for this when he was 9. At the age of 15, the left eye became divergent; this was operated on when he was 17. Both eyes have always

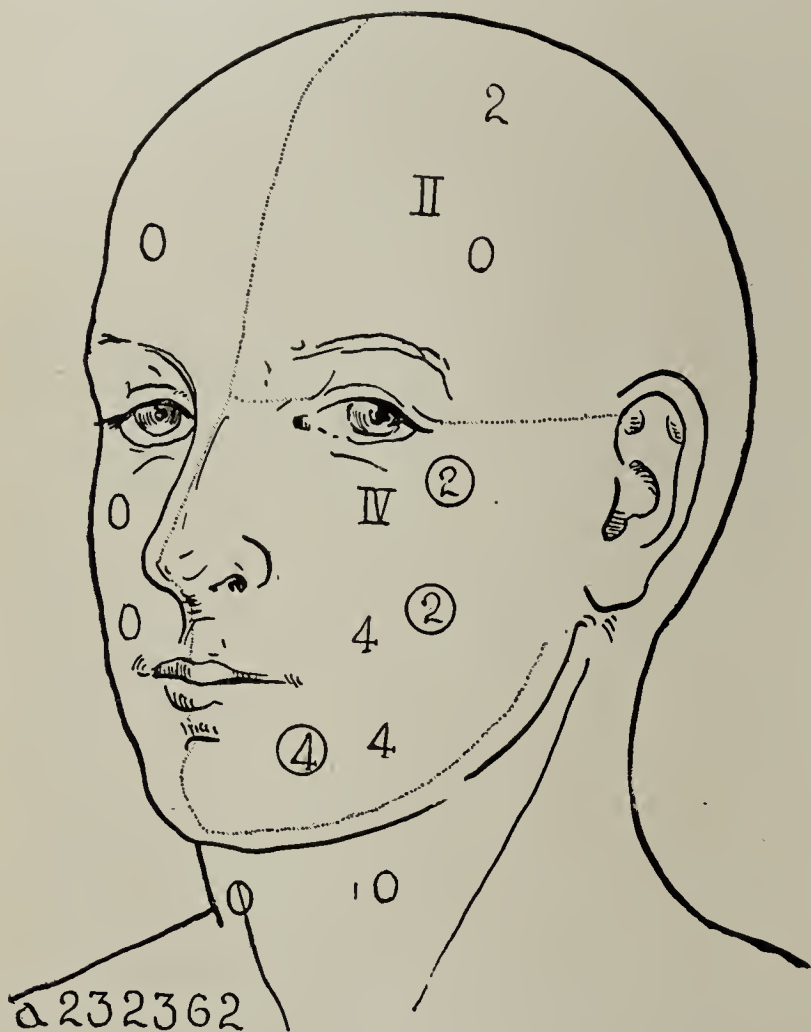


Fig. 3 (Case 2).—Anesthesia chart.

left side of the face seemed a trifle flat, but the power seemed normal. The watch-tick was not heard in either ear, and tests with the forks indicated a marked nerve deafness in both ears, especially the left. The soft palate was pulled toward the right, and fluids were often deflected through the nose on swallowing. The left vocal cords were paralyzed. The left sternomastoid was weak. The left half of the tongue was markedly atrophic, with fibrillary twitchings near the tip. The reflexes of the arms were normal; the knee and Achilles on the left were somewhat more active than on the right, and there was a Babinski response from each foot. The abdominal reflexes were absent. The sensation, with the exception of that of the face, the coordination, the station and the sphincter control were normal.

June 15, an attempt was made to relieve the severe pain by section of the posterior root of the fifth nerve. Through the usual approach the ganglion with a portion of the tumor was removed *en masse* and the posterior root cut. A partial paralysis of the left seventh nerve appeared after the operation. Only temporary relief from the pain was obtained. The pathologist diagnosed endothelioma (Fig. 4). In December, 1918, a report from her physician stated that symptoms continued with gradually progressive emaciation until death.

CASE 3 (A 231496).—Mrs. Z., aged 47, examined, May 15, 1918, had always been in good health, was well nourished, and had a good color. Eleven months before she began to have severe pain on the left side of her head; this had been practically constant since. Six months before a convergent strabismus appeared in the left eye. All the teeth on the left side had been removed, and a nasal operation had been performed five months before, but without relief.

The general examination was negative. The blood and spinal fluid were negative. Vision in the right eye was 6/6, in the left 6/15. The pupils were equal, and pupillary reaction was normal; the fundi and fields were negative. The left

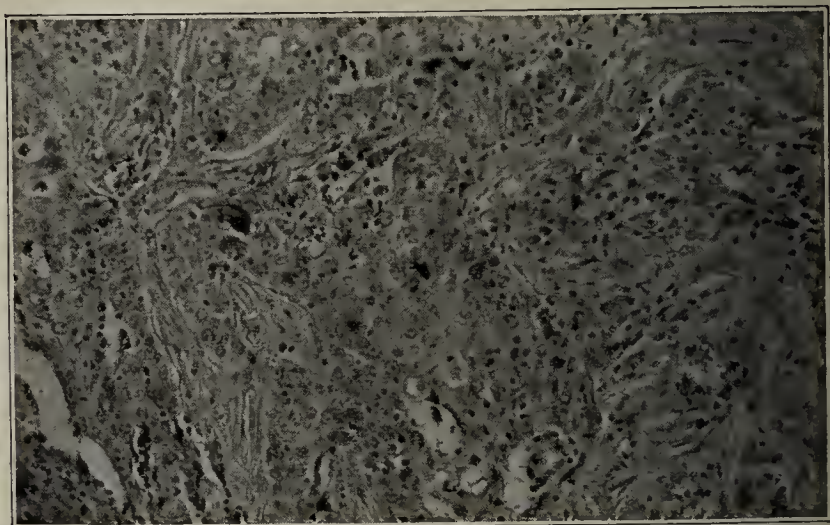


Fig. 4 (Case 2).—Endothelioma (this tumor is indistinguishable from squamous-cell epithelioma of a high degree of malignancy); $\times 100$.

been prominent, the left more so, and vision in this eye was never sufficient to read by.

Recently a report was received from the patient's physician, Dr. Otto Lundman of Toledo, and I am including it here in order to continue the narrative of the disease in proper sequence. "In December, 1913, the patient, then in good health, consulted me for refraction. The vision of the right eye with correction was 6/5. With the left eye he counted

fingers at 2 feet. In June, 1914, he returned complaining of dizzy spells, when an optic neuritis was found in the right eye and optic atrophy in the left. The visual field was normal in the right eye, but a marked concentric contraction for white and colors was present in the left. A month later an incipient choked disk was present in the right eye."

The history given in the Mayo Clinic in November, 1917, was that for two years his vision had been failing gradually. Sufficient vision remained to count fingers with the right eye and only to perceive light with the left. Eleven months before he had noticed a burning, prickling sensation on the right cheek, which soon spread to the mucous membrane of the cheek, the right edge of the tongue, the face and the fore part of the scalp. The same area was sensitive to the touch, and here he sometimes felt sharp, shooting pains. Fluids ran from his mouth, nostril and right eye without his knowledge. His mouth felt as though it were open; his tongue felt rigid. His gait was slightly uncertain, the dexterity of his hands at times was impaired, and occasionally he had spells of dizziness.

The general examination, including blood and spinal fluid tests, was negative. The sella showed some enlargement. The pupils were equal, moderately dilated and reacted sluggishly to light, both direct and crossed. The fundi showed a definite secondary optic atrophy. There was slight divergence of the left eye, and its movements were somewhat impaired; this was attributed to the congenital defect of the ocular muscles.

The sensibility to touch, pain and temperature was quite uniformly lost over the distribution of the right fifth nerve. The right corneal reflex was absent. The right masseter and temporal muscles were weak and atrophied, and the jaw could be deviated only to the right. The patient recognized ammonia in the left nostril but not in the right. Camphor was detected equally well in the two. The hearing was normal to the watch, but the response to the forks was slightly but equally reduced. The neurologic examination was otherwise negative.

Nov. 24, 1917, a well encapsulated reddish blue tumor 2 cm. in diameter, situated above but involving the right gasserian ganglion, was removed. The tumor was diagnosed glioma on microscopic examination (Fig. 7). Our observation continued for one month following the operation. Slight subjective improvement in sensation occurred; that is, he could tell when his lips were closed. The fundus examination revealed a swelling of 2 diopters in each eye, but this subsided. Three and one-half years later his physician reported that his general condition is very good. His vision has remained unchanged; the eyes are very prominent. Occasionally sharp pains are felt in the right side of the head, but this is much less frequent than was reported two years before. There is still anesthesia of the right fifth nerve. Thus far, no evidence is at hand to indicate a recurrence; in fact, there has been slow but gradual improvement.

COMMENT

Pain is usually the initial symptom and the one for which relief is sought. It varies considerably in intensity and constancy. Sudden paroxysms of pain were infrequent in our cases, and in no instance was it influenced by eating, by speaking, or by external irritation. In three cases the pain was referred to the cheek, lips, chin or tongue, and in one case it was diffuse over the left face.

Tumors involving the gasserian ganglion exhibited evidence of varied extension into the middle and posterior fossae. Implication of the nerves immediately adjacent to the ganglion is the rule, but those of the posterior fossa are much less frequently disturbed. Hellstein's patient had atrophy of one half of the tongue. In Case 2, besides atrophy of the left side of the tongue, the patient's left vocal cord was paralyzed and the left sternomastoid was weak and wasted. In Case 3, the patient's tongue and sternomastoid were affected when she was first examined; this was fol-

lowed in six months by involvement of the left vocal cord. The epileptiform seizures of the patient in Case 2 may have been due to extension of the tumor to the cortex of the temporosphenoidal lobe. However, there is no further evidence to support this.

No anesthesia was demonstrable in the patient in Case 3. The pain was very intense. Sensibility to touch with cotton was acute and somewhat painful. Discrimination of head and point was prompt and accurate. Temperature sensibility was also normal. Spiller reports similar findings in one of his cases, and at necropsy no distinct ganglion tissue was found. This situation is unusual, especially in view of the observation of the surgeon that the gasserian ganglion in Case 3 was completely destroyed by the tumor and that a portion 2.5 cm. in diameter was removed. The ailment had then been of eleven months' duration. Following the cutting of the sensory root a complete

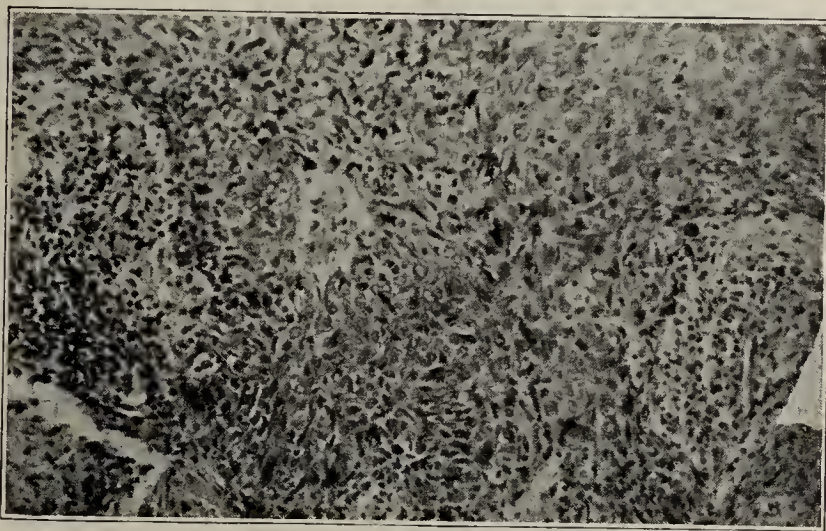


Fig. 5 (Case 3).—Epithelioma (this tumor is indistinguishable from squamous-cell epithelioma of a high degree of malignancy); $\times 100$.

permanent anesthesia resulted (at least it was constant for one year) so that the natural progression of the signs was interrupted.

A second peculiarity was found in Case 1 and in Case 2, in that both patients exhibited decided impairment of pain and temperature sensibility over the forehead, while the tactile sensibility was normal in this area in both.

The work of Spiller and others indicates that the spinal root of the fifth nerve serves the sensation only of pain and temperature, and that the touch fibers pass work to the sensory nucleus directly after entering the pons. This arrangement of the fibers offers opportunity to damage either group of fibers separately and to abolish either touch or pain and temperature in the corresponding distribution of the fifth nerve.

In Case 1 and in Case 2 the touch, pain and temperature were abolished in the third division; over the second division the touch was moderately impaired, while over the first division it was normal. Over the first division, pain and temperature were moderately impaired. This type of disturbance seems to have been produced by unequal involvement of the ganglion or the peripheral divisions of the nerve.

We had no opportunity other than the limited one offered at operation to study the location and extent of the damage done by these tumors. In Case 2 the cranial nerves were involved from the third to the twelfth nerve, and the bilateral Babinski reaction suggests involvement of the two pyramidal tracts in the same

region. There was no impairment of sensation in the trunk or extremities, nor any disturbance of gait or station not accounted for by general weakness and emaciation.

The gasserian ganglion may be involved with tumors arising primarily from the nasopharynx. These tumors

From a therapeutic standpoint, the two groups are decidedly different. In spite of the poor prognosis, surgical measures are advisable in the intracranial tumors, whereas the tumors of the nasopharyngeal group admit only of palliative treatment with radium; this gives a fair prospect of relief at least from pain.

Involvement of the cervical lymph glands with metastasis from a primary tumor involving the gasserian ganglion has been reported with relative frequency. Metastasis in these glands has no definite localizing value, but is of decisive importance in establishing the presence of malignancy. As nasopharyngeal tumors are even more prone to metastasize in the cervical glands, this probability should be given due consideration in diagnosis and treatment. Bilateral tuberculous glands were a complication in one case in our series, and in two cases small cervical glands, which were noted very late in the clinical course, were left undisturbed because their investigation was only of pathologic interest.

A patient with a tumor involving the left gasserian ganglion is not included in this series, but the case deserves mention because of an associated chronic purulent mastoiditis on the same side. It was thought that extension of the chronic inflammatory process to the dura might involve the ganglion also. A mastoid operation with exposure of the dura, in fact, revealed quite an extensive pachymeningitis; but subsequent complete healing of the operative field failed to modify the symptoms and course of the primary affection. A few weeks later a swelling gradually appeared in the left temple owing to infiltration of the skull by the tumor which precluded any successful intracranial operative procedure. Death occurred one year and four months after onset. No postmortem examination was made.

Pathologic specimens obtained in Case 1, Case 2, and Case 3 were strikingly similar, as were also the clinical courses. The average duration of life of the three patients after the onset of the symptoms was about two years. Broders states that the present method is to refer to these tumors as endotheliomas, but they are indistinguishable from epitheliomas.

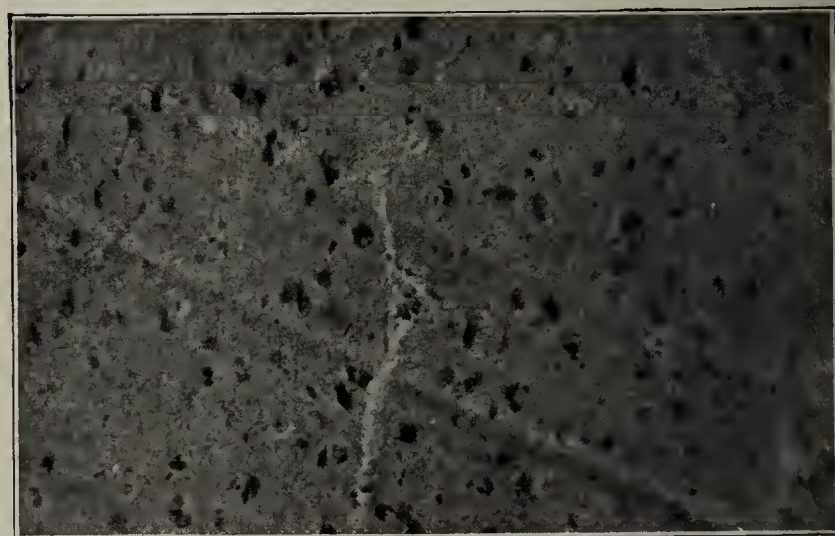


Fig. 7 (Case 4).—Glioma; $\times 100$.

The clinical course in Case 4 is so at variance with the usual course and with that of the average case as to arouse interest. The patient's disease began in 1914 with symptoms of intracranial pressure and optic neuritis. Later, secondary optic atrophy began. When he came to us in 1917 for failing vision, the com-

are usually of the squamous-cell type (epitheliomas). In this location the primary tumor may not cause subjective symptoms until the skull is penetrated, when, because of the involvement of one or more of the cranial nerves, the clinical manifestations are those of an intracranial disease. Such tumors may properly come within the scope of this discussion; we have classified them as nasopharyngeal tumors with extension to the central nervous system, although the symptomatology and clinical signs are indistinguishable from those caused by tumors arising within the cranial cavity and involving the ganglion.

We have observed sixty-five tumors of the nasopharynx, nine of which have been attended with intracranial extensions from the optic chiasma to the medulla, and of the nine, four have exhibited the gasserian ganglion syndrome.

In approximately the same period, six cases of intracranial tumors involving the ganglion have been observed. One case was reported by Plummer and New⁶ in 1913, one patient was not operated on or the case otherwise verified, and four are the cases considered in this paper.

6. Plummer, W. A., and New, G. B.: Tumor of the Middle Cranial Fossa Involving the Gasserian Ganglion, *J. A. M. A.* **62**: 1082-1083 (April 4) 1914.

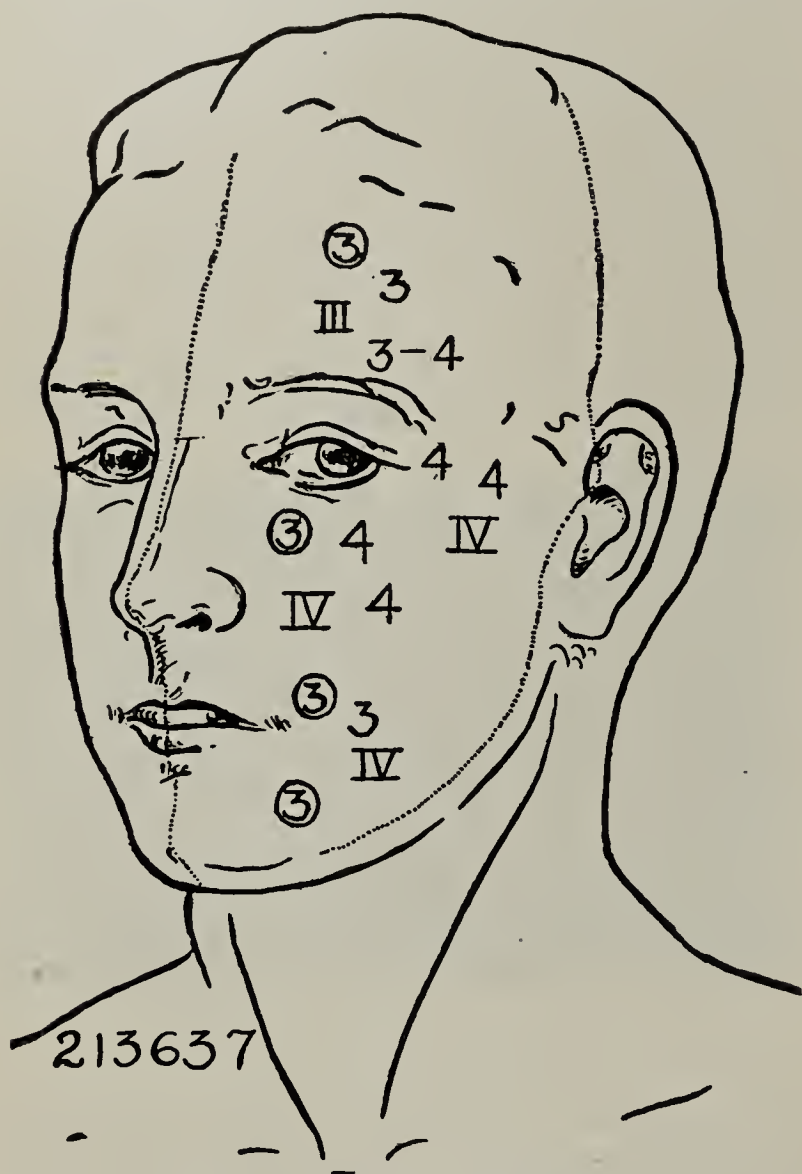


Fig. 6 (Case 4).—Anesthesia chart.

plaint of headache and pain was subordinate and was elicited only after we learned that the optic atrophy was secondary. It is now four years since the tumor was removed. Such great variation in the clinical course indicates a very different type of tumor. The microscopic examination of the fresh tissue at operation and many fixed sections since gave typical pictures of glioma (Broders).

Treatment of tumors involving the gasserian ganglion is beset with many difficulties. The severe and frequent pain which precedes, for a long period, any objective sign urges one to employ many inadequate measures for relief. The extraction of teeth, exploration of nasal sinuses, alcohol injections, specific treatment and the like, are used to meet apparent indications with almost uniform failure. It is strange with what frequency unrelated complications, such as syphilis, tuberculosis or meningitis, are found to be associated with this syndrome. The rarity explains largely the tardiness of recognition even after trustworthy objective signs have appeared. Thus it happens that, although only in early operation can we hope for satisfactory results, surgical interference is generally long delayed. Indeed, it is very doubtful whether endotheliomas of the degree of malignancy we have encountered can be successfully dealt with by surgical means.

Section of the sensory root offers relief from pain of variable degree and duration, and it may compensate in some measure for an otherwise futile exploration.

CONCLUSIONS

1. Tumors involving the gasserian ganglion, by marked variation in the rate and extent of growth, display many combinations of signs and symptoms.

2. Anesthesia may not occur, or it may be profound. In two of four cases, moderate dissociation of pain and temperature were present.

3. Epitheliomas of the nasopharynx have produced this syndrome with about the same frequency as tumors arising within the skull.

4. Two distinct types of tumor were found. The endotheliomas were malignant and little influenced by surgical treatment. The glioma was benign and produced general symptoms of brain tumor; later it involved the gasserian ganglion. There are no signs of recurrence in this case after three and one-half years.

ABSTRACT OF DISCUSSION

DR. PETER BASSOE, Chicago: As the gasserian ganglion is the homologue of the spinal ganglions, it is noteworthy that primary tumors of the latter are exceedingly rare as compared with the former. At this moment I can think of only one case, one of sarcoma of a thoracic ganglion reported by Sommerfelt of Norway. The reason for this discrepancy seems to be that the so-called gasserian ganglion tumors start elsewhere, usually in the dura, and later invade the ganglion.

DR. FOSTER KENNEDY, New York: Intracranial tumors which involve the gasserian ganglion usually take origin from the base of the skull; that is to say, the ganglion is assailed from below upward. The motor branch of the fifth nerve is placed below the sensory ganglion. It therefore happens inevitably that masseter and temporal muscle paralysis precede often by weeks or months the onset of ganglion pain. This palsy, being unilateral, gives almost no inconvenience to the patient, and unless especially looked for by the neurologist is apt to escape observation. Sarcoma of the

skull base is rarely an operable condition; therefore, it is well to search carefully for its pathognomonic insignia. In the differential diagnosis between fifth nerve pain produced by irritation of the gasserian ganglion and that produced by irritation of the descending nucleus of the fifth nerve, the latter condition is often improperly ignored or forgotten.

DR. PERCIVAL BAILEY, Boston: I am interested in Dr. Shelden's presentation because of its bearing on the pathogeny, still so obscure, of trigeminal neuralgia. As is well known, alcohol injections or peripheral operation on the fifth nerve will stop the pain of trigeminal neuralgia. Because of this fact, one need not expect to find essential changes in the ganglions, and as a matter of fact no changes can be found. I should like to ask Dr. Shelden whether he knows of any case of tumor of the gasserian ganglion in which either alcohol injections or peripheral operation had any influence on the pain.

DR. G. W. HALL, Chicago: In occlusion of the posterior inferior cerebellar artery there is a definite sympathetic eye syndrome due to involvement of the sympathetic fibers at their central origin. These fibers probably pass through the gasserian ganglion. I should like to inquire of Dr. Shelden whether any such syndrome was observed in his cases.

DR. CHARLES R. BALL, St. Paul: My experience with alcohol injections in neuralgic or neuritis conditions, aside from the true cases of tic douloureux, has been very unsatisfactory. The explanation for this has seemed to me to lie in the different conditions which cause the pain in a genuine tic and in cases of neuritis from whatever cause. In the former, the pain is elicited from a hypersensitive area, or what Dr. Patrick has called the trigger zone. In the latter, the pain is produced by the irritation in the nerve fibers themselves, which is of a more or less constant character. In injecting a nerve the seat of a neuritis, the alcohol must deaden the nerve itself in order to relieve the pain. In injecting for the relief of pain in a case of tic this is not at all necessary. If one succeeds in numbing the area called the trigger zone and thus cutting off the pathway of the impulse which induces the pain, the patient is relieved. As an example, one often sees a case of tic whose pain is felt in the distribution of the second branch of the fifth where the attacks are completely relieved by injecting the first branch where the trigger zone for that particular case is located. In general, alcohol injections for the relief of pain other than in tic douloureux should be discouraged.

DR. WALTER D. SHELDEN, Rochester, Minn. In reply to Dr. Bailey's question whether alcohol injections or peripheral operation had any influence on the pain in tumor of the gasserian ganglion, it did not. In one of the cases, after removal of the tumor alcohol injections were given without any influence whatever on the pain.

Psychiatric Clinic for Maladjusted Children.—The Cornell Medical College Children's Psychiatric Clinic has demonstrated not only the need for such a clinic, but also its usefulness. This is especially true in the case of neurotic children who show a wide variety of symptoms that can be understood and treated only by intensive study of each child and its home environment. In addition to the correction of physical defects, there is usually necessary, not only a reeducation of the child, but also a change in the attitude of the home toward the child. All this can often be accomplished through the clinic, with the necessary aid of the psychiatric social worker or the visiting teacher or any social worker who has an understanding of and a training in the principles of mental hygiene. For those neurotic children for whom, either because of their inherent neurotic disposition or of irremediable home conditions, a continuance in the home offers very little hope of improvement, the establishment of farm schools is urged by L. Blumgart (*Mental Hygiene* 5:341 [April] 1921). The resultant improvement in the behavior of the children, following the change in their personal and physical environment, appears at the end of two and one-half years to be permanent in approximately 50 per cent. of the cases.

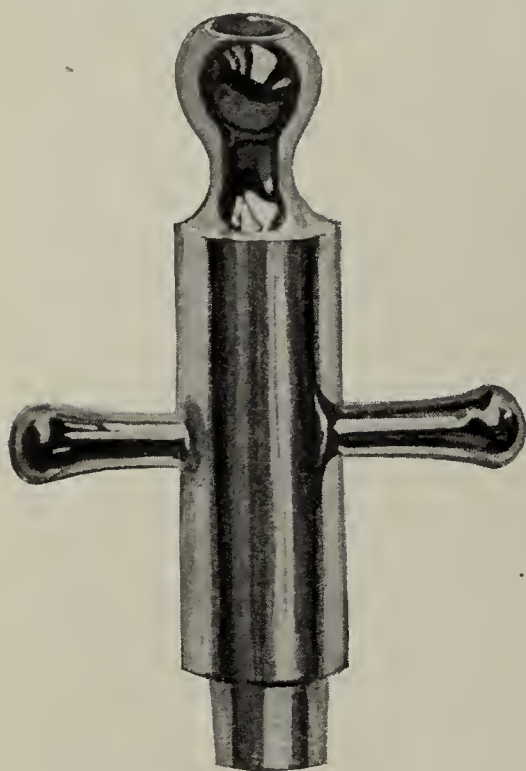
Clinical Notes, Suggestions, and New Instruments

AN EVACUATING ATTACHMENT FOR THE CYSTOSCOPE *

ROBERT SEVERANCE, M.D., NEW YORK

Instructor in Urology, Post-Graduate Medical School and Hospital

Having observed on two or three occasions the great efficacy of the Bigelow evacuator in cases of severe hematuria with clots of liver-like consistency, it occurred to me that it might be of advantage to have constructed an attachment which could be adjusted to the cystoscopic sheath and which, when connected with the evacuating bulb of the lithotrite evacuator, would obviate the necessity of the repeated introduction of the evacuator and reintroduction of the cystoscope. An additional advantage anticipated from such an attachment is that in litholapaxy when the final step is checked up by cystoscopic observation, and small fragments are still to be observed, this



Evacuating attachment for cystoscope.

attachment will obviate the introduction and reintroduction of the cystoscope or evacuator, as the case may be, for the cystoscope will suffice both for examination and evacuation of debris. As a matter of actual practice, it has been found that the device here illustrated offers all these advantages. It is simple, readily attachable and convenient to carry. In view of the fact that the aforementioned observations are made as the result of the work of Dr. McCarthy on such occasions, the attachment is primarily designed for his cystourethroscope. At present it is adaptable only to this instrument; but

if it proves of sufficient advantage, its adjustment to other cystoscopes will be simple, for in the event of universal sheath calibration, one attachment will fit all instruments of similar size.

HERNIA OF THE APPENDIX WITH FOREIGN BODY PERFORATION OF THE HERNIAL SAC

ROBERT WILLIAM LANGLEY, A.B., M.D., LOS ANGELES

Intern, Los Angeles County Hospital

J. H., a man, aged 60, a janitor, walked into the examining room to have a nail removed which had perforated the scrotum on the right side. He stated that two years and eight months before he swallowed a nail. Shortly after he vomited and imagined that he had thrown up the nail. Four months later he was taken suddenly with a sharp pain in the right inguinal region which persisted for several minutes. Similar attacks had been a source of irritation to the patient for the last two years, but apparently had not been severe enough to force him to consult a physician. He had never complained of a diffuse abdominal pain or pain on defecation. During the last month the pain had been localized in the right inguinal region and, Saturday evening, May 7, 1921, the patient felt a sharp point protruding from the upper part of the scrotum. Further examination revealed a nail which he

was not able to withdraw. Sunday the nail was still protruding, and Monday afternoon the patient came to the hospital examining room to have it removed. He refused to enter the hospital at that time, stating that he would return the following day. Tuesday morning the patient noticed that the nail had disappeared. He was admitted to the hospital the same morning. Wednesday a roentgenogram of the pelvis disclosed the nail in the right lower quadrant.

The patient stated that he had had a rupture on the right side since he was 9 years old. It had never given him any serious trouble.

Physical examination was negative except for a mass in the right inguinal region which gave a decided impulse on



Fig. 1.—Appendix and mesentery showing nail in lumen of appendix.

coughing. The tumor did not recede when the patient lay down. There was some induration of the tissues of the scrotum surrounding a small ulcer where the nail had perforated. The inguinal ring on the left side was large, but no hernia was found.

The case was assigned to the surgical service of Drs. W. L. Huggins and W. A. Bayley. Thursday morning the patient was prepared for a right inguinal herniotomy. The hernial sac was exposed and found to contain the appendix and



Fig. 2.—Roentgen ray showing nail in right lower quadrant.

meso-appendix. The nail was found in the cecum and readily pushed into the lumen of the appendix. An appendectomy was performed, the hernia repaired and a usual closure made. No perforations could be demonstrated in the cecum through the herniotomy opening, and none were found in the appendix. Gross and microscopic examinations of the appendix were made by Drs. Hammock and Maner of the pathologic staff, and they were unable to demonstrate any evidence of acute inflammation. On gross examination of the specimen, Dr. Hammock found it to be infested with seatworms (*Oxyuris*

* Demonstrated before the Urological Section, Academy of Medicine, March 16, 1921.

vermicularis). Fifteen worms were found within the lumen of the appendix.

The postoperative care was that of an ordinary hernia case, and with the exception of a superficial stitch-wound infection the patient made an uneventful recovery and was discharged from the hospital, Saturday, June 11.

COMMENT

Foreign-body appendicitis with perforation of the appendix by the foreign body is not so common as is generally supposed, according to Da Costa, who states that Ranvier collected the records of 459 postmortems and found reported 179 fecal concretions and sixteen foreign bodies.

In the case reported above there is a great deal of question as to whether or not the nail perforated the appendix. The probabilities are that the nail perforated the cecum while it was in the hernial sac and disappeared when spontaneous reduction of the hernia occurred.

Hernia of the appendix, while mentioned only in a general way in most surgical textbooks, is probably not a rare condition. Da Costa mentions Merigot de Treigny, who compiled twenty-two cases. In seventeen the hernia was inguinal; in five it was femoral. Da Costa himself operated in a case of appendicitis in which the inflamed appendix was the sole occupant of an incomplete right inguinal sac.

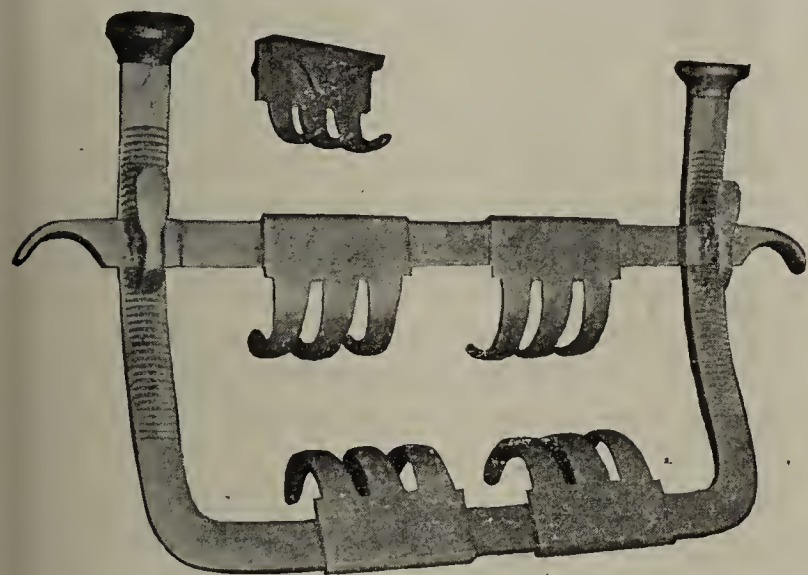
The occurrence of these conditions in the same individual, associated with the finding of *Oxyuris vermicularis* so high up in the intestinal tract, is quite unusual and of sufficient interest to warrant a report of the case.

1100 Mission Road.

MULTIPLE BLADE RETRACTOR

ALFRED J. BUKA, M.D., PITTSBURGH

The needs in surgery for retraction and retention that may be regulated and uniform at all times, and still allow a clear field for inspection and operative work, occasioned the construction of the instrument here described. The assembly of this retractor is simple, there being nothing which will easily get out of working order.



Multiple blade retractor.

The desire to obtain a dip in incisions for retraction developed this construction so that a distinct concavity is utilized. With uniform concavity of the vertical bars directed downward (against the subject) the blades are allowed the easier access to incisions. Retraction is exerted through the blades, and it is immediately developed by an outward and upward expansion of the incision, when the horizontal bars are separated. Two sizes of blades are offered with this model, the smaller size for superficial and the larger size for deep retraction. The blades are removable from and movable on the horizontal bars, of which the proximal (the one nearest the operator) is adjustable. Retraction and retention are accomplished with the aid of parallel notchings on the vertical bars. A fairly liberal freedom of the movable horizontal bar is allowed so that retraction may be obtained at either end of an incision, of an even or uneven type. The fixing of the

proximal bar after retraction, for retention, is accomplished by a dog on each end of this bar, which snaps automatically into the notches of the vertical bars at the points of desired retraction. By pressure on the thumb-pieces or head-ends of the vertical bars, and counterpressure with either the index or middle fingers, on the grips of the horizontal bar, retraction is developed.

It may be increased as occasion demands by a similar procedure, while retraction with retention is released by pressure on the clip-ends of the dogs, when the instrument may be removed *en masse* from an incision. The advantages of the instrument are: clear field for operation, continuous and even retraction, retraction that may be varied as the operator desires, retraction which may be either superficial or deep, and retraction which may be accomplished in small or large openings. It allows the assistant to serve more actively during operative work, and permits more freedom for the operator. It establishes retraction with speed, and affords an admirable means for keeping the field for operation free from unnecessary hands and instruments.

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A NEW SLIDE STAINING RACK

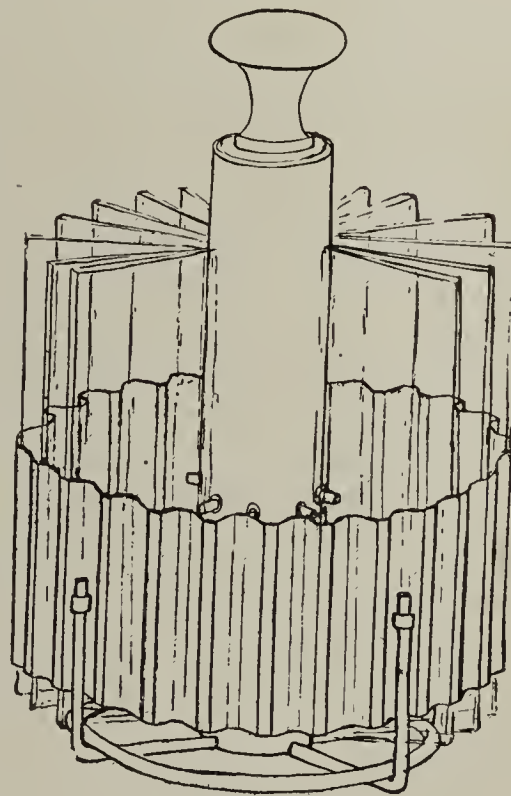
W. L. ROBINSON, B.A., M.B., TORONTO
Pathologist, Toronto General Hospital

The advantage of slide racks for staining tissue sections or bacteriologic smears is not fully appreciated by most laboratories. They represent a great saving in time, and often enable one technician to do practically the work of two.

The feature I particularly wish to emphasize in this rack is its compact, sturdy form and the fact that no special receptacles are needed for the solutions, ordinary glass jars with an internal diameter of not less than 8 cm. being all that is required.

This rack should be made of copper or monel metal. The center post, a copper tube, should have an outside diameter of 2.3 by 10.5 cm. length, with a knob or loop on the upper end to act as a handle. Four centimeters from the bottom, eight pegs or posts made of No. 12 copper wire and 0.6 cm. in length are soldered to the outside, like spokes of a wheel, equal distances apart. Two heavy copper wires about 15 cm. in length, size No. 12, are soldered at right angles to the bottom of the center post, and the ends turned up to support a corrugated band made of 16 ounce cold rolled copper 3.5 cm. in width and about 7.4 cm. in diameter, with corrugations 0.5 cm. deep. There should be twenty-four corrugations, allowing for twenty-four slides to be inserted. About the center post the slides come together, three between each pair of pegs. This rack can be used for any number of slides up to twenty-four.

The slides, as soon as the sections are cut and mounted, are placed in these racks to drain. The rack is then put in a paraffin oven. The xylene, alcohol and stains are kept in a large, wide-mouthed jar. The rack of slides is then passed from one jar to the other till the whole process of dissolving the paraffin, staining, dehydrating and clearing of the sections is complete. They are then lifted out of the rack one by one and mounted in balsam.



Slide staining rack.

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SATURDAY, AUGUST 27, 1921

HIGH PROTEIN DIET AND RENAL IRRITATION

High protein diet has frequently been charged in the past with harboring elements of danger to the human organism. By some of the advocates of "physiologic economy" in nutrition they are pictured as decidedly menacing, although a critical examination of the charges usually reveals indefinite generalities of the intangible type described as "undue liver activity" or "kidney strain." The propagandists for the low protein regimen as a scheme for promoting well being have repeatedly been reminded by their less enthusiastic colleagues that the human organism manifests a large "factor of safety" in its ability to dispose of surplus protein, as it does in various other aspects of physiologic function. The older idea that albumin which appears in the urine at times may be derived directly from food protein has been abandoned. Recently, convincing evidence has been furnished from the clinic that considerable variations in the intake of albuminous food are without noteworthy influence on the blood pressure of patients currently believed to be peculiarly susceptible to the assumed pressor effects of abundance of protein in the diet.¹

At the University of Michigan Medical School, Squier and Newburgh² have reinvestigated the question whether a diet rich in protein can provoke renal irritation of a demonstrable sort. The observations were made on patients for whom evidence of incipient kidney damage already existed. Prolonged high feeding in these cases was actually followed by definite signs of renal disturbance. It resulted in the appearance of red blood corpuscles in the urine, and in the appearance of albuminuria or the increase of a pre-existent condition of this sort. As might be expected, the high protein regimen caused the more marked or persistent disturbance in the acute or subacute stage of nephritic involvement. The Michigan clinicians discovered a definite increase in the edema and macular changes in the fundus after liberal ingestion of meat in

some cases. The red cells disappeared from the urine after return to a lower plane of protein intake. Forced meat feeding during two successive meals was invariably sufficient to cause the temporary appearance of red blood corpuscles in the urine of healthy young men; in no case, however, was there detectable albuminuria. It should be emphasized that the lack of effect on the blood pressure, asserted by Mosenthal,³ has been verified. On the other hand, in view of these studies the clinician must deal with the thesis that a high protein diet in man may be a renal irritant. Moschcowitz,³ among others, has contended that hypertension is not an outcome of nephritis, but ascribes the arterial condition to continuous circulatory vasoconstricting influences. Whether and, if so, how kidney lesions result from hypertension remains to be learned.

THE SCHICK TEST AND IMMUNITY TO DIPHTHERIA

The Schick test for determining the degree of immunity exhibited by an examined person to diphtheria is no longer a novelty in medical practice. It is already being applied in many thousands of cases each year in this country; and many of those giving a positive reaction have been successfully immunized in the face of impending danger. Park of the New York City Board of Health asserts that the evidence that antitoxin is the only substance in the body which can prevent the toxin from acting is so conclusive that a negative Schick test may be assumed to mean the presence of sufficient antitoxin to neutralize it. The occasional, though rare reports of the appearance of tonsillitis of a diphtheritic character in persons who have given a negative Schick test have raised the question: Is the minimum amount of antitoxin required to prevent the Schick reaction sufficient to prevent the development of diphtheria and, if not, is it sufficient to prevent a toxemia?

An essential postulate in evaluating evidence on these topics is that the technic of the test shall be beyond criticism. The toxin injected must be accurately dosed and, as has repeatedly been pointed out by the experts in such work, it must be delivered wholly intracutaneously. Park,⁴ who has had most exceptional experience in this connection, admits that from 2 to 4 per cent. of the persons ordinarily giving negative Schick tests may do so because of faulty technic; he insists, however, that when the procedure and dosage are correct such errors do not arise. It is undoubtedly true that "immune" persons may harbor diphtheria bacilli so that, if they chance to suffer from a tonsillitis due to other microorganisms, throat cultures may reveal diphtheria germs. Furthermore, Park admits that in unusual cases the

1. Mosenthal, H. O.: *Am. J. M. Sc.* **160**: 808 (Dec.) 1920. The Alleged Harm from Protein in the Diet in Certain Disorders, editorial, *J. A. M. A.* **76**: 452 (Feb. 12) 1921.

2. Squier, T. L., and Newburgh, L. H.: Renal Irritation in Man from High Protein Diet, *Arch. Int. Med.* **28**: 1 (July) 1921.

3. Moschcowitz, E.: Hypertension: Its Significance, Relation to Arteriosclerosis and Nephritis and Etiology, *Am. J. M. Sc.* **158**: 668 (Nov.) 1919.

4. Park, W. H.: The Degree of Immunity to Diphtheria Insured by a Negative Schick Test, *Am. J. Dis. Child.* **22**: 1 (July) 1921.

latter, when present in a throat experiencing some other infection, may develop sufficient toxin to cause superficial lesions in the mucous membranes even when the system contains sufficient antitoxin to prevent the Schick reaction.

Such admittedly rare patients show favorable progress without antitoxin treatment. Accordingly, the upshot of the situation, in the light of present-day knowledge, is thus summarized by the New York bacteriologist: A negative Schick test in cases in which there is active immunity, either natural or acquired, when the toxin used and the technic employed have been suitable, gives an almost complete security from diphtheritic disease, not only for the immediate time but also for the future. This favorable comment should inspire confidence in the further application of the Schick test far more extensively than is the case at present.

VARIABLE FACTORS IN HYPERTHYROIDISM

The overworked domain to which the name endocrinology has been applied in recent years is slowly beginning to yield some scientific fruits of permanent value. Foremost is the hormone or "active principle" of the thyroid gland, thyroxin, which has been described as "a catalyst that accelerates the rate of formation of a quantum of potential energy in the cells of the organism."¹ Hyperthyroidism thus becomes the clinical syndrome resulting from the presence of an excess of thyroid hormone in the body. Thyroxin has definitely been demonstrated to increase the basal metabolic rate. According to Plummer,² hyperthyroidism is the physiologic status of an individual otherwise normal when the thyroxin in the tissues is sufficient to hold the basal metabolism above normal. Consequently the estimation of the basal metabolism by the methods of indirect calorimetry now in vogue is destined to assume an important rôle in the clinic of thyroid disorders. However, there is something approaching real danger in the unfortunate fact that the intellectual training of those who operate the "metabolism apparatus" now widely offered for sale has not progressed so rapidly as has the simplification of the technic. As Benedict³ recently remarked, the latter is dangerous when it makes it possible for a tyro to secure measurements which frequently neither he nor his associates are in a position to interpret intelligently, and from which it is possible for him to draw deductions that are not only erroneous but, since they not infrequently may influence for or against operative procedure, may actually be of serious harm.

One of the lessons that needs to be learned is the fact that hyperthyroidism is not the only possible cause

of augmented metabolic rate. The latter must always be correlated with other clinical data. Not every patient with a basal metabolism 25 per cent. above the prediction figure has hyperthyroidism. As Means,⁴ who has had a large experience with indirect calorimetry at the Massachusetts General Hospital, warns us, the high finding may have been due to some other disease, pernicious anemia or leukemia perhaps, or possibly to an unrecognized fever at the time the test was made—or even to inaccurate technic, if we may admit it.

Again, greater definiteness must be applied to the distinctions between the varied anatomic changes in the thyroid structure that are commonly grouped under the general expression goiter. In this respect it is becoming important to differentiate pure hyperthyroidism from exophthalmic goiter, since they are often looked on as essentially identical in character. Plummer² has pointed out that a definite symptom of hyperthyroidism is, with rare exceptions, associated with diffuse hypertrophic or adenomatous goiter, just as it follows the therapeutic administration of thyroxin. Whereas hypertrophic goiter is the anatomic expression of functional disturbance in the developed thyroid, an adenoma of the gland represents new tissue developing postnatally from the stimulation of embryonic cells. In either case—and the two types of goiter may be present in the same structure—the effects noted are essentially those attributable to an excess of the normal thyroid hormone. Recognition of this, in which the heightened basal metabolism assists, points the way to rational treatment, by removal of the adenoma.

The status of exophthalmic goiter is different. While it is in the main a hyperthyroid state, it cannot be attributed wholly to an excess of the normal thyroid hormone. Kendall,⁵ who isolated and identified thyroxin, has suggested that probably there is, in exophthalmic goiter, a slight alteration in the thyroxin molecule. Adenomatous goiter and exophthalmic goiter have in common symptoms due to increased metabolic rates; but beyond this they differ materially. The simple adenoma does not give rise to the varied characteristic symptoms represented by exophthalmos, thrills and bruit, tendency to gastro-intestinal crises, and a peculiar type of nervousness. The estimation of basal metabolism will not suffice for the differential diagnosis, though it may materially assist in indicating the extent to which treatment has produced improvement in the patient. At present it is well to join Boothby⁶ and Plummer⁷ in insisting that we are dealing with two distinct diseases in exophthalmic goiter and in adenoma with hyperthyroidism. They have an unlike mode of onset, clinical course, duration of symp-

4. Means, J. H.: Determination of the Basal Metabolism as a Method of Diagnosis and as a Guide to Treatment, *J. A. M. A.* **77**: 347 (July 30) 1921.

5. Kendall, E. C.: Isolation of the Iodine Compound Which Occurs in the Thyroid, *J. Biol. Chem.* **39**: 125 (Aug.) 1919.

6. Boothby, W. M.: The Basal Metabolic Rate in Hyperthyroidism, *J. A. M. A.* **77**: 252 (July 23) 1921.

7. Plummer, H. S.: The Clinical and Pathologic Relationship of Simple and Exophthalmic Goiter, *Am. J. M. Sc.* **146**: 790, 1913.

1. Plummer, H. S., and Boothby, W. M.: Specific Dynamic Action of Thyroxin, *Am. J. Physiol.* **55**: 295-296, 1921.

2. Plummer, H. S.: Interrelationship of Function of the Thyroid Gland and of Its Active Agent, Thyroxin, in the Tissues of the Body, *J. A. M. A.* **77**: 243 (July 23) 1921.

3. Benedict, F. G.: The Measurement and Standard of Basal Metabolism, *J. A. M. A.* **77**: 247 (July 23) 1921.

toms and physical findings, as well as a difference in the pathologic condition of the thyroid. To account for these differences, the workers at the Mayo Clinic postulate that in exophthalmic goiter not only are the thyroid cells producing an excess of the thyroid hormone, but also the secretion so formed has some abnormal chemical property which produces the symptoms that differentiate it from pure hyperthyroidism.

IMMUNIZING FUNCTION OF COLOSTRUM

Although it is characteristic of all mammals to secrete, for a few hours or days after giving birth to their young, a fluid quite different in composition from the milk that nourishes the young during the rest of their period of suckling, little attention seems to have been given to the purpose of this secretion. That such a universal phenomenon can be purposeless is highly improbable, and yet textbooks on obstetrics and pediatrics seem not to discuss it. If the colostrum is mentioned at all, beyond a description of its physical and chemical characteristics, only a laxative property is usually mentioned, attributed to the high protein content. Recent work on immunity contains suggestions of a much more important function.

That young infants possess a greater or less degree of immunity to various infections is generally recognized. Often this early immunity disappears, which indicates that it is of a passive character, and therefore to be attributed to antibodies obtained from the mother. Much experimental work has been done to determine how much transfer of antibodies from mother to fetus occurs, and by what route. The conclusion has been that the total transfer of antibodies to the fetus is usually small, and that it may occur either by intra-uterine absorption through the placental circulation or by alimentary absorption of antibodies contained in the milk, or by both routes. One of the most recent investigations of this sort, by Reymann,¹ disclosed that, at least in the case of agglutinins in goats, the young were usually born without agglutinin but acquired a considerable amount during the first days of life from the mother's milk. He found also that the milk is especially rich in these immune bodies in the first lacteal fluid secreted, i. e., colostrum, being commonly richer in agglutinins than even the serum of the same animal. The same thing seems to be true of antibodies other than agglutinins. The amount of immune antibodies in the milk falls rapidly during the first two or three days of lactation, and usually the later milk does not contain quantities large enough to be demonstrated.

These observations harmonize well with some other recent chemical and immunologic investigations on colostrum. Thus, Crowther and Raistrick² found that the high protein content of cow's colostrum depends

chiefly on the presence of a large quantity of globulin, which constitutes an average of more than 50 per cent. of the total proteins of colostrum, being about 8 per cent. of the total weight of the colostrum and only 0.03 per cent. of later milk. Evidently, then, the colostrum differs from milk chiefly in having added to the casein and albumin a large quantity of globulin. The significance of this is brought out by a study of the immunologic behavior of the several protein constituents of milk by Wells and Osborne,³ for they establish, in confirmation of earlier observations, that the globulin of milk is identical with that of the serum of the same species, whereas the other milk proteins are quite distinct from any of the other proteins of the serum. From these facts they make the suggestion that the formation of colostrum is for the purpose of presenting to the new-born infant a concentrated solution of serum globulin, which carries the antibodies of the maternal blood. Early investigators found that the mammal when newly born is able to absorb proteins from the alimentary canal in unchanged condition to a much greater extent than later when the digestive processes have become more developed, and hence the serum globulins bearing the antibodies are poured out by the mammary glands only during the brief period when they can be absorbed by the suckling in an active condition. In confirmation of this idea is the observation of Howell and Eby⁴ that the antibodies in the maternal blood diminish after parturition. The inference to be drawn from these laboratory observations is that the colostrum is a peculiarly valuable material for the new-born infant, and that nature has provided it to help protect the infant against infections until such time as it can become more or less thoroughly actively immunized to the pathogenic microbes it meets after leaving the protection of its mother's womb.

CARBON MONOXID ASPHYXIA

Carbon monoxid gas seems to be assuming greater importance than formerly as a source of danger through respiration. Long known as a toxic ingredient of illuminating gas, carbon monoxid has become familiar to hygienists in connection with the once frequent cases of "blowing out the gas light." While this menace to unsuspecting victims is becoming much less common with the altered conditions of living today, other sources of the introduction of carbon monoxid into the atmosphere breathed by man have arisen. The gasoline engine of the automobile represents an important agency of this sort; for there are various ways in which the products of incomplete combustion discharged with its exhaust may contaminate the air of buildings or other closed spaces with carbon monoxid among other undesirable substances.

1. Reymann, G. C.: *J. Immunol.* **5**: 227 (May) 1920.
2. Crowther and Raistrick: *Biochem. J.* **10**: 438, 1916.

3. Wells, H. G., and Osborne, T. B.: *Anaphylaxis Reactions with Proteins from Milk*, *J. Infect. Dis.* **29**: 200 (Aug.) 1921.
4. Howell, K. M., and Eby, H.: *J. Infect. Dis.* **27**: 550 (Dec.) 1920.

Carbon monoxid readily unites with hemoglobin and thus decreases the normal oxygen-carrying capacity of the blood. In this way an anoxemia arises and asphyxial conditions ensue. It becomes of great importance, therefore, to ascertain conclusively whether the gas exerts any toxic action independent of the anoxemia; in other words, whether carbon monoxid asphyxia is essentially comparable with the effects of the inhalation of low concentrations of oxygen. Haggard¹ has recently demonstrated, in investigations conducted at Yale University for the U. S. Bureau of Mines, that death under carbon monoxid asphyxia is due to failure of respiration. The anoxemia resulting from the formation of carbon monoxid hemoglobin induces excessive breathing and thereby leads to the elimination of an excessive amount of carbon dioxid. A few years ago this would have been regarded as a beneficent removal of a waste product of metabolism. Today, however, carbon dioxid is recognized as a stimulus to respiration; and the excessive loss of this gas from the blood may be as unfavorable as an undue accumulation, for the lack has a tendency finally to depress respiration as the hydrogen ion concentration of the blood is decreased.

It is now known that acute oxygen deficiency may produce a functional impairment of the auriculoventricular conduction in the heart. According to Haggard, oxygen deficiency, occasioned by carbon monoxid, even in advanced asphyxia is not in itself sufficient to cause impairment of auriculoventricular conduction. Following respiratory failure, however, the increased anoxemia from this cause may start the development of heart block through its various phases. Of practical importance is the observation that cardiac conduction can be restored to normal, after the development of such a heart block, by restoring respiration and rapidly eliminating the carbon monoxid by means of inhalations of carbon dioxid and oxygen. The evidence indicates that the impairment of cardiac conduction is due purely to anoxemia. Carbon monoxid exerts no direct toxic action on the heart. The prospects of successful resuscitation are increased through this knowledge. It is worthy of note, however, that illuminating gas evidently contains additional toxic substances, which exert a stimulating action on respiration and thus may hasten the onset of respiratory fatigue or failure.

1. Haggard, H. W.: Studies in Carbon Monoxid Asphyxia, I, The Behavior of the Heart, *Am. J. Physiol.* 56: 390 (July) 1921.

Babies' Welfare Association.—The annual report of the Babies' Welfare Association of New York City shows that more than 15,000 children of needy families were cared for during 1920, and through the efforts of the association more than 12,641 mothers and new-born infants have received proper treatment and have been led to take advantage of the facilities offered by the baby health stations. Convalescent and fresh air care have also been provided for a large number of children, while more than 2,000 children whose mothers are forced to go to work have been placed in boarding homes certified by the city.

Current Comment

DANGER IN FILLING SILOS

The frequent reports of deaths from asphyxiation in silos call attention to a menace to human life of which the public seems not to be aware. A silo is essentially a tubular tank of considerable height, designed to contain green fodder, generally corn. The silo is usually provided with doors at intervals along the sides to provide ventilation and to facilitate the removal of the ensilage during the feeding season. As the silo is filled, these doors are closed. The immature corn is cut into small pieces by a cutting machine, and the chopped material is blown into the silo by a "blower" attached to the cutter. As soon as it is placed in the silo, the ensilage begins to undergo changes in a direction opposite to normal plant metabolism by which the oxygen content of the surrounding air is considerably decreased and the carbon dioxid content is largely increased. In some cases, nearly all of the oxygen is consumed. The carbon dioxid surrounding the particles of silage is supposed to be the principal preserving agent for the green fodder. If the doors immediately above the level of the silage are not kept open during the process of filling the silo, so as to allow for free ventilation, carbon dioxid is likely to collect in sufficient amounts during the night to endanger the lives of the workmen who enter the silo in the morning. Owing to the high density of carbon dioxid, it tends to collect at the surface of the silage so that workmen who sit or lie on the silage before the filling operation begins are much more likely to suffer than those who stand. Owing to the general lack of information concerning the possible dangers in filling silos, country physicians, whenever practicable, may well warn farmer patients who own silos relative to the danger mentioned.

TUBERCULOSIS SANATORIUMS NEAR LARGE CITIES

The time has passed, it is hoped, when the hapless consumptive faced exile to the desert and mountains. Nearly every state in the Union has found within its own borders a salubrious location for a tuberculosis sanatorium. With a better understanding of the relation of climate to the treatment of tuberculosis, we now know that it is not necessary to go more than a few hours' ride from any large city in the United States to find a suitable location for such a sanatorium. The U. S. Public Health Service therefore is urging states, cities and counties to construct sanatoriums, that is, instructive institutions, conveniently located to the populations to be served in order that patients may receive the solace of frequent visits from friends and relatives. The establishment of additional conveniently located sanatoriums, however, is only part of the institutional care for which further provision must be and is being made. Hand in hand with the increase in sanatoriums, general hospitals throughout the United States are setting aside rooms or wards for tuberculous patients. This measure the U. S. Public Health

Service considers most important, as it not only would provide for the hospital care of large numbers of needy sufferers who are unsuitable for transfer to distant points or who are unwilling to be removed to remote hospitals, but also would do much to popularize treatment in the home climate, and to familiarize physicians with the early diagnosis and the effective treatment of the disease. Tuberculosis wards in general hospitals serve largely as diagnostic centers and clearing stations, and as shelters for the care of terminal cases. The plan of having all general hospitals accept patients suffering from tuberculosis was endorsed by the House of Delegates at the last session¹ of the American Medical Association. Together with the provision of sanatorium facilities convenient to large centers of population, the proposals constitute a practicable program on which the antituberculosis campaign may concentrate its present efforts to advantage.

SCHOOLS FOR PUBLIC HEALTH OFFICERS

As announced on another page of this issue,² the Rockefeller Foundation has made an initial gift of \$1,785,000 to the Harvard University for its school of public health. This gift not only will provide a suitable building for the school but also will permit the carrying on of more research and an enlargement of the courses of instruction for public health officers. An additional sum, not to exceed \$500,000, is promised should the growth and development of the school require it. This is the second school of public health to receive generous aid from the Rockefeller Foundation, the other being the School of Hygiene and Public Health which, through the generosity of the foundation, was established at Johns Hopkins Medical School in 1916. There are now ten schools for the training of health officers, the first of which was established by the University of Pennsylvania in 1906. The others in order of their establishment are: Harvard University, Universities of Wisconsin, Michigan and California, Detroit College of Medicine and Surgery, University and Bellevue Hospital Medical College, Yale University, and Albany Medical College.³ These schools have been established in recognition of the urgent need of improved opportunities for public health instruction. As a result the science of sanitation and public health will be more rapidly advanced and methods of teaching will be improved. Still more important, however, they provide facilities and instructors whereby medical students, physicians, engineers, chemists, biologists and others may fit themselves for useful careers in up-to-date public health work. There is no field in which efficient and thoroughly trained officers are more needed. It is hoped that the generous gifts provided by the Rockefeller Foundation will result not only in improved health officers but also in establishing a greater confidence and cooperation on the part of the general public in public health measures.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Lucien T. Lee, Huntsville, has been appointed director of the bureau of epidemiology of the state department of health to succeed Dr. James L. Bowman, who resigned to become city and county health officer of Montgomery County.

ALASKA

Hospital News.—It has been reported that the new hospital at Point Barrow, the mission farthest north in North America, will be completed and ready for occupancy this summer. The hospital will not only minister to the Eskimos of that region, but will also be available to all the population from Demarcation Point to Point Hope. The hospital will be in charge of Dr. Henry F. Greist and his wife, a trained nurse.

CALIFORNIA

Chiropractor Claims State Law Unconstitutional.—On the plea that the California state medical practice act, No. 2164, is class legislation, W. Frank Willis, a chiropractor, has filed an application in the United States district court asking that the state board of medical examiners be enjoined from enforcing the act as it relates to chiropractors.

DISTRICT OF COLUMBIA

Personal.—Dr. Robert Y. Sullivan has been appointed gynecologist to Columbia Hospital for Women, to succeed Dr. Isaac S. Stone, who has resigned after thirty years of service. Dr. Stone has been made emeritus gynecologist by the board of directors.

Dairy Regulations.—The city board of health has issued an order that all persons selling milk from two or more cows shall be rated as dairymen, and must obtain a permit from the board of health before selling milk in the city. The order also provides that live steam must be used in cleaning the bottles to insure perfect sanitation. Personal inspection of all dairies will be made at frequent intervals.

ILLINOIS

Personal.—Dr. Royal L. Eddington, Lacon, was recently elected president of the board of education, District Number 80.

Physicians' Outing at Lake Maxinkuckee.—Four hundred members of the Northside Branch of the Chicago Medical Society were the guests, August 16, of Culver Military Academy, at an outing held at Lake Maxinkuckee, Ind. The day was devoted to sports, one feature being an old-fashioned "hurry-up call" contest, in which each physician was required to harness a horse to a buggy and go to a fictitious patient.

IOWA

Personal.—Dr. John P. Savage, Sioux City, has been appointed chief of the medical service training center of the Bureau of Vocational Education at Silver Springs, Md.

Hospital News.—Sunnycrest, Butte County's new sanatorium for the treatment of tuberculosis, was dedicated, August 13, and is now open for the treatment of patients. Under the terms of the will of the late John H. Burns, filed at Huntington, Neb., the bulk of his estate was left to found a protestant hospital, to be called the John H. Burns Memorial Hospital, under the professional supervision of his friend and physician, Dr. Louis Townsend, Sioux City. It is believed that \$150,000 will be available for the purpose.

KANSAS

Personal.—Dr. Florence Brown Sherbon, head of the division of child hygiene of the state board of health, has resigned, to take effect, September 1, when she will take a position on the faculty of the Kansas University, where she will teach child welfare and allied subjects.

1. Minutes of the House of Delegates, J. A. M. A. 76:1763 (June 18) 1921.

2. General News, this issue, p. 714.

3. Statements in regard to the courses in these institutions appear in the Educational Number of THE JOURNAL, Aug. 13, 1921, p. 538.

LOUISIANA

Appropriation for Health Work.—The state board of health is planning to establish a full-time staff for health work at Monroe. The International Health Board of the Rockefeller Foundation will provide \$2,500, and the Ouachita Parish police jury has appropriated \$2,500. The state board of health will spend \$2,500, and it is expected that the city of Monroe will provide the remaining \$2,500. This \$10,000 fund will be spent for health work in the Ouachita parish and the city of Monroe.

Ordinance to Prevent Spread of Communicable Diseases.—The board of health, Morehouse Parish, at its last regular meeting, adopted an ordinance prohibiting any person suffering from a communicable disease from being employed as a teacher or janitor in any public school of the parish. The ordinance also requires teachers to furnish a health certificate from a registered physician addressed to the parish superintendent, certifying that they are not suffering from any communicable disease. The ordinance also prohibits the use of open receptacles for drinking water in schools, and also of dippers and cups. No teacher or pupil will be allowed to carry to school, or allow to follow, a dog or any other pet animal. The board of health has also adopted an ordinance prohibiting persons from working in bakeries, cafés, restaurants, hotels and at soda fountains if they have communicable diseases.

MARYLAND

Personal.—Dr. Arthur J. Lomas, who recently resigned from the Johns Hopkins Hospital, has left for the West, and after a short trip will go to Iowa City as superintendent of the University Hospital, connected with the University of Iowa. Dr. Calvin H. Goddard, who succeeds him, has taken up his new duties as second assistant director and head of the dispensary.—Dr. Irmarita Kellers, a graduate of the 1921 class, Johns Hopkins Medical School, is spending the summer in London.—Dr. T. Caspar Gilchrist, Baltimore, en route to America on the *Albania*, went to the assistance of a fireman on the *Tamaqua*, bound for London, who had torn off his arm in a ventilating fan. Dr. Gilchrist had the man removed on board the *Albania* and operated on the patient at sea, saving his life.

MASSACHUSETTS

Personal.—Dr. Francis O'Brien has been appointed superintendent of the Hampshire County Sanatorium, Leeds, to succeed Dr. Charles E. Perry, who resigned recently to take charge of a government tuberculosis hospital in California.

MICHIGAN

Personal.—Dr. John Sundwall, director of students' health service and professor of hygiene and public health, University of Minnesota, has been made director of hygiene and public health in the newly established department of physical education in the University of Michigan. He will also become director of students' physical welfare for the Michigan school, and will assume his duties at the opening of the college late in September. An important feature of the newly organized division will be the training of teachers and supervisors of physical welfare for colleges, high schools and grade schools.

MINNESOTA

Poliomyelitis Epidemic.—More than 400 cases and suspected cases of poliomyelitis are reported throughout the state. Physicians from the university and assistants to Dr. Albert J. Chesley of the health department have been sent to many sections of the state to check the spread of the disease.

NEW YORK

Health Conference.—The annual conference of health officers and public health nurses of New York state will be held, September 13-15, at Cornell University, Ithaca.

New York City

Huntington Hospital Drive Ends.—The final figures of the drive for the benefit of the Huntington (L. I.) Hospital netted over \$30,000. Of this sum \$25,000 is to be used for an extension to the hospital building.

New Jamaica Hospital.—Plans for the new Jamaica Hospital building, Van Wyck Avenue near Fulton Street, are about completed. The new structure will accommodate 122 patients and will cost \$500,000.

City Hospitals Open to Obstetric Cases.—Bird S. Coler, commissioner of public welfare, announced recently that because of the high fee demanded by obstetricians he has decided to open the city hospitals for confinement cases as a means of relief to families whose incomes range between \$2,500 and \$5,000 a year. Mr. Coler states that the privately owned hospitals of Brooklyn and Manhattan have become purely business institutions, and that while the poor can receive free treatment and the rich can pay fees from \$150 to \$250, there is no place for the patient of moderate means to go and still retain self-respect.

NORTH CAROLINA

Negro Women in Health Drive.—The Colored Women's Federation of Rocky Mount conducted a campaign of lectures, demonstrations and exhibitions, August 3-5, to instruct colored mothers in the better care of their babies. The movement had the approval and cooperation of the city health department.

Southern Pediatric Seminar.—A two weeks' course for general practitioners in the study of the child in disease and health was recently held in sections at Black Mountain, Saluda, and Asheville. The lectures were given by well known specialists, many of whom spend their vacations in this locality. Dr. William A. Mulherin, Augusta, Ga., is the head of the courses, and Dr. Frank Howard Richardson, Black Mountain, has charge of the local work.

OHIO

Meeting of Hospital Unit.—The former members of Base Hospital No. 67, U. S. Army, will hold their second annual meeting at Cleveland, September 3-5. This unit was stationed at Mesves, France, during the war, and more than 50 per cent. of its membership lives in Ohio.

State Association Committee on Health Appointed.—Dr. Wells Teachnor, Columbus, president of the Ohio State Medical Association, on authorization by the council, pursuant to the request of the Ohio Public Health Association, has appointed the following committee to represent the position of the association on general health subjects: Drs. Charles W. Waggoner, Toledo, chairman; William D. Porter, Cincinnati; Daniel C. Houser, Urbana; James A. McCollam, Uhrichsville, and William A. Galloway, Xenia.

Important Health Measure.—The Talley-Chatfield law, which went into effect, August 16, gives the state department of health power to order improvements in public water supplies on its own initiative instead of acting on complaint of local authorities or on petition of voters, as before. It also requires analysis of public water supplies. The law was designed to safeguard against serious water-borne epidemics, such as the Salem typhoid fever outbreak of last year, caused by conditions which the state health department was at that time powerless to correct.

Medical Expansion at Ohio State University.—According to a recent announcement of the trustees of the university, Dr. Charles S. Hamilton has been made professor of surgery and head of the surgical department in the College of Medicine; Dr. Roy G. Hoskins, editor of *Endocrinology*, is to be professor in physiology, and Dr. Clayton S. Smith, formerly connected with Northwestern University and the government Bureau of Chemistry, has been appointed professor of physiologic chemistry and pharmacology. One of the ten new buildings listed on the university's expansion program, is the new hospital to be erected on the campus back of the site selected for the new medical science building which is also to be erected for the College of Medicine. The hospital will have a capacity for 300 beds and will be called the Lynne Starling Hospital, in honor of the founder of the old Starling Medical College. It is expected that work on the new hospital will be started in October. Another new building which is now being erected at a cost of approximately \$70,000 is the Kettering Research Laboratory, which was made possible by the gift of Charles F. Kettering of Dayton.

PENNSYLVANIA

Personal.—Dr. Thomas H. Newcome, Red Bank, while returning from a visit to a patient at Templeton, suffered three broken ribs and cuts about the face when the brakes on his automobile refused to work and the car catapulted down a steep grade. Dr. Newcome was taken to the Kittanning Hospital.—Dr. Jerome B. Rogers, surgeon in chief of the Pottsville Hospital, has been appointed chief surgeon of

the Philadelphia and Reading Coal and Iron Company, to succeed the late Dr. George Halberstadt.

Physicians of Four Counties Meet.—Fifty physicians of Mifflin, Juniata, Snyder and Perry counties held a meeting under the jurisdiction of the state medical society, August 17. The following papers were presented: "Medical Legislation," by Frederick L. Van Sickle, Harrisburg; "Infant Feeding," Dr. Henry R. Douglas; "Diabetes," Dr. John W. Eilenberger; "Pleurisy," Dr. F. C. B. Phillips; "Acute Abdominal Pains," Dr. George B. Stull; "Cancer, Radium, Roentgen Ray, and Knife," Dr. Harvey F. Smith; "Experience with Typhus in Poland," Dr. George R. Moffitt.

Typhoid Fever Epidemic.—Typhoid fever, which has been raging in epidemic form in Shamokin, Pa., for two weeks, has reached its peak, according to local health officials and physicians. The total list of victims has reached the 100 mark, but the number of new cases reported has dwindled from ten to two a day. There have been four deaths since the outbreak of the disease. Eleven cases have been reported at High Park, Pa., and Jeannette, Pa. The state department of health has notified public health nurses throughout the state to make efforts to obtain pure milk supplies in their districts, and at the same time efforts are being made to control the disease in all the districts by instructing the public as to the symptoms and precautions to be observed.

Philadelphia

Personal.—Dr. Russell S. Wingfield, formerly an intern in the Stetson Hospital, was injured in a fire which destroyed the buildings occupied by the health clinic of the Red Cross in Saloniki, Greece, August 2.—The following physicians will comprise the staff of the Radium Clinic of the Philadelphia General Hospital, City of Philadelphia: Drs. Charles C. Norris, Jay F. Schamberg, John B. Carnett and Henry K. Pancoast.

VIRGINIA

Personal.—Dr. John H. Baird, who was recently elected by Yale University as professor of neurologic surgery in their college in China, but at his request will not be called to enter upon his duties there for another year, has entered the U. S. Public Health Service as passed assistant surgeon with the rank of captain. He has been assigned to duty at Fox Hills, Staten Island, N. Y.

TEXAS

Hospital News.—The new Missouri, Kansas and Texas Hospital, Denison, which was erected at a cost of over \$300,000, will be opened September 1. Dr. Thomas J. Long, Denison, will be the superintendent.—It has been announced that a site has been purchased for the new Harris Memorial Methodist Hospital at Fort Worth. The building will be constructed at the cost of \$1,000,000 and will contain 400 rooms, not including the many large wards incorporated in the plans. The present sanatorium will be turned into a maternity ward.

CANADA

Personal.—Dr. Norman Anderson, Toronto, is spending the holidays at Cacouna on the St. Lawrence.—Dr. George W. Badgerow, C. M. G., London, England, is spending the summer in Toronto.—Dr. William Gallie, Toronto, has been appointed head surgeon of the Hospital for Sick Children, Toronto.

GENERAL

New England Surgical Society.—The society will meet at Worcester, Mass., September 21-22.

Legislation Introduced for Relief of Russia.—A resolution, introduced by Senator King of Utah, would authorize the President to use army medical supplies for the relief of famine sufferers in Russia. Surplus army drugs, medicines and medical supplies to the value of \$5,000,000 would be placed at the disposal of the sick and suffering people in Russia.

Mississippi Valley Conference on Tuberculosis.—Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin and Ohio will report at the ninth annual session of the Mississippi Valley Conference on Tuberculosis to be held, September 12-14, at Columbus, under the presidency of Dr. Walter McNab Miller, St. Louis. Among those who will address the conference are: Dr. Allen K. Krause, Baltimore, director of the Dow's Foundation for Tuberculosis Research, Johns Hopkins Medical School; Dr. Haven Emerson, New York, and Dr. James Alexander Miller, New York, president of the National Tuberculosis Association.

American Electrotherapeutic Association.—The thirty-first convention of the association will be held at Washington, D. C., September 7-10. Electricity will be the theme of the meeting, and the largest apparatus for electrical treatment ever assembled at a medical meeting will be shown. Dr. George Betton Massey, Philadelphia, the first president, will present a paper. The scientific program will include addresses by physicists of the National Bureau of Standards. Major-Gen. Merritte W. Ireland, Surgeon-General of the Army, Admiral Edward R. Stitt, Surgeon-General of the Navy, and Hugh D. Cumming, Surgeon-General, U. S. Public Health Service, will be among the speakers at the banquet.

Personal.—Dr. E. C. Yao, Shanghai, and Dr. K. H. Li of Soochow, a graduate of Tsinghua College of Medicine, China, both of whom received their diplomas from the University of Pennsylvania in June, after spending seven years in this country acquiring their medical education, sailed, August 11, from Vancouver, with forty prominent medical men and scientists, for Peking, China, to attend the dedication of the Peking Union Medical College and also the International Conference to be held there in September. Drs. Yao and Li will remain in China, Dr. Yao to specialize in surgical work and Dr. Li to devote his time to child welfare work from a medical standpoint.

Gifts for Harvard's School of Public Health.—It is announced that the School of Public Health of Harvard University has received an initial gift of \$1,785,000 from the Rockefeller Foundation. This school, which was organized in 1910, gives a general course for the training of public health officers and special courses in preventive medicine, tropical medicine, and industrial hygiene. The work has been hampered, however, by a lack of adequate funds, and by uneven growth. This gift, therefore, will enable the school to provide opportunities for research, to unify existing courses, and to provide extended teaching facilities in public health administration, vital statistics, immunology, bacteriology, medical zoology, physiologic hygiene, and communicable diseases. Part of the funds will be used for the purchase and equipment of a building for the housing of the school. For this purpose the university hopes to secure an existing building adjacent to the medical school. The cost of maintenance and development of the school will be met from endowment funds in part set aside by the university and in part contributed by the foundation. The foundation's immediate appropriations to the project will aggregate \$1,785,000. If the growth of the school seems to demand it, the arrangement provides for further sums to any amount which shall not exceed \$500,000.

Use of Alcohol at First Aid Stations, Dispensaries, Infirmarys, and Clinics, and by Visiting Nurses' Associations.

—According to a recent Treasury decision, Section 74 of Regulations No. 60, as amended by Paragraph 5, T. D. 3041, approved July 1, 1920, is further amended to read as follows:

Section 74.—*Use of alcohol at first aid stations, dispensaries, infirmaries and clinics, and by visiting nurses' associations.* A person conducting a manufacturing, industrial or other establishment of such proportions and of such character as to justify the maintenance of a first aid station for employees, may procure alcohol for other than internal use at such first aid station, such as for application to wounds after use of carbolic acid or tincture of iodine, making alcohol packs, sterilizing instruments, making solutions for external application, etc., in such quantities as may be necessary, provided the first aid station is under the direct supervision of a physician or a trained nurse responsible to the proprietor of such establishment for the proper safeguarding and use of any alcohol obtained under the provisions of this section. Alcohol may be procured at a dispensary, infirmary or clinic, for the uses stated in the preceding sentence, provided such dispensary, infirmary or clinic is under the immediate supervision of a duly qualified physician actively engaged in the practice of his profession. Alcohol may also be procured, for the uses stated above, by a visiting nurses' association, where the alcohol is in the custody of a trained nurse and is used only by trained nurses directly responsible to the officers of the association.

(a) The person in charge of a first aid station, dispensary, infirmary, clinic or visiting nurses' association procuring alcohol as stated in the preceding paragraph, must keep a record showing the amount of alcohol on hand at the beginning of a month, each quantity later received and date of receipt, the total quantity used during the month, the purpose for which used, and the amount on hand at the end of the month. This record must be in duplicate and signed by the person in charge. One copy will be filed at the premises where the alcohol is kept, and one copy forwarded to the director on or before the tenth day of the month succeeding that for which the entries are made. In case no alcohol is received or used during any month, the record referred to must nevertheless be kept, and a copy forwarded to the Director to show the quantity on hand, if any.

(b) In filing application for a permit to use alcohol at a first aid station in the manner outlined above, the proprietor of the establishment must indicate the number of employees in the establishment, the maximum quantity of alcohol which it is desired to procure during the calendar year, the specific purposes for which the alcohol will be used, and the name of the physician or trained nurse in charge of the first aid station. An application for a permit to use alcohol at a dispensary, infirmary, or clinic, or by a visiting nurses' association, must show the name of the physician or trained nurse in charge thereof who will be responsible for the proper safeguarding and use of any alcohol procured

pursuant to such permit, if issued, a full description of the work of such dispensary, infirmary, or clinic or visiting nurses' association, the maximum quantity of alcohol which it is desired to procure during the calendar year, and the specific purposes for which it will be used.

LATIN AMERICA

Physicians in the Brazilian Congress.—The following physicians have been elected members of the Brazilian Congress: Profs. C. Fraga and P. Mendes, from Bahia, and Profs. A. Sodré, A. Austregesilo and Dr. M. de Medeiros from Rio de Janeiro.

Foundation of Two Medical Societies in Brazil.—The *Folha Medica* announces the organization of the Associação Medico-Cirurgica Fluminense at Nictheroy, with election of Dr. Geraque Collet, president; Dr. Dario Callado and Dr. Tavares de Macedo, vice presidents; Dr. C. da Fonseca, Dr. Lemos Duarte and Dr. Vital de Mello, secretaries; Dr. Eurico Bastos and Dr. D. Costa Velho, treasurers, and Dr. P. da Veiga, director of the museum.—The profession has also organized at Campos, founding the Sociedade Fluminense de Medicina e Cirurgia.

Memorials to Physicians in Havana.—In the News department of THE JOURNAL, July 23, 1921, p. 295, it was stated that it was proposed to erect in the corners of Finlay Park, Havana, statues of the three members of the commission which with Dr. A. Agramonte confirmed the transmission of yellow fever by the mosquito. According to a letter just received from Dr. J. Le-Roy y Cassá of Havana, the busts—not statues—that are to be placed there are of Dr. Gorgas, Dr. J. Guiteras and Dr. C. Delgado in addition to the bust of Dr. Lazear, the martyr of the yellow fever research work. The busts are already being made. The statue of Dr. Carlos J. Finlay stands in the center of the park and was recently unveiled.

FOREIGN

Department of Health for Japan.—In order to bring the various health organizations of the empire under one department, there has been introduced, in the Japanese house of representatives, a bill to create a department of health.

Research on Diphtheria Bacillus.—The recent graduation thesis at the University of Lyons of Dr. P. Durand presented the results of research on the Douglas Flattery Foundation at the Bacteriology Institute at Lyons, France. Research on antisera and vaccines for diphtheria and tuberculosis is also being pushed by Dr. P. Courmond.

Visual Disturbance After Loss of Blood.—Dr. Terson of Paris has been commissioned by the French Société d'Ophthalmologie to collect data on the effect on vision of losses of blood. He is appealing to confrères in general, civilian and military, for records of cases they may have observed, and the treatment followed. Address M. Terson, 47 boulevard des Invalides, Paris, France.

Memorial to Roentgen-Ray Victim.—A memorial tablet was recently placed on the house at Enghien-les-Bains, formerly occupied by the radiologist, A. Leray, who succumbed last spring to the effects of roentgen-ray injury acquired during his work for the wounded during the war. M. Leredu, ministre de l'hygiène, unveiled the tablet and addresses were made by the mayor and others.

Personal.—Prof. T. Rovsing of Copenhagen has been elected an honorary member of the Edinburgh Medico-Chirurgical Society.—The *Medizinische Klinik* states that Prof. P. Uhlenhuth, formerly director of the Institute for Hygiene and Bacteriology at Strasbourg, has assumed the supervision of the "Emil Behring" Institute for Experimental Therapy of the University of Marburg.

Deaths in Other Countries

Dr. H. Eichhorst, professor of special pathology and treatment and director of the medical clinic of the University of Zurich, author of several textbooks on clinical medicine, aged 72.—Dr. E. P. Rueda of Buenos Aires.—Dr. J. de Andrade Gramaxo, professor emeritus of internal pathology at the University of Porto, Portugal, aged 96.—Dr. H. Lajoux, formerly professor emeritus of the medical school at Rheims, aged 73.

CORRECTION

Results in the Treatment of Acute Poliomyelitis.—In the article by Dr. E. C. Rosenow, THE JOURNAL, August 20, in the last line of the sixth paragraph on page 589 the words 6.4 per cent. should read 67.4 per cent.

Medical School in Acceptable List.—Through an error the University of Arkansas Medical Department was shown as

being rated in Class B on page 528 of the Educational Number of THE JOURNAL, Aug. 13, 1921. Its correct rating, however, is shown in the lists of medical schools appearing on pages 544 and 545.

Government Services

Change in Medical Personnel of Veterans' Bureau

The director of the Veterans' Bureau has appointed Lieut.-Col. Robert U. Patterson, M. C., detailed by the War Department, as medical executive officer in charge of administration and executive medical work of the bureau. John D. Lung, surgeon, U. S. P. H. S., has been detailed to the office of the director to take up the question of an epileptic colony for beneficiaries of the bureau. The request for relief from duty in the bureau by Col. Henry H. Shaw, who has been chief of the War Risk Insurance, section on hospitals and inspection, has been approved, and the resignation of Dr. Haven Emerson, medical adviser, Veterans' Bureau, will take effect September 1.

Army Medical Department Encourages Necropsies

Surgeon-General Ireland has issued instructions to medical officers of the Army to perform necropsies, whenever possible, and to forward all types of pathologic material to the Army Medical Museum. A special course in pathology will be made a part of the basic course given at the Army Medical School in the future in which these specimens will be used for study. It is urged on all officers performing necropsies that each one is of sufficient importance to justify a complete protocol being written in duplicate, whether tissues are collected or not. During the World War the pathologic section of the laboratory service in France required that one copy of all necropsy protocols be sent to the headquarters laboratory in Dijon. In the brief period that American troops were in that country over 15,000 necropsy protocols were collected. Practically all of these protocols include brief clinical notes on the case.

United States Veterans' Bureau

A resolution introduced in Congress and passed by the Senate provides for the change of the name of the Veterans' Bureau, established by the Sweet act, to the "United States Veterans' Bureau." The reason for the change in the name is the fact that the American Legion has a branch of its organization with the title of "Veterans' Bureau" and confusion in the mails has already resulted. The new United States Veterans' Bureau started in operation on August 9, after the measure had passed both houses of Congress and had been signed by the President. The appointment of Colonel Forbes, former head of the Bureau of War Risk Insurance, as director, was approved by the Senate.

Public Health Service Aids Pellagra Prevention

The U. S. Public Health Service has commenced a system of cooperation with demonstration and county agents in the states of the South in spreading propaganda on the prevention of pellagra. All of these agents are being furnished with leaflets and pamphlets on the relation of diet to pellagra for the purpose of distribution among the tenant farmers of the South. Surgeon-General Cumming has also issued instructions for attendance of public service officials at all the conventions of agents and demonstrators that are to be held during the coming year. These officials will deliver lectures to the delegates on pellagra and preventive methods. The first state convention will be held at Gainsboro, Fla., Sept. 5, and the second at Blackburg, Va., October 15.

Public Health Service Exhibit at Cincinnati

U. S. Public Health Service officials will present an extensive health exhibit at the coming Cincinnati Health Exposition, to be held, October 15 to October 22. The exhibit will be similar to the one recently presented at the Pageant of Progress at Chicago.

Foreign Letters**LONDON**

(From Our Regular Correspondent)

Aug. 1, 1921.

Gestation of Three Hundred and Thirty-One Days Allowed

The possibility of prolonged gestation has once more come before the courts. The case is important, as evidence was given by the leading authorities, so that the case constitutes the most recent pronouncement in English obstetrics. A man prayed for the dissolution of his marriage on the grounds of his wife's adultery with an unknown man. He was a soldier at the time, but was granted leave of absence from Sept. 29 to Oct. 4, 1918, when the last coitus took place. He did not return home until September, 1919. September 1, his wife gave birth to a child. The lapse of time from coitus to birth was 331 days. No evidence was adduced of misconduct on the part of the wife. The claim for relief was based on the impossibility of gestation extending to 331 days. The judge (the lord chancellor) adjourned the hearing and referred the case to the attorney-general with a request to attend as *amicus curiae* to argue the matter and call further medical evidence. The medical witnesses were nominated by Sir Francis Champneys, president of the General Lying-in Hospital and chairman of the Central Midwives Board.

Prof. Henry Briggs, president of the Obstetrical and Gynaecological Section of the Royal Society of Medicine, gave evidence that the longest period of gestation he had known was 306 days. It was impossible to fix an outside limit to the period of gestation. Dr. J. S. Fairbairn, obstetric physician to St. Thomas' Hospital, said that, taking the patient's information as correct, the longest period of gestation that he had known was 315 days from the last menstruation. The labor was prolonged and the child had to be delivered by cesarean section. Von Winckel had recorded a case in which birth occurred 336 days after the last menstruation, and that was calculated to 315 days from conception. From the scientific point of view he could not say that 331 days was an impossible period, but he would reject a history of 331 days unless signs of prolonged gestation plainly appeared in the child. Dr. Thomas Watts Eden, vice president of the Obstetric Section of the Royal Society of Medicine, gave evidence that in his personal experience he had cases in which, relying on the dates supplied by the patients, gestation had been prolonged for 305, 300 and 298 days after the last menstruation. He was not prepared to say that 331 days was an impossible period. The physician who attended the patient in her confinement was then recalled. He said that the child was exceptionally large and the labor was prolonged. He did not weigh the child at birth, but judged that it weighed 11 pounds.

The attorney general referred to the reported cases in which the period of gestation had been prolonged. In *Bowden v. Bowden* (1917) the number of days was 307, and the judge (Horridge) decided in favor of legitimacy. In the Gardner peerage case (1824) the period was 312 days and the decision was against legitimacy. Excepting the case of *Bowden v. Bowden*, no case had been decided entirely on the evidence of the duration of gestation.

In delivering judgment, the lord chancellor said that the only evidence of adultery was the abnormal length of the pregnancy. He could find the respondent guilty only if he came to the conclusion that it was impossible, having regard to the present state of medical knowledge, that the petitioner could be the father of the child. The expert evidence showed that there was no such impossibility. He therefore accepted the evidence of the respondent that she had not committed adultery, and dismissed the petition.

International Tuberculosis Conference

The second conference of the International Union Against Tuberculosis has been held in London, under the presidency of Sir Robert Philip of Edinburgh. In all, thirty-nine countries were represented. Of the enemy countries of the late war, Austria was represented but not Germany or Prussia. At meetings of the council of the union, resolutions were passed on the motion of Prof. Léon Bernard, urging all governments to vote large sums to promote preventive measures against tuberculosis, and, on the motion of Professor Réion, pressing for the establishment of tuberculosis as a subject of special teaching in the medical schools of all countries in order that physicians might be instructed in the precise diagnosis of the disease and the means of combating it. It was resolved to meet in Brussels next year, and in Washington the year following.

THE CAMPAIGN IN ENGLAND

Sir Alfred Mond, minister of health, described the work of his department. In England and Wales there were now 341 tuberculosis officers, 412 dispensaries and 18,050 sanatorium beds. These beds had increased by 4,000 during the last two years; and during the next two years, with the completion of the buildings now in progress, 3,500 additional beds would be available. In 1914 there were 99,000 notified cases of tuberculosis and 50,000 deaths; in 1920, 73,000 notified cases and only 42,000 deaths.

Col. George E. Bushnell (U. S. Army) said a basic fact was that the large majority of civilized mankind were infected with tuberculosis. That they did not die of it was the best of proof that tuberculosis was not necessarily an evil. Might it not, indeed, be that the salvation of the people was to be sought in an optional tuberculization? The hope of entire freedom from infection with tuberculosis was surely illusory under present conditions. The existence of the International Union Against Tuberculosis showed that its leaders were alive to the advantages of international cooperation in the study of tuberculosis. Under its leadership might they not look forward to standardizing their knowledge, to compelling the assent of the world by the accumulation of mountains of proved objective facts, so that some of the problems of today should become the truisms of tomorrow, and that there might be laid, broad and deep, everlasting foundations on which their successors should go on to build a perfect structure.

MODES OF DIFFUSION

Prof. A. Calmette of the Pasteur Institute opened a discussion on the modes of diffusion. He said that tuberculosis attacked all human races. People who had been isolated geographically or commercially, and had thus been protected, proved on exposure to be the most susceptible, whereas the older civilized races were the most resistant. Tuberculosis, in the words of Krause, was the price paid for civilization. He emphasized the part played in the diffusion of tuberculosis throughout the world by healthy carriers of tubercle bacilli. The recently acquired knowledge of this unexpected danger from individuals with occult tuberculosis made the organization of social defense much more difficult than when prophylaxis had to be based only on the education and isolation of phthisical patients. While the latter were by far the principal factors in dissemination, humanity must be warned against the possibilities of infection from innumerable individuals, apparently perfectly healthy, and, in fact, only slightly infected with lesions limited to a few glands. Such lesions might remain indefinitely latent, yet those who harbored them might be capable of contaminating their environment. Countries still comparatively free from tuberculosis could be protected only by organizing a system of detection based on both tuberculin tests and clinical examination of the glandular system, mainly by means of roentgenoscopy. Suspected indi-

viduals could not be prevented from living with the healthy, but by supervision and education they might be rendered harmless. This was the goal toward which all countries should strive.

THE MEDICAL PROFESSION AND PREVENTION

Sir Humphry Rolleston opened this discussion. He said that physicians were in a position to diminish and prevent infection, to improve the resistance of the people, and to promote hygienic education. The physician in his ordinary practice was the first line of defense against this and all other forms of disease. The worker in special branches of research was also of great potential importance in tuberculosis prevention, while the physician attached to the teaching hospital had a great responsibility in forming the outlook of the future physician in regard to this question. But as a member, leader and adviser of the general public and of municipal bodies, the physician could also exercise a vast influence. A periodic census of all persons should be taken so as to classify them by means of von Pirquet's test, segregating those with open tuberculosis, not only temporarily in sanatoriums, but perhaps permanently in village industrial settlements, and placing those with latent infection under medical supervision.

Sir George Newman, chief medical officer of the ministry of health, emphasized the importance of notification. The failure of a number of physicians to notify their cases when first diagnosed was a serious handicap, and some steps would have to be considered for insuring compliance with this compulsory regulation unless great improvement was effected. The dispensary, under the guidance of the tuberculosis officer, should be the consultation center for the neighborhood. One of its chief functions should be to afford facilities for early diagnosis; it should be also a center for treatment, so far as the appropriate treatment might be prescribed there, and also in that any particular treatment could not be properly undertaken by a general physician. Residential institutions would be included in a complete scheme, with sanatorium schools for the young and training sections where patients with more or less arrested disease might be "hardened up." After-care work was important, and included not only general supervision but also study of environment. A complete government scheme would also include research work, and every worker in the prevention of tuberculosis should regard himself as, ipso facto, an investigator. Finally, the health officer had important functions, and there should be most harmonious cooperation between him and the tuberculosis officer and a close coordination of the institutions and methods they represented.

Prof. C. E. A. Winslow said that in America they looked to France instinctively for the theory of tuberculosis, and to England for ideas as to administration, and they were not disappointed. Col. G. E. Bushnell deprecated the too early devotion of the medical student to a specialty. He considered it a great mistake also that physical diagnosis was not first learned on the normal chest. Dr. Minor (of the United States) held that in the last analysis the problem was a social one even more than a medical one. It was the problem of educating a more intelligent race. The essential factor was not so much the strength of the invading organism as the resistance of the host. Several speakers appeared to think that the physician should engage wholeheartedly in social and propagandist work. Dr. Eric Pritchard said that since a tubercle-free environment was a dream of Utopia, the best strategy was to aim at a population which should be tubercle-immune or resistant, and to do this a beginning had to be made with the infant. The opportunity at infant welfare centers of detecting cases of infection was so great that it should be an instruction to officers in charge of those centers to send such cases to the tuberculosis dispensaries.

SAVING CHILDREN: THE GRANCHER SYSTEM

Dr. Armand Delille of Paris described the system of the late Professor Grancher for protecting children. When a parent is found to be affected, the children while still healthy are removed to the country, where they are lodged with peasants for several years. Out of 2,300 Parisian children thus dealt with since 1903, only seven had become tuberculous and two had died of meningitis. Branches had been started in twenty of the principal cities in France, and there would soon be one in each of the eighty-nine departments working in connection with the Departmental Committee for Assistance to the Tuberculous, and complementary to the work of the Calmette Dispensaries. The "Œuvre Grancher" was a work of private charity, but the French government realized its importance, and gave a large grant to it, as did also the city of Paris and different cities where there were branches. The Grancher system was the most useful, the least expensive, and the most radical and successful method of fighting tuberculosis. Indeed, it stopped the disease in all families in which it was applied.

PARIS

(From Our Regular Correspondent)

July 21, 1921.

Congress of History of Medicine

The second international congress of the history of medicine, which has just been held in Paris, adopted the following resolutions: 1. An international association of the history of medicine is hereby created, and its permanent committee will meet in Paris. 2. The next congress will take place in London, in 1922. Besides various minor communications, two principal questions will be discussed, for which essayists will be appointed in different countries.

Pyelography at the Urologic Congress

This method of exploration, first used in 1906, has been rapidly improved, especially in America. The accidents, which were frequent at the beginning, are mostly due to a faulty technic. They can be prevented if the greatest care is used in connection with catheterization and injections; if only small catheters are employed, allowing the reflux of the liquid, and if the syringe is eliminated. Collargol is still the most commonly used liquid. Dr. Papin prefers crystalloid solutions and especially a 30 per cent. sodium bromid solution. Drs. Young and Waters emphasized in their report the importance of taking the pyelograms in the horizontal as well as in the vertical position (patient seated), in order to show conspicuously renal mobility and ureteral bends, and also sometimes in the Trendelenburg position, especially to prove the presence of open ureteral orifices and of the vesico-ureteral reflux. Though pyelography may find its principal application in the diagnosis of hydronephrosis, we must agree with Papin that floating kidney, the anomalies of the kidney and ureter, and reno-ureteral lithiasis have greatly benefited through the use of this method. It facilitates also the diagnosis of tuberculosis, which is recognized at the start by erosions of the renal pelvis, by the formation of cavities and, occasionally, by the precipitation of lime salts showing very pronounced shadows. Finally, in renal tumors, pyelography is often the only means of diagnosis. Dr. Genouville of Paris emphasized the importance of pyelography in the diagnosis of reno-ureteral calculi. He contends that two roentgenograms are necessary: one of the calculus alone and the other of the calculus with pyelography. Comparison and superimposition of the two plates permit one to locate the calculus exactly with reference to the renal pelvis. Genouville was able by this method to determine accurately the site of an intrarenal calculus in an aged woman whose general condition was bad. If this calculus had been enclosed in

the pelvis, it would probably have entailed the blocking of the ureter, whereas it is tolerated in the kidney without inconvenience to the patient. Thus, pyelography saved the patient from undergoing an operation from which she would not have derived any important advantage.

MADRID

(From Our Regular Correspondent)

July 21, 1921.

Cajal

Cajal, the most famous of Spanish biologists, has been forced into the spotlight of publicity when he least expected it, and in fact, much against his will. Basing his action on the fact that Cajal will soon retire as professor of normal and pathologic histology in the School of Medicine of Madrid, Dr. Van Baubergen, a member of congress, introduced a bill providing, first, that Cajal should be appointed honorary dean of all Spanish medical schools and, second, that he should be granted an annual pension of 25,000 pesetas (about \$3,200) during the remainder of his life. As the bill had not been introduced in the usual way, the minister of public education was taken unawares. While endorsing its first paragraph, he added that the pension could not be granted, as it would violate the budget law. The matter was put to a vote and, as might be surmised, the house sided with the minister. This was the starting point for a campaign on behalf of Cajal. Cajal himself tried to put a stop to it, publishing a letter in which he said, among other things, "I would consider myself very ungrateful if I overlooked the fact that I am a spoiled child of fortune. I owe much, very much, to foreign countries, but I also owe a great deal to the government that has rewarded very generously my efforts and those of my pupils, establishing for us an official laboratory." And further on, "The legend of the poverty-stricken and neglected researcher has no application in my case." Cajal asked in his letter that, rather than granting him a pension he does not need, they should increase the funds for the Cajal School. The government accepted the suggestion and increased by 50,000 pesetas (about \$6,500) the annual appropriation for the school.

Antimalarial Campaign

Professor Sella, the Italian sanitarian and chief of the antimalarial service of the League of Red Cross Societies of Geneva, is lending his cooperation in the work that the Spanish Commission for the Sanitation of Malarial Regions is conducting in some towns of Extremadura. In connection with this subject, Professor Sella gave an important lecture last week. He emphasized the seriousness of malaria in Spain since it causes a death rate of 11 per hundred thousand inhabitants, and in some provinces of even 107.1 per hundred thousand. The number of malarial patients can be estimated as being from 300,000 to 400,000. He reviewed the methods employed in different countries to combat malaria. Italy was the first to begin this work, attacking the problem from the standpoint of the patient and employing quinin as a prophylactic and a remedy; on the other hand, in the United States the attack is aimed at the mosquito through the destruction of larvae, oiling, drainage and the breeding of larva-eating fish, such as the Bureau of Fisheries of the United States has sent to Spain. Either method alone is inefficacious. He referred to the expenses incurred which, however, were over-compensated by the benefits obtained. But usually, local resources are inadequate for the sanitation of a region. The central government must help, and hence the need of anti-malarial legislation, such as Italy originated. In that country, however, the mistake was made of centering only on the patient and not extending the campaign to other fields. Sella believes that the ideal consists in starting local campaigns which the general government should assist to the extent of

bearing 25 per cent. of the expenses. Demonstrations make it possible to develop experts while training a body of assistants, which is precisely the hardest to secure. This is so well known that a famous professor said it was easier to get the money for an antimalarial campaign than trained assistants to carry it out. In Italy the bureau of public health has established a school of malaria prophylaxis. Finally, Sella discussed the scarcity of quinin, which is one of the greatest economic difficulties found at present. Quinin during the war sold at 600 francs a kilogram, and then decreased in price to 200 francs. When everybody expected that it would go down to its prewar price of 16 francs a kilogram, an agreement made by the Java planters, who produce 90 per cent. of all quinin sold in the world, threatens to keep up the price indefinitely. This seems to be a subject for consideration in an international conference. Perhaps chemistry may solve the problem. Quinin represents a very small fraction of the alkaloids available in the cinchona bark, and chemists might either transform the other alkaloids so that they might become useful, or produce a synthetic quinin. It is well known that Knoll discovered antipyrin while searching for a synthetic quinin. The experiments made in India have shown that the alkaloids associated with quinin, even when not transformed, have their uses, since cinchonidin and quinidin seem to be more active against tertian fevers than quinin itself.

BUENOS AIRES

(From Our Regular Correspondent)

June 29, 1921.

Influenza

We have actually suffered an epidemic of influenza during the month of June, synchronizing with a low temperature, even — 3 and — 4 C. (about 25 F.) and changeable weather. The number of cases increased so rapidly that both national and municipal sanitary authorities were compelled to take emergency measures. The federal government and some city authorities closed the schools from June 23 to July 21. Public amusement places and street cars were disinfected almost daily. The fact that 700 motormen were taken sick caused the temporary crowding of a limited number of passengers into each street car. So far the mortality has not been very high, since in the first twenty-five days of June there were in this city 2,070 deaths, i. e., only 340 more than in the same period during 1920. Most deaths have been from bronchopneumonia. Pneumococci, streptococci and Pfeiffer's bacilli have been demonstrated in the sputum.

Malaria

The floods caused by the heavy rains in El Chaco which accompanied our recent Indian summer have caused a malaria epidemic in El Chaco, Misiones and Formosa, and some foci in Corrientes and Santa Fé. In many of these places malaria was not endemic before. The national department of health sent to these places commissions headed by Drs. Alonzo Mugica and Falcón to take charge of the treatment and prophylactic measures.

Tribute to Rawson

The Academy of Medicine held a special session to celebrate the centenary of Dr. Guillermo Rawson's birthday. There were other public functions in connection with this anniversary in which the national government also participated. Rawson was born in San Juan, his father being an American physician, Dr. Aman Rawson. After distinguishing himself in school he devoted himself to politics, being one of the members of the constitutional assembly, member of congress and of the cabinet, but he is most famous as a professor and sanitarian. All the hygienists who have worked in this country were his pupils and owed much to

his inspiration. In his lectures he set forth most clearly all great public health problems of Argentina, many of which have already been solved according to his suggestions.

Professor Güemes' Retirement

Dr. Luis Güemes, professor of clinical medicine and the most famous clinician in our country, has just resigned. He has been appointed honorary professor in the school of medicine and in addition the ward in his charge in the Hospital de Clínicas will be named after him. The officers of the school of medicine have recommended the assistant professor, Dr. Pedro Escudero, to take his place.

Diphtheria Antitoxin

Dr. A. Sordelli has succeeded in obtaining diphtheria antitoxin of a very high potency in less than a month, injecting old horses twice a week with increasing doses of very active diphtheria toxin, beginning with 1 c.c. He has employed this method in many horses, saving both time and money and greatly simplifying the technic.

MEXICO

(From Our Regular Correspondent)

Aug. 7, 1921.

Restrictions on the Practice of Medicine

The states of Hidalgo and Sonora must be added to the list of those which have issued regulations on the practice of medicine pursuant to Article 4 of the constitution. In both of them, persons lacking proper diplomas will not be permitted to practice medicine as done heretofore. The Sonora law requires, in addition, that physicians graduated from foreign colleges must furnish satisfactory proof of their competence and know Spanish sufficiently well unless their diploma has previously been approved by a Mexican school. Meanwhile, so far as medicine is concerned, anarchic conditions still prevail in the federal district and territories, and the exploiters of human suffering are having a sort of contest to see which of them can obtain more notoriety. Some have even advertised cures for impotency by means of injections of goat and bull serums. We have also received our first shipment of chiropractors, who are trying to perform all kinds of miracles.

Women's Aid Society

A group of society women have organized an association named "Ejército de Regeneración de la Mujer." One of its first activities has been the establishment of an asylum for fallen women similar to American reformatories. In addition, the members make attempts to persuade the prostitutes, especially when they are in the hospital for venereal patients, of the disadvantages of their mode of living. A similar society has been organized in the city of Aguas Calientes.

Odontologic Congress

The First Mexican Odontological Congress, organized by the Association of Dental Surgeons, will be held in Mexico City, December 25-31. At the same time there will be held an exhibit of dental articles, and prominent foreign dentists will be invited to give practical courses. The secretary of the executive committee is Sr. Ernesto Acuña, Av. Isabel la Católica, 32.

Practical Course in Bacteriology

The department of public health is organizing a one year course in practical bacteriology for young women. In this way it will familiarize itself with routine laboratory measures for the diagnosis of communicable diseases and also will become acquainted with the manufacture of bacterial vaccines. This course fills a true need, as nowhere outside the school of medicine is medical microbiology taught, and this teaching is limited to physicians who are not very likely to serve as assistants in the laboratories already established

and to be established by the health department. At first there will be room for only eleven students; but if the course is a success, the school will either be enlarged or another one will be organized. The professor in charge is the laboratory worker Dr. Tomás G. Perrín.

BERLIN

(From Our Regular Correspondent)

July 21, 1921.

The New Prussian Public Health Council

The ministry of state has established for Prussia a public health council on the same lines as the national public health council of Germany. The purpose of the new council is to serve as an advisory board of the ministry of state, and more particularly of the subdepartment of public welfare, in all questions pertaining to public health and social and hygienic welfare, and in all medical, dental and pharmaceutical matters. This council will also serve as an arbitration committee for the settlement of certain controversies of a medical nature. The various duties of the council will devolve on the body as a whole or on certain committees. If need arises, special experts may be called in to assist in arriving at decisions. The committees of the council may in turn appoint subcommittees to deal with special questions. The members of the council will receive compensation in the form of fees computed by the number of days of service, including traveling expenses, if any.

Association of Japanese Medical Men

Japanese medical men in Berlin, to the number of forty, have formed an association, one of the purposes of which is to reestablish relations between German and Japanese medical men, which were broken off by the war. With this purpose in view, the association organized last month a special session, to which the directors of all the institutes in which Japanese physicians are engaged at the present time were invited. The invitation included the dean of the medical faculty (Geheimrat Rubner), the presidents of the medical societies and certain representatives of the medical press. Following the special session, a banquet was held, at which several Japanese gave expression to their gratitude for the part that the Germans had played in the advancement of Japanese medicine. The announcement that the owner of two widely read Japanese newspapers had contributed 300,000 marks for the relief of German children made a very favorable impression.

Results of the Census of Persons Affected with Venereal Disease

During the period from Nov. 15 to Dec. 14, 1919, a census of persons suffering from venereal disease in Germany was taken. A preliminary official report of the result has now been published. It was ascertained that, during the period mentioned, 136,000 civilians and army men were under treatment for a venereal disease or its sequels. In other words, there were twenty-two venereal patients to 10,000 of population. In reporting the results of the census the names of patients were omitted. In many large cities the average rate of 0.22 per cent. was exceeded: Berlin, 0.76; Hamburg, 0.67, and Lübeck, 0.49 per cent. However, since in the large cities there are proportionally more unmarried men from 15 to 30 years of age (the dangerous period) than elsewhere, it is not justifiable to draw from these figures the definite conclusion that there is a greater spread of the diseases in the cities. The figures for the several states of Germany are not essentially different. The percentage for Saxony is 0.29; Prussia, 0.22 (thus identical with the average for the whole country); Bavaria and Thuringia, 0.19; Baden, 0.18, and Württemberg, 0.13. A comparison of the statistics recently obtained with those based on the census of 1913 does not show that venereal

diseases in Germany have materially increased. The incidence is most frequent in men and women in the 20-25 age group. The second most frequent incidence occurs, in both sexes, in the 25-30 age group, but after this a differentiation is noticeable, since the third most frequent incidence in men is during the period from 30 to 40; in women, from 15 to 20. Of the men, the unmarried group is most affected; then come the divorced, next the married group, while widowers come last. With the women, the relationship is different: the divorced are most affected; then come the unmarried, next the married, and widows come last.

Death of Oswald Schmiedeberg

Professor Schmiedeberg, formerly ordinarius for experimental pharmacology in Strasbourg, died in Baden-Baden, July 12, at the age of 82. Schmiedeberg, a pupil of Rudolf Buchheim in Dorpat, was himself a native of the Baltic Provinces. After serving for a short time as assistant, he became Buchheim's successor in Dorpat. From there he was called, in 1872, to the newly established German university in Strasbourg. There he carried out his important work in the field of experimental pharmacology and became the instructor of numerous physicians and pharmacologists. His "Grundriss der Pharmakologie in bezug auf Arzneimittellehre und Toxikologie" has been widely used. By reason of his excellent contributions to science, Schmiedeberg was given a doctor's title *honoris causa* by the universities of Edinburgh and Bologna. He was a member of the Academy of Medicine of Paris, the Academy of Sciences of Rome, and honorary member of the Academy of Medicine of Brussels.

HELSINGFORS, FINLAND

(From Our Special Correspondent)

July 18, 1921.

Meeting of Scandinavian Physicians

Scandinavian physicians meet every two years in session, alternating in Stockholm, Copenhagen, Christiania and Helsingfors. This year the meeting was in Helsingfors. Unlike the session of the American Medical Association, at which the representatives of the various branches meet at the same time, four different sessions were held. First the tuberculosis men had their session; next the tenth northern congress of internal medicine was held from June 30 to July 2; then the orthopedists, and at last the surgeons, gynecologists and obstetricians met. Thus the program was extended more than two weeks.

The Session for Internal Medicine

In spite of the strained political relations existing between Sweden and Finland over Aland Island, a great number of Swedish physicians attended, including Jacobeus from Stockholm, Petrén from Lund and the roentgenologist Forssell from Stockholm. P. Holst was the leading man from Norway, and Knud Faber from Denmark. The Finnish hosts were qualitatively and numerically well represented. Of the leaders, Tallqvist and Schauman are internationally known for their work on pernicious anemia. The scientific program of a session consists, except for freely chosen lectures, of a theme for discussion. The latter is chosen at the previous session. For the opening discussion, there is generally selected one man for each country. The theme at Helsingfors was "The Prevalence and Treatment of Visceral Syphilis." Opening papers on this subject were read by J. Hagelstam, professor of diseases of the nervous system in Helsingfors, O. Hanssen of Bergen, and H. C. Jacobeus, professor of internal medicine at Stockholm. The lively discussion centered on the value of the arsenical preparations. In Europe and especially in Scandinavia, these have never received such an extensive use as in the United States. In the light of the American vigorous treatment, especially

of early syphilis, the European way of treatment would be called inadequate so far as arsphenamin is concerned. Whatever the fault may be, the arsenical preparations have given disappointing results in the hands of Scandinavian physicians. Extensive statistics from some of the Scandinavian clinics show further that symptoms from the central nervous system in recent years appear at a much earlier date than they did before the use of arsenical preparations. This is a view similar to that expressed by Nonne of Hamburg in a recent lecture in Helsingfors. His opinion was that the use of arsenical preparations seems to hurry the onset of central nervous complications. Whatever may be the cause of this, a change of the virus or a change in the treatment remains to be discovered. All speakers seemed to agree on one point, namely, that the arsphenamin preparations are still of uncertain value.

Jacobus read a paper on the burning of adhesions as a method of changing a partial pneumothorax into a complete one. Numerous roentgenograms demonstrated convincingly the brilliant effects of this method. Jacobus has been invited to lecture on this subject at the coming congress of Clinical Surgeons of North America in Philadelphia. A. Josefsson of Stockholm gave an interesting talk on the diagnostic value of gas injections into the various cavities. He described the removal by tapping of from 60 to 70 c.c. of fluid from the lumbar canal and thereupon the injection of some air into it. In case of a tumor in or around the cord, the air will not extend above it. Operative findings confirmed the correctness of the diagnosis.

Forssell showed his ability to get excellent roentgenograms when he demonstrated on the screen the foldings of the mucous membrane of the digestive tract. By careful watching he had seen folds appear also in the first part of the duodenum, thus for the first time, I believe, demonstrating their presence. This was contrary to all earlier authors, but the plates left one in no doubt as to their presence, in these instances at any rate.

Karl Petrén, in talking about the treatment of grave diabetes, said that he did not get as good results with the Allen method as with a moderate reduction of the intake.

Schauman discussed the rarity of chlorosis in recent years. His statistical material was not only from Finland but also from Scandinavian clinics.

Osten Holsti of Helsingfors confirmed Pemberton's results in showing alimentary hyperglycemia in all kinds of chronic arthritis. He has extended his researches to acute rheumatic polyarthritis, in which in all of his cases he found a marked alimentary hyperglycemia.

Hisinger-Jägerskiöld of Helsingfors related his interesting studies over the capillaries in pernicious anemia according to the Müller-Weiss method.

Many other papers of interest were read. It can be said that this session bore witness to the high standing of internal medicine in the Scandinavian countries.

Marriages

HERBERT C. NEBLETT, major, M. C., U. S. Army, Baltimore, to Miss Mary Belle Small at Washington, D. C., June 11.

STANLEY HEWITT HAYNES, Minneapolis, to Miss Ruth McKay of Cleveland, at Delaware, Ohio, July 7.

GEORGE FRANCIS PATTERSON, Cincinnati, to Miss Mary Schmueckle at Delphos, Ohio, August 10.

JOHN BAIRD, Richmond, Va., to Miss Emily Elizabeth Richmond of Gate City, Va., in July.

J. CALVIN DAVIS, JR., to Miss Elizabeth Kathryn Norton, both of Omaha, April 9.

LEWIS I. MILLER, Denver, to Miss Ethel Bluestone, in New York City, July 1.

Deaths

Matthew H. Cryer ☉ Philadelphia; Medical Department, University of Pennsylvania, Philadelphia, 1877; emeritus professor of oral surgery at the University of Pennsylvania, since 1898; died, August 12, after several months' illness, aged 81. Dr. Cryer was born in Manchester, England, in 1840, and came to the United States in 1851. He was a veteran of the Civil War, with the rank of major. He was for twenty years lecturer on mechanical dentistry at the Philadelphia Dental College, and since 1900, oral surgeon on the staff of the Philadelphia (Blockley) Hospital. He was a member of the Academy of Stomatology; American Dental Society; American Society for the Advancement of Sciences; Pathological Society of Philadelphia, and in 1902 was president of the Pennsylvania State Dental Society. He was the author of several books on dental anatomy.

Floyd W. McRae ☉ Atlanta, Ga.; Atlanta Medical College, 1885; postgraduate courses at the New York Post-Graduate Medical School and Hospital, and the New York Polyclinic; was found dead in his room, Saturday, August 13, from a revolver wound, aged 59. Dr. McRae was born in December, 1861; after his graduation he specialized in surgery; from 1885-1893 he was demonstrator of anatomy at Atlanta Medical College, prior to which he was professor of physiology at Atlanta Dental College and the Southern Medical College. He was a member of the American Surgical Association, the Southern Surgical Association, the American College of Surgeons and the American Urological Association.

Elmira Y. Howard, Palmyra, Mo.; New York Medical College and Hospital for Women (Homeopathic), New York City, 1869; clinics in Vienna General Hospital, Austria, 1873-1874; practiced in Cincinnati for twenty-five years; died, August 7, at the home of her son, Covington, Ky., from chronic nephritis and pulmonary congestion, aged 80.

Bartholomew Bantley, National Soldier's Home, Danville, Ill.; Rush Medical College, Chicago, 1886; assistant surgeon, National Home, Milwaukee, 1900-1921; Civil War veteran, and later served in the regular army; died, August 10, following several surgical operations, in the general hospital of the home, aged 73.

Robert McLean G. Taft, New York City; New York University Medical College, 1894; served as surgeon in both the British and American navies, during the late war; member of the Medical Society of the State of New York; died suddenly, August 8, from heart disease in a street near his home, aged 47.

Hiram M. Miller ☉ Chester, Pa.; University of Pennsylvania, Philadelphia, 1891; postgraduate courses in Berlin, Vienna and Paris; spent 1895-1902 in scientific explorations; on the staff of the Chester Hospital and Glen Mills Reform School; died in Bellefonte, Pa., August 8, aged 54.

Charles A. White ☉ Danville, Ind.; Rush Medical College, Chicago, 1871; Civil War veteran; for twenty-five years local surgeon of the Big Four Railroad; practitioner for over half a century; died, August 10, at the Deaconess Hospital, Indianapolis, from chronic nephritis, aged 76.

George Pearson Bell, Wynyard, Sask., M.R., C.S. (Eng.), 1872; M.B.C.M., 1876; M.D., University of Aberdeen (N.B.), 1879; assistant surgeon, Northwest Mounted Police, 1894-1905, and surgeon 1905-1915, Saskatchewan, Canada; died, June 27, from osteosarcoma, aged 74.

Robert Eugene Bering, Long Beach, Calif.; Tulane University of Louisiana, New Orleans, 1895; superintendent of the Bering Sanatorium, San Francisco, for fifteen years; member of the California Medical Association; died, August 8, from paralysis, aged 50.

Henry H. Sutton, Madoc, Ont.; University of Toronto, 1866; served as army surgeon in the U. S. Civil War, 1861-1865; died in the General Hospital, in June, from burns, caused by the accidental igniting of the bedclothes, aged 84.

Arthur Patrick Coll, New York; College of Physicians and Surgeons, New York City, 1890; member of the New York Academy of Medicine; specialized in laryngology and rhinology; died suddenly of apoplexy, August 10, aged 57.

John Sadler, Columbus, Ohio; Cleveland Medical College (Western Reserve University), Cleveland, 1869; practitioner in Columbus for over half a century; veteran of the Civil War; died, August 6, from arteriosclerosis, aged 77.

Jefferson G. Hutson, Carriers Mills, Ill.; American Medical College, St. Louis, 1896; died, August 9, at the Crane Hospital, West Frankfort, following a nervous collapse, aged 60.

Francis Henry Dodge, Lake Mills, Wis. (license, Wisconsin, 1899); also a druggist; practitioner for over fifty years; died, July 27, from the results of an accident, aged 93.

Joseph Clark Winans ☉ Belleville, N. J.; University and Bellevue Hospital Medical College, New York City, 1905; Captain, M. C., U. S. Army, during the World War; died, August 9, from septicemia and anemia, aged 43.

Stanley H. Haynes, Minneapolis; Rush Medical College, Chicago, 1920; until July 21, on the staff of the Lakeside Hospital, Cleveland; died, August 8, following an operation at the Northwestern Hospital, aged 28.

John Bryant, Independence, Mo.; St. Louis Medical College, 1865; Jefferson Medical College, Philadelphia, 1866; died, July 16, at the home of his daughter, Berkeley, Calif., from arteriosclerosis, aged 78.

Patrick J. Hirst ☉ Salisbury Center, N. Y.; Albany Medical College, Albany, 1910; superintendent of the Herkimer County Tuberculosis Sanatorium; died suddenly, August 10, from heart disease, aged 37.

William Remington Udney Wolcott, Moscow, Idaho; University of Michigan Medical School, Ann Arbor, 1910; was killed, June 15, when he fell from a third story window, in San Diego, Calif., aged 35.

James Hetherington Mackintosh, Westwood, N. J.; Bellevue Hospital Medical College, New York City, 1872; also a druggist; practitioner for nearly half a century; died, August 5, aged 84.

Cleon Andrew Giles, Canton, Ohio; Ohio State University, College of Homeopathic Medicine, Columbus, 1915; died at the home of his parents, August 2, from acute rheumatism, aged 34.

John Burton Martyn, Alviston, Ont.; Trinity Medical College, Toronto, 1891; member of the legislature, 1914-1919, for East Lampton; died, June 3, from pneumonia, aged 53.

John Wesley Carmichael ☉ Knoxville, Tenn.; Vanderbilt University, Nashville, 1887; specialized in pediatrics; died suddenly, August 7, from heart disease, aged 72.

Jacob Edward Berry, Clarington, Ohio; Starling Medical College, Columbus, 1898; died, August 7, in the Ohio Valley General Hospital, Wheeling, W. Va., aged 47.

J. A. Cozby, Azle, Texas; Kentucky School of Medicine, Louisville, 1884; died, August 1, at a hospital in Fort Worth, from cerebral hemorrhage, aged 60.

Charles R. Mahady ☉ Rome, N. Y.; Baltimore Medical College, 1897; health officer since 1908; died, August 8, from cerebral hemorrhage, aged 49.

Robert S. Lynn, Tulsa, Okla.; Gross Medical College, Denver, 1898; member of the Oklahoma State Medical Association; died, May 27, aged 57.

William Henry Cook, Livonia, Ind.; Kentucky School of Medicine, Louisville, 1895; died, July 29, from liver and stomach trouble, aged 64.

Andrew J. Beardsley, Huntington, W. Va.; Bellevue Hospital Medical College, New York City, 1870; died, June 25, from dysentery, aged 78.

Nathaniel W. Comegys, Millington, Md.; University of Maryland, Baltimore, 1866; died, July 30, from cerebral hemorrhage, aged 79.

Robert L. May, Jacksonville, Fla.; University of Maryland, Baltimore, 1890; died suddenly, August 2, from heart disease, aged 56.

Eldridge Sharp Edwards, Milton, Iowa; attended Keokuk (Iowa) Medical College (license, Iowa, 1888); died, July 29, aged 82.

Pierre O. Wagener, Harbor Beach, Mich.; University of Bonn, Germany, 1869; died, July 30, from arteriosclerosis, aged 70.

V. C. Huff, Wytheville, Va.; Medical College of Virginia, Richmond, 1865; confederate veteran; died, July 21, aged 87.

Otto E. Westedt, Loganville, Wis.; Medical Department, Marquette University, Milwaukee, 1908; died, July 9, aged 42.

Nathan Hall Williams, Pasadena, Calif.; University of Michigan, Ann Arbor, 1878; died, August 4, aged 74.

Eindred Viko ☉ Salt Lake City; Minnesota Hospital College, Minneapolis, 1887; died, July 11, aged 58.

William Clifford Braden, Orchard, Colo.; Denver College of Medicine, 1892; died, July 23, aged 55.

☉ Indicates "Fellow" of the American Medical Association.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Tonoline Tablets.—The American Drug Sales Co., Boston, Mass., are alleged to have shipped in October, 1918, a quantity of "Tonoline Tablets" which were misbranded. The Bureau of Chemistry reported that analysis showed the pills to consist essentially of nux vomica alkaloids and ferrous iron. Some of the claims made for the product were:

"... valuable in the treatment of the various Debilitating Diseases of men and in the most extreme cases of Nervous Prostration in women . . ."

"For . . . Nervousness, Rundown, Wornout, Emaciated, Lost Ambition, and to Correct Poor Assimilation."

"... to Make Thin . . . Men and Women Plump . . . the missing link between food and flesh."

"... most marvelous body builder which medical science has, so far, produced."

"... nothing . . . has even been discovered which can in any way approach it."

Naturally these preposterous claims, and others similar to them, were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9067; issued May 25, 1921.]

Antifebrom, Regilaterro No. 1, Lekarstwo Na Szkorbut, Lekarstwo przeciw Pijanstwu, Krople Bobrowe, Krople Maciczne, Gardlolek, Krople Nazemcowe, and Krople Laurowe.—In January, 1917, the Dr. John Chmiell Co., Boston, Mass., were alleged to have shipped quantities of "Antifebrom," "Regilaterro No. 1," "Lekarstwo Na Szkorbut," "Lekarstwo przeciw Pijanstwu," "Krople Bobrowe," "Krople Maciczne," "Gardlolek," "Krople Nazemcowe" and "Krople Laurowe," which were misbranded.

The federal chemists reported that analysis showed "Antifebrom" to be a water-alcohol solution containing iron, quinin and strychnin, with sulphuric and citric acids, probably as quinin sulphate and iron and strychnin citrate. The product was falsely and fraudulently represented as effective to improve digestion and to remove all kinds of stomach ailments, rheumatism and fever, and as a sure cure for colds, influenza and malaria.

"Regilaterro No. 1" was reported by the federal chemists to be a water-alcohol solution of aloes. It was falsely and fraudulently represented as effective to prevent smallpox and as a remedy for rheumatism, kidney troubles, dyspepsia, all stomach disorders, colds, coughs, and as a special remedy for headache.

"Lekarstwo Na Szkorbut" was reported by the federal chemists to be a glucose sirup containing a small amount of alum and copper sulphate (blue vitriol) in solution. It was falsely and fraudulently represented as an effective remedy and cure for scurvy.

"Lekarstwo przeciw Pijanstwu" was reported by the federal chemists to be powdered ipecac with sodium bromid and a small amount of ammonium salts and to contain a high percentage of mineral impurities. This preparation was falsely and fraudulently represented as an effective remedy and cure for the drink habit.

"Krople Bobrowe," according to the federal chemists, was found to be a water-alcohol solution containing strychnin, iron, lime and magnesium, united with sulphuric, citric and phosphoric acids. It was falsely and fraudulently represented as an effective remedy for all sorts of feminine ailments, lack of strength and pleasure of life, weariness and disability to perform work, and for women desiring to have children.

"Krople Maciczne" was, according to the federal chemists, a mixture of alcohol, ether and water containing emodin-bearing (laxative) drugs. This was falsely and fraudulently

represented as effective as a womb remedy and a cure for rheumatism.

"Gardlolek" was reported by the federal chemists to be a solution containing boric acid, menthol and thymol. This was falsely and fraudulently claimed to be an effective remedy for diphtheria.

"Krople Nazemcowe" was reported by the federal chemists to be a water-alcohol solution containing an emodin-bearing drug, probably senna, also gentian and capsicum (red pepper), but no alkaloids. It was falsely and fraudulently represented as an effective remedy for pains in the stomach caused by diarrhea, and as a remedy for faintness.

"Krople Laurowe," according to the federal chemists, was found to be an extract of bitter almond. It was falsely and fraudulently labeled as an effective remedy for heart troubles.

In addition to the false and fraudulent claims made for these preparations, two of the products ("Krople Maciczne" and "Krople Laurowe") were misbranded in that the amount and proportion of alcohol in them was incorrectly stated.

In September, 1919, the Dr. John Chmiell Co. entered a plea of *nolo contendere* and was fined \$25.—[Notice of Judgment No. 9042; issued May 25, 1921.]

Vitalitas.—In July and August, 1919, the Vital Remedies Co., Houston, Texas, are alleged to have shipped a quantity of Vitalitas which was misbranded. Analysis of the sample of the article by the Bureau of Chemistry showed that the stuff consisted essentially of a watery solution of sulphate of iron and aluminum, with traces of other mineral salts. The trade packages bore such claims as:

Advertisement

CHAS. M. HOLMAN GAINED 12 POUNDS ON VITALITAS

Mr. Holman Gives This Statement for the Benefit of Boston People

This is one of the latest statements to be received praising VITALITAS. Mr. Holman says: "For over 10 years I have been troubled with rheumatism, indigestion and constipation, and during that time I could never find a remedy that would give me permanent relief. It did not make any difference what I would eat, there would always form a large lump in my stomach, followed by a burning sensation. Rheumatism got into my joints, causing them to swell. I had constipation, and I was in pretty bad shape. I had been told to try Vitalitas, but I thought there was nothing to it, as I had tried so many remedies without relief. Here are the results from taking Vitalitas:

"Indigestion has left me completely. Rheumatism gone. Not an ache or pain of any kind; my constipation cured, and I have gained 12 pounds in weight, and I never felt better in my life; Vitalitas was the only remedy that would do the work."

To you who suffer from rheumatism, indigestion, stomach, liver and kidney ills, why not profit by the experience of Mr. Holman and try Vitalitas? Mr. Holman is only one of thousands who testify as to what Vitalitas has done for them. Vitalitas has no alcohol, no drugs and is not a patent medicine; it is just as nature made it.

Come to our store and let us explain Vitalitas, the supreme remedy, to you; buy Vitalitas today. Woodward Drug Store, 102 Tremont St., Boston.

"Its functions are to enrich the blood, strengthen the tone of the system, and thus aid in the restoration of healthy functions."

"A Family Remedy useful in the treatment of Rheumatism, Chronic Indigestion, Impoverished Blood, Atonic Dyspepsia, Chronic Diarrhea, Dropsy, Malarial Anemia, General Debility following recovery from acute diseases, Leucorrhea, and Excessive Menstruation."

These claims were declared false and fraudulent "in that the article contained no ingredient or combination of ingredients capable of producing the effects claimed." In April and October, 1920, the Vital Remedies Co., Inc., filed bonds that were satisfactory to the court and the court ordered that the product be delivered to the concern on payment of the cost of the proceedings.—[Notice of Judgment No. 9050; issued May 25, 1921.]

Red Cross Tansy Pills.—The Norman Lichty Mfg. Co., Des Moines, Iowa, were alleged to have shipped in June, 1920, a quantity of this product which was misbranded. The federal chemists reported that analysis showed the contents of the pills to consist essentially of aloes and iron (ferrous) sulphate. The package bore such claims as:

"Relieves cases of obstructions of long standing and the Regulation of Female Complaints."

"Sure Relief in cases of obstructions of long standing and the Regulation of all Female Complaints . . . safe and sure as a monthly regulator."

"For Suppressed Menstruation, for Painful Menstruation, and a preventive for Irregular Menstruation."

These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 8988; issued May 24, 1921.]

Claes Tilly Genuine Medicamentum.—In November, 1918, and January, 1919, Claes Tilly, Inc., New York City, are alleged to have shipped a quantity of "Claes Tilly Genuine Medicamentum" which was misbranded. The Bureau of Chemistry reported that analysis showed the product to be a

sulphurated vegetable oil, probably linseed, mixed with turpentine and possibly a small amount of oil of amber. The preparation was falsely and fraudulently represented as an effective treatment, remedy and cure for bladder, kidney, and liver disorders, brittle nails, measles, smallpox, jaundice, pneumonia, and worms in children. In January, 1921, a plea of guilty was entered on behalf of the defendant company, and Claes Tilly, Inc., was fined \$200.—[*Notice of Judgment No. 9007; issued May 25, 1921.*]

Howe's Compound Damiana Tablets.—The Howe Medicine Co., Philadelphia, Pa., are alleged to have shipped in December, 1919, a quantity of this product which was misbranded. The federal chemists reported that analysis showed the pills to consist essentially of phosphorus and extractives of damiana and nux vomica. The preparation bore such claims as:

"For Lost Vitality and Wasting Weakness . . . continued use of this remedy will produce the most satisfactory results."
"A True Tonic For the Entire System."

These claims were declared false and fraudulent for the reason that the product contained no ingredient or combination of ingredients capable of producing the therapeutic effect claimed. In October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9058. issued May 25, 1921.*]

Correspondence

"CHIROPRACTIC IN OHIO"

To the Editor:—A communication in the correspondence column (*THE JOURNAL*, August 13) states, on the authority of Dr. M. M. Wickware, Detroit, that a certain physician of Ohio reports this state as being one of the few states that allows chiropractors to sign death certificates. This is a false report, as such practice has never been allowed by law in this state, nor have such signatures ever been accepted by the Ohio Bureau of Vital Statistics.

Only several days ago, I requested of the present attorney general of Ohio and received from him a ruling setting forth emphatically and again emphasizing the same ruling as taken by his predecessors; namely, that no one other than regularly licensed medical practitioners has a legal right to sign death certificates. It has always been my opinion that this ruling is in accordance with the law and is entirely just and fair, and it is consequently the policy of this bureau to reject every certificate of death on which it is noticed or evident that the signatory physician is a doctor of chiropractics or similar practitioners.

U. G. MURRELL, M.D., Columbus, Ohio.

Registrar, Department of State,
Bureau of Vital Statistics.

THE MATERNITY BILL

To the Editor:—I am enclosing a copy of Senate Bill 1039, commonly called the Maternity Bill, which passed the Senate, July 25, 1921, and has since been referred to the Committee on Interstate and Foreign Commerce, House of Representatives, for its consideration.

While this bill contains humanitarian and desirable provisions which would particularly confer advantages on citizens of the sparsely inhabited states of the Union, it also contains very objectionable provisions. Aside from its invasion of states' rights and the creation of powers within the federal government to do many of the things for the citizens of the states, which things the citizens of the respective states should do for themselves, the measure, if it becomes a law, will probably seriously interfere with the rights, privileges and emoluments of the medical profession, as most measures do which go too far in the direction of state medicine.

But perhaps the most un-American and unfair provision of the bill is that, while it provides for the exercise of the option on the part of the several states to decline to receive any benefits from the measure, it saddles upon all states alike the burdensome taxation necessary to create appropriations carried in the bill. To illustrate: If the state of Illinois, having a population much larger than that of many other states of the Union, were to fail to cooperate in or fail to accept any benefits accruing from the measure (and it is doubtful whether the measure would confer any benefits upon the state of Illinois, even were that state to cooperate), the measure would mean to the state of Illinois an increase in federal taxation much out of proportion to that borne by other states, and certainly out of proportion to any benefits that might accrue to the state of Illinois.

J. J. KINDRED, M.D.,
House of Representatives, U. S.

"A CASE OF CHRONIC ACETANILIDISM"

To the Editor:—I was much interested in the report by Dr. John Shuman in *THE JOURNAL*, August 13, of a case of chronic acetanilidism. This young woman is now a patient in the University Hospital at Minneapolis. I was asked to see her a few days ago.

GILBERT J. THOMAS, M.D., Minneapolis.

[COMMENT.—Since the publication of the article by Dr. Shuman, evidence has developed that this patient has been ill at various times in several different hospitals in which she has been engaged as nurse, the list including at least two hospitals in Chicago, the hospital in Sioux City and in Minneapolis.—Ed.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BENZYL BENZOATE AND CINCHOPHEN

To the Editor:—I would greatly appreciate anything that you could tell me as to the toxicity of (1) benzyl benzoate and (2) cinchophen, the maximum single dose, maximum in twenty-four hours and signs of poisoning by each. I do not seem to be able to get results desired by small doses, and the literature at my command gives me no idea how far I can safely venture.

W. A. BELSEY, M.D., Poplar Grove, Ill.

ANSWER.—1. The pharmacology of benzyl benzoate is largely the work of D. I. Macht, and is not completed. From a therapeutic point of view the drug is decidedly in the experimental stage. Macht states that the toxicity of benzyl benzoate is comparatively low, especially in relation to papaverin (*THE JOURNAL*, Aug. 23, 1919, p. 600). Heller and Steinfield, using benzene as a control, found that benzyl benzoate was without toxic effect on the leukocytes of rabbits (*New York M. J.* **112**:160 [July 31] 1920). More recent work by Emge and Jensen contradicts that of Heller and Steinfield, as the former show that when benzyl benzoate, even in small dose, is given to rabbits over longer periods than described by Heller and Steinfield, a leukocytosis occurs. It was noted by these authors that while treating spasmodic dysmenorrhea with benzyl benzoate, in two patients the recrudescence of an old appendicitis was not accompanied by the usual increase in white cells (*J. Pharmacol. & Exper. Therap.* **17**:415 [June] 1921). As to dosage, Litzenberg reported that, in the treatment of dysmenorrhea, he did not obtain as complete relief as desired with the dosage recommended by Macht—from 10 to 30 drops of a 20 per cent. solution in alcohol—so that he increased the dose to 1 teaspoonful and even to 2 drams every two hours (*THE JOURNAL*, Aug. 23, 1919, p. 601). We know of no data on the symptoms of poisoning from extratherapeutic doses of benzyl benzoate in case of man. In animals, so Macht states, injections of large doses of benzyl esters exhibit symptoms referable to the central nervous system in the form of spastic

convulsions. Thus, in mice, guinea-pigs, rabbits and cats, death occurs generally with convulsions following paralysis of the respiration (*J. Pharmacol. & Exper. Therap.* 11:419 [July] 1918). Our correspondent's inability to obtain results in the benzyl therapy is in line with a recent editorial: "Certainly this new work suggests that allowances be made for impressions, reflex influences, the psychic state and natural recovery before drawing definite conclusions as to the beneficial effects of benzyl benzoate especially in such capricious conditions as hiccup, whooping cough, asthma and dysmenorrhea for which it has been advocated" (*THE JOURNAL*, April 9, 1921, p. 1252). The "new work" referred to was that of Mason and Pieck, who got negative results on untreated and previously excised organs of dogs after benzyl benzoate intravenously. Subsequently, however, Nielsen and Higgins, using a different method, have obtained certain results which do not harmonize with those of Mason and Pieck (*J. Lab. & Clin. Med.* 6:388 [April] 1921).

2. Cinchophen, introduced as atophan, resembles the salicylate compounds in action. According to the recent work of Hanzlik and others, "Large doses of cinchophen, . . . such as are necessary in the treatment of rheumatic fever, produce characteristic symptoms of salicylism [headache, dizziness, fulness of the head, buzzing in the ears, nausea, sometimes vomiting and pain in the epigastrium], which, however, are less pronounced than those caused by corresponding doses of salicylate." The dosage recommended in New and Non-official Remedies for gout is from 0.5 gm. of cinchophen four times a day to 1 gm. three times a day. In rheumatic fever, Hanzlik used 1 gm. of the drug every hour until definite symptoms of drug action were manifested. (Hanzlik, P. J.; Scott, R. W.; Weidenthal, C. M., and Fetterman, Joseph: Cinchophen, Neocinchophen and Novaspirin in Rheumatic Fever, *THE JOURNAL*, June 18, 1921, p. 1728.)

EFFECT OF INTERMARRIAGE OF KIN ON OFFSPRING

To the Editor:—Please inform me where I may procure literature on the subject of the effect of intermarriage of kin on their offspring. If there has been anything authoritative written on this subject, I shall be glad to know where I can purchase it.

S. CLARENCE DEAN, M.D., Anderson, S. C.

ANSWER.—Following is a list of literature on the effect of intermarriage of kin on their offspring:

- Kemp, M. P.: Consanguinity Among Patients at Newberry State Hospital, *Am. J. Insanity* 73: 487 (Jan.) 1917.
Arner, G. B. L.: Consanguineous Marriage in the American Population, Columbia University, Studies in History, Economics, Public Law, New York Columbia University 31, No. 3, 1909.
Barr, M. W.: Marriage: Results and Effects of Heredity, Consanguinity and Environment, *J. Psycho-Asthenics* 16: 43-49, 1911-1912.
Elderton, E. M.: On the Marriage of First Cousins, published by Dulan & Co., 37 Soho Square, London, W., 1912; price 1 shilling.
Consanguineous Marriage, Berlin Letter, *THE JOURNAL*, Jan. 30, 1915, p. 452.
Yearsley, M.: Question of "Concubintancy" in Cousin Marriages, *Lancet*, Jan. 17, 1914.
Kangisser, F.: Consanguineous Marriages, *München. med. Wchnschr.*, April 1, 1913; abstr. *THE JOURNAL*, May 17, 1913, p. 1587.
Crane, R. N.: Marriage Laws and Statutory Experiments in Eugenics in the United States, *Eugenics Review*, April, 1910.
Davenport, C. B.: State Laws Limiting Marriage Selection in the Light of Eugenics, Cold Spring Harbor, 1913, p. 66.
Rogers, A. C.: Recent Attempts at Restrictive Marriage Legislation, Nat. Conf. of Char. & Correction, 1901, p. 200.

DISCOLORATION OF FINGER NAILS

To the Editor:—I would thank you greatly for some advice relative to a peculiar condition of a young woman's finger nails. The nails on both hands under the upper border and almost half way down the nails have turned black, the color resembling a silver nitrate stain. She denies using anything in manicuring the nails that would cause this. I find absolutely no constitutional condition that could cause this condition, which has persisted for almost two months.

R. C. F.

ANSWER.—Discolorations of this sort sometimes come to the observation of dermatologists. They are, in all probability, due to some external chemical coming in contact with the nails. There is no known disease of the nails that produces such discoloration. It is frequently very difficult to determine the agent.

"REMOVAL OF SILVER STAINS"

To the Editor:—You will find a saturated solution of sodium or potassium iodid more satisfactory than the formula given in your answer to Dr. J. P. Brandon, Essex, Mo. (*THE JOURNAL*, July 30, p. 395). It does not take many drops, and acts in a few minutes.

OLIVER TYDINGS, M.D., Chicago.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

- ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vigne, Juneau.
ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
COLORADO: Denver, Oct. 4. Sec. Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.
GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Oct. 9. Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.
IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.
ILLINOIS: 217 County Bldg., Chicago, Aug. 30-31. Director, Mr. W. H. H. Miller, Capitol Bldg., Springfield.
KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.
MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter P. Bowers, 144 State House, Boston.
MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.
NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.
NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 26-29. Mr. Herbert J. Hamilton, Asst. Professional Examinations, Education Bldg., Albany.
OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.
PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.
RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.
WEST VIRGINIA: Charleston, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.
WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

REPORT OF ELEVENTH EXAMINATION OF THE NATIONAL BOARD OF MEDICAL EXAMINERS

The eleventh examination of the National Board of Medical Examiners was held in Boston, June 14-21, 1921. The written and laboratory examinations were held in the Harvard Medical School, and the clinical examinations were held in the Massachusetts General Hospital, the Peter Bent Brigham Hospital and the Boston City Hospital. The subjects of the examination and the relative value of each were: anatomy, 100; physiology, 75; chemistry, 75; pathology, 75; bacteriology, 50; materia medica, pharmacology, and therapeutics, 75; medicine, 200; surgery, 200; obstetrics and gynecology, 75; hygiene and sanitation, 50; medical jurisprudence, 25. A percentage of 75 was required to pass. Falling below 65 per cent. in two subjects, or below 50 in one subject, constituted a failure.

There were fifty-nine applicants who applied for examination. Fifty-three were found to have the essential preliminary and medical qualifications. Forty appeared for examination, of whom thirty-seven passed and three failed.

PASSED		Year of Graduation
Name	College	
Tracy J. Putman.....	Harvard Medical School.....	1920
Edward D. Churchill.....	Harvard Medical School.....	1920
Clarence J. Gamble.....	Harvard Medical School.....	1920
Isaac Starr, Jr.....	University of Pennsylvania.....	1920
Joseph Treloar Wearn.....	Harvard Medical School.....	1917
Lawrence W. Smith.....	Harvard Medical School.....	1920
John Ross Marshall.....	Harvard Medical School.....	1918
George Lawrence Chaffin....	Harvard Medical School.....	1917
Ellis Herndon Hudson.....	University of Pennsylvania.....	1919
Glen Evan Cheley.....	Harvard Medical School.....	1920
Francis Clark Grant.....	University of Pennsylvania.....	1919
Wm. Kenneth Livingston....	Harvard Medical School.....	1913
Kempton P. A. Taylor.....	University of Pennsylvania.....	1919
Julia Morgan.....	University of Pennsylvania.....	1920
Monroe Anderson McIver....	Harvard Medical School.....	1917
Wayne A. Yoakman.....	Harvard Medical School.....	1920
Wm. Jefferson Armstrong....	University of Pennsylvania.....	1920
Ellis Moore Black.....	Harvard Medical School.....	1920
Sheo-Nan Cheer.....	Johns Hopkins Medical School.....	1920
Olaf J. Pederson.....	Northwestern University Med. School.....	1915
Curtis Everett Smith.....	Harvard Medical School.....	1918
William Eustis Brown.....	Harvard Medical School.....	1920
Raymond D. Stillman.....	Harvard Medical School.....	1920
Don Dee Lyon.....	Harvard Medical School.....	1920
Seymour Fiske.....	University of Pennsylvania.....	1920

Milton James Quinn.....	Jefferson Medical College.....	1919
Mabel Hattersley Pearson....	Woman's Medical College.....	1920
Hugh Grant Rowell.....	Harvard Medical School.....	1920
Eugene N. Van Dyke.....	Johns Hopkins Medical School.....	1920
William Bell Cook.....	University of Pennsylvania.....	1919
Albert Howell Brewster.....	Johns Hopkins Medical College.....	1918
Newton Clarence Browder....	Harvard Medical School.....	1920
Harold Inman Gosline.....	Harvard Medical School.....	1914
Mary J. K. Tomkins.....	Woman's Medical College.....	1920
George McMillen Brandau..	Vanderbilt University.....	1919
Ralph F. MacDonald.....	Northwestern University Med. School.	1920
David D. Greene.....	Harvard Medical School.....	1920

FAILED		
University of Pennsylvania.....		1920
Tufts Medical College.....		1913
Boston University		1918

AVERAGES OBTAINED *

Candidates by Number	Anatomy; Value, 100	Chemistry; Value, 75	Mat. Med., Pharm. and Therapeutics; Value, 75	Obstetrics and Gynecology; Value, 75	Hygiene; Value 50	Medicine; Value, 200	Surgery; Value, 200	Pathology; Value, 75	Physiology; Value, 75	Bacteriology; Value, 50	Medical Jurisprudence; Value, 25	Final Average
1	75	95	80	67	73	86.5	82.7	87	77	75	90	815
2	85	96	85.5	80	79	78.2	78	84	82	75	80	815.3
3	68	95	85	70	72	90	85	81	68	87	79	817.3
4	57	92	82	55	52	77.2	76.7	61.8	71	38	84	702.6
5	89	98	90.5	87	92	87.7	85.7	81.7	86	93	84	882.5
6	80	92	91	82	85	89.5	82.2	94.2	78	81	93	857.9
7	56	88	70.5	65	54	65.5	67.2	52.8	53	46	92	639.1
8	94	88	91	93	70	89.2	91.5	85	77	87	93	898.6
9	72	88	78.5	80	65	75.2	84	66	70	51	91	758.7
10	76	88	81	79	69	85	81.7	80.4	66	73	91	799.8
11	81	95	92	86	76	87	92.5	77.4	91	86	87	874
12	87	98	92	80	74	75.7	83.5	75.4	84	70	94	823.1
13	69	95	82	70	84	83.7	89.5	71.4	65	71	90	803.6
14	84	95	90.5	75	77	77	91	80.5	78	83	94	838.4
15	78	95	81	65	65	76	80.7	77.4	81	81	69	782.1
16	64	92	71	85	66	81.5	84.5	84	76	79	86	796.2
17	85	96	83	80	79	85.7	85.7	89	86	75	92	851.5
18	78	96	75	80	73	75	88.2	70.5	67	71	94	791.6
19	67	98	78.5	80	90	61.2	89	75.3	66	74	92	811
20	74	95	83.5	87	76	87	86	71.8	78	76	92	830.4
21	73	95	83.5	80	86	83	88	77	87	75	86	834.3
22	70	92	87.5	67	65	70.2	82.5	65.7	73	70	88	753.8
23	75	95	92.5	90	81	88.2	89.7	81.8	83	88	89	869.6
24	86	95	92	80	79	79	90.2	78.4	90	76	92	857.4
25	77	88	85	85	67	72.2	78	75.6	78	57	70	766.5
26	89	90	83	85	75	75.5	77.5	75.3	85	70	76	800
27	78	95	91.5	90	75	81	82.5	78	85	83	92	837
28	83	95	90	85	70	85.2	88.7	77.8	88	75	93	854.1
29	67	95	85	82	65	78	83.7	76.9	75	75	83	792.4
30	86	95	83.5	75	70	81	79.5	84.1	77	59	88	804.8
31	77	95	85	85	72	83.7	85.5	81.4	82	62	90	826.6
32	88	88	81.5	55	40	69.2	85.7	75.7	32	34	67	700.8
33	81	90	85.5	82	70	76.5	84.2	69.4	82	83	88	808.1
34	82	95	91.5	85	70	89	91.5	76.5	81	67	92	856.6
35	78	95	76.5	92	80	84.7	90.5	80.1	80	80	78	845.3
36	59	95	81.5	85	65	81.2	81.2	70	78.5	75	83	786.6
37	85	95	82	75	75	77.2	71.5	65.6	65	68	90	763.4
38	66	92	87.5	90	70	81.5	82.7	75.2	80.5	76	88	808.2
39	91	95	79	80	70	79.2	90.2	83.4	75.5	81	90	837.9
40	92	98	95	82	80	90.7	86.5	96	92.5	92	92	902.3
Gen'l												
aver.	77.5	93.7	84.5	79.6	89.2	78.4	84.3	77.2	75.4	72.5	86.8	

* The general average of the candidates is based on subject values as rated by the board. The averages in each subject are on a basis of 100. 1,000 is the total perfect mark as rated by the board. The ratings assigned to each subject will be found at the head of each column.

ANATOMY

Examiner, Dr. Herbert Harlan, Baltimore.

Associate examiners in practical anatomy: Drs. A. S. Begg, R. M. Green and E. A. Boyden.

Written Examination.—1. Describe the stomach briefly, giving gross structure, blood and nerve supply. 2. Locate and describe two ductless glands, giving both gross and microscopic structure. 3. Give attachments, action and nerve supply of the following muscles: (a) digastric; (b) pectoralis minor; (c) triceps extensor cubiti; (d) obliquus oculi superior. 4. Give the embryologic basis for: (a) median and bilateral hare-lip; (b) cleft palate; (c) umbilical, urinary and fecal fistulas. 5. Describe the radiocarpal articulation, including relations with tendons, vessels and nerves in immediate vicinity.

Oral Examination.—The following is a list of specimens, microscopic and gross, used at this examination: von Kupffer's cells (endothelium) of the liver; islands of Langerhans (islands of the pancreas); medullated nerve fiber in a nerve trunk; diaster, anaphase (cell division); osteoblasts in bone formation; nucleus gracilis; median lemniscus (fillet); corpus callosum; internal capsule; hippocampus; right os calcis; femur, anterior intertrochanteric line; internal condyle; internal auditory meatus (structures passing through it); clitoris; superior thyroid artery; internal carotid; musculospiral nerve; ulnar nerve; caudate lobe, round ligament; flexor carpi radialis muscle; mediocephalic vein; anterior coronary artery; omohyoid muscle; middle colic artery (cross-section); lacrimal duct (cross-section); subclavian artery (cross-section).

PHYSIOLOGIC CHEMISTRY

Examiner, Dr. Victor C. Vaughan, Ann Arbor, Mich.

Associate examiner, Dr. Cyrus H. Fiske.

Written examination.—Five out of the ten questions are to be answered. 1. Give in detail the physiology of the secretion of gastric

juice, its chemical composition and its digestive action on food. 2. Give the chemical composition of bile, the origin and destination of each of its constituents and its physiologic action. 3. Give the chemical composition of the blood, including that of the red and white corpuscles and the plasma, and tell the most marked quantitative variations in these constituents in disease. 4. Give the chemistry and origin of each nitrogenous constituent of normal urine and tell the most marked variations in these in disease. 5. Discuss accessory food factors or vitamins and the diseases which are caused by deficiencies in these factors. 6. Discuss the chemistry of the cerebrospinal fluid and its variations, and their diagnostic value in disease. 7. Discuss the chemistry of bacteria and the difference between bacterial poisons and bacterial toxins. 8. Discuss the formation of amino-acids in the body; tell where they are formed; what changes occur in them in normal metabolism; in what form they are eliminated, and how these processes are modified by disease. 9. Discuss the metabolism of carbohydrates in health and in disease. 10. Discuss metabolism of cholesterolin-containing bodies in health and in disease, and state what endocrine glands, if any, affect this metabolism.

Practical examination.—1. Make a chemical and microscopic examination of three samples of urine. 2. Make a chemical examination of two samples of gastric juice, determining the kind and amount of free and combined acids in one of these. 3. Determine the nonprotein nitrogen in a sample of blood serum.

MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS

Examiners.—Drs. W. L. Bierring, Des Moines, Ia.; H. D. Arnold, Boston.

Associate examiners in pharmacology.—Drs. Reid Hunt, Worth Hale, G. Philip Grabfield.

Written Examination.—(a) Name three members of the atropin group of drugs. (b) Discuss the action of atropin on the heart. (c) Discuss the action of atropin on the gastro-intestinal tract. 2. Discuss the action of camphor in the treatment of acute pneumonia. 3. (a) Give a classification of diuretics, and one example of a drug belonging to each class. (b) Name a drug used to render urine alkaline and the proper dosage. (c) Name a drug used to render urine acid and the proper dosage. (d) Name a drug used to prevent the growth of bacteria in the kidneys and bladder, and the proper dosage. (c) Write a prescription containing a diuretic drug, with full directions to the patient, and state the dose intended. 4. (a) Name four preparations of the endocrine glands that have recognized positive therapeutic value. (b) Give the indications for the use of three of them. 5. Give the preparations of mercury used for therapeutic purpose, the indications and proper dosage of each.

Practical Examination.—1. Demonstration of the principles involved in the preparation of a solution of arsphenamin for intravenous injection. (a) In what form is the arsphenamin in the solution made directly from the contents of the ampule? What would be the effect if this solution were injected? (b) What happens when sodium hydroxid is added? (c) When an excess of sodium hydroxid is added? In what form is the drug present now? (d) Why is sodium hydroxid and not potassium hydroxid used?

The candidate was required to interpret and explain a series of tracings indicating the action of drugs on the circulation. The candidate was asked to identify ten drugs in the bottles by placing the number, appearing on the bottle, immediately before the name of the drug, in the following list, selected as being the substance contained in it: barbitol; liquor cresolis comp.; linamentum camphorae; hydrargyri chloridum mite; tinct. opii camph.; opii pulvis; paraldehydum; digitalis; chloralum hydratum; liquor potassii arsenitis.

OBSTETRICS

Examiner.—Dr. Austin Flint, New York.

Associate examiners.—Drs. F. S. Newell, W. A. Ham, D. J. Bristol, Jr., John B. Swift, F. C. Irving, F. S. Kellogg and T. R. Goethals.

Written Examination.—1. What are the mechanical causes for the following movements in the mechanism of labor: (a) Forward rotation of the occiput in a normal (L. O. A.) case? (b) Forward rotation of the occiput in an R. O. P. case? (c) Backward rotation of the occiput in an R. O. P. case? (d) Describe the management of a persistent backward position of the occiput. 2. Describe in detail the (a) local, and (b) general conditions which would indicate the artificial termination of pregnancy at about the seventh month by: (1) Vaginal hysterotomy. (2) Bags. (3) Bougie or gauze packing. 3. Define eclampsia. What is its etiology? What is its pathology? What is its preventive treatment? 4. What are the chief causes of fetal death during labor, and how would you guard against such an occurrence? 5. In a prolonged second stage of labor discuss the indications and describe the technic of each of the following methods of treatment: low forceps; episiotomy; pituitary extract.

GYNECOLOGY

Written Examination.—1. Describe in detail the management of a case of acute pelvic peritonitis. 2. What are the indications and contra-indications for a curettage? 3. Give a brief account of the relation of gynecology and the organs of internal secretion. 4. Classify tumors of the ovary. 5. What are the indications for the use of: Vaginal tampons? Ring pessaries? Stem pessaries?

Practical Examination.—During the written examination each candidate was required to make demonstrations on the manikin and to explain different obstetric operations.

HYGIENE

Examiner.—Surgeon-General H. S. Cumming, Washington, D. C.

Written Examination.—(Answer any five).—1. Discuss the factors involved in the transmission of tuberculosis, and indicate the most promising lines of attack on the tuberculosis problem. 2. How may typhoid fever be controlled in military establishments; in large cities; in rural communities? 3. What measures are at our disposal for the control of the bubonic type of plague? 4. How would you deal with an outbreak of typhus fever? 5. Discuss the epidemiology of pellagra; how may the disease be prevented? 6. Discuss the advantages of medical inspection of schools.

MEDICINE

Examiners.—Drs. H. D. Arnold, Boston; Lewis A. Conner, New York; W. L. Bierring, Des Moines, Ia.

Associate examiners.—Drs. H. A. Christian, Channing Frothingham, Francis W. Peabody, C. W. McClure, Donald McPherson, Arthur B. Lyon, John L. Ames, R. C. Larrabee, F. W. Palfrey, Thomas J. O'Brien, Thomas E. Buckman, W. R. Ohler, C. S. Burwell, H. M. Marvin, W. D. Smith, Paul A. White, Basil Jones, Chester Jones.

Written Examination.—(Answer the first six questions and four from questions 7 to 12—a total of ten questions).—1. You are called to treat a girl, aged 8 years, who has been attending school until the day of

your visit. After a restless night she complains of a sore throat, general malaise and is indisposed to eat. Her mother thought she was feverish and is alarmed because there have been a few cases of diphtheria recently in the neighborhood. At 10 a. m. you find the temperature 102, the pulse 108 and the respiration 20. She appears to be moderately sick. (a) What signs and conditions in the throat would warrant a provisional diagnosis of diphtheria at this visit? (b) What considerations would influence your decision as to the immediate use of diphtheria antitoxin? (c) If you decided to use it at once, instead of waiting for a report from a culture, what dosage would you employ? (d) If the diagnosis is confirmed by the report on the culture, how would you proceed with the further use of antitoxin? 2. (a) What physical signs would warrant a diagnosis of aneurysm of the transverse arch of the aorta without the evidence of a roentgen-ray examination? (b) How would you treat such a case? 3. On what symptoms and physical signs would you make a diagnosis of cancer of the liver? 4. Discuss the significance of hematuria. 5. A man, aged 26 years, after three days of malaise, anorexia and increasing headache, has quit work. (a) What evidence would make you strongly suspect typhoid fever? (b) How would you treat the case, pending a report on the Widal test? (c) What developments would warrant a diagnosis of typhoid fever in case the Widal test were reported negative five days later? (d) Briefly outline the dietetic treatment of a patient moderately sick with typhoid fever. (e) What would you do in case the patient passed about 3 ounces of blood in a stool? 6. Discuss the relation of general paresis to syphilis. 7. Discuss the etiology of acute chorea in children and outline treatment. 8. What conditions call for the transfusion of blood? 9. Discuss the question of the diagnosis of pulmonary tuberculosis in the absence of demonstrated tubercle bacilli in the sputum. 10. Describe the appearance and course of a moderate attack of facial erysipelas, and its treatment. 11. Incubation period, symptoms, prophylaxis and treatment of tetanus. 12. Discuss the etiology, diagnosis and treatment of pyelitis.

Clinical Examination.—This was held in the wards of the Massachusetts General Hospital, Peter Bent Brigham Hospital and the Boston City Hospital, each candidate being assigned to a long case and then quizzed on his findings. Following this the candidate was assigned to two short cases representing some well defined cases of diseases of the heart, lungs, abdominal organs and general medical ailments.

Clinical Laboratory.—This was also held in each of the three hospitals and consisted of microscopic examination of two specimens of blood and one specimen of urinary sediment. Each candidate made a report on these examinations and was quizzed by the examiner.

SURGERY

Associate examiners.—Drs. Edward G. Nichols; John Homans; C. A. Porter; William C. Quimby.

Assistant examiners.—Drs. Elliott C. Cutler; R. B. Greenough; Richard H. Miller, T. K. Richards, T. W. Lanman, I. J. Walker, A. R. Kimpton, R. C. Cochrane.

Written Examination.—(Answer any five.)—1. Give symptoms, prognosis and treatment of fracture of the base of the skull. 2. (a) Name the topographical landmarks employed in the operation of thyroidectomy. (b) Discuss the parathyroid glands. 3. (a) Diagnosis, differential diagnosis and prognosis of carcinoma of the breast. (b) Discuss the subject of metastasis in this condition. 4. (a) Give varieties, symptoms, prognosis and treatment of acute intestinal obstruction. (b) Discuss the cause of death. 5. Give symptoms, pathology and treatment of fracture of the pelvis. 6. Give symptoms, prognosis and treatment of spinal cord tumor at the tenth and eleventh dorsal segments of the spinal cord.

Clinical Examination.—This was held in the wards of the Massachusetts General Hospital, Peter Bent Brigham Hospital and the Boston City Hospital. Each candidate was given at least three cases, and these were chosen from surgical cases which were being treated in the wards of these respective hospitals.

Operative Surgery.—Each candidate was given one operation on a dog that had previously been killed with ether, selected from the following list: trephine; tracheotomy; thoracotomy; appendectomy; lateral intestinal anastomosis; inguinal hernia; suprapubic cystotomy; amputations of legs and feet, and also a practical examination in regional anatomy on the living human model.

SURGICAL SPECIALTIES

Examiners.—Dr. Herbert Harlan, Baltimore, Massachusetts General Hospital, Eye and Ear Dispensary; Dr. David A. Strickler, Denver, Boston City Hospital.

Associate examiners.—Drs. H. B. Stevens, C. R. Mills, W. T. Haley, Louis M. Freedman, J. J. Corbett, Townsend W. Thorndike, William P. Boardman, Philip Hammond, H. P. Cahill, Alexander Quackenboss, Harris P. Mosher, Fred S. Simmons, Harry A. Barnes.

Examiners in Diseases of the Skin.—Drs. E. Lawrence Oliver, William P. Boardman, T. W. Thorndike.

Each candidate was given examples of ordinary diseases of the eye, ear, nose and throat, as well as eye ground examination, and each candidate was given examples of ordinary skin disease to diagnose.

BACTERIOLOGY, SEROLOGY AND PARASITOLOGY

Examiners.—Surgeon-General E. R. Stitt, U. S. Navy; Colonel J. F. Siler, M. C., U. S. Army.

Associate examiner.—Dr. H. C. Ernst.

Assistant examiners.—Dr. E. E. Tyzzer, N. C. Foot, Calvin Page, M. Fabyan, Philip Castleman.

Written Examination.—1. (a) Name the laboratory tests to be employed in arriving at or excluding a diagnosis of typhoid or the paratyphoid fevers in a patient with undetermined fever, indicating the stage of the disease at which each test is of greatest value. (b) Discuss the bacteriologic and serologic methods for identifying *Bacillus typhosus*, *Bacillus paratyphosus* A and *Bacillus paratyphosus* B. (c) What is meant by group agglutinins and by specific agglutinins? 2. (a) Name the communicable diseases of the United States transmitted through discharges from the respiratory tract. (b) Name the communicable diseases of the United States transmitted through discharges from the intestinal tract. (c) Name the communicable diseases of the United States for which insects act as true intermediate hosts. 3. (a) What is meant by "blood grouping," and what is its practical application in the practice of medicine? (b) Outline briefly the standard method for bacteriologic examination of water supplies. 4. (a) What are the points of differentiation between the nonsexual forms of full-grown tertian, quartan and estivo-autumnal malarial parasites, as observed in stained blood smears? (b) Discuss briefly recent advances in our knowledge of the etiology of yellow fever. 5. (a) Indicate diagrammatically the difference in appearance between the ova of the following helminths: *Uncinaria americana*, *Ascaris lumbricoides*, *Trichuris trichiura*, *Oxyuris vermicularis*. (b)

What are the main points of differentiation between full-grown segments of beef and pork tapeworms?

Laboratory Examination.—Each examiner is provided with tubes, plates, etc., of various standard culture mediums. The candidate is examined as to the composition, uses, technic of inoculation and study of these. There are also provided plates of plain agar, blood agar, etc., showing colonies, and the candidate is examined as to his ability to recognize and discuss colony characteristics with the unaided eye and magnifying glass. Various serologic preparations, such as Wassermann or other complement fixation tests, microscopic agglutination precipitin reactions, are provided, and interpretation of these is required. Specimens of intestinal parasites and their ova, together with stained smears of blood preparation of parasites, were given the candidates for identification.

PATHOLOGY

Examiner.—Dr. L. B. Wilson, Rochester, Minn.

Associate examiners.—Drs. S. Bert Wright, M. Fabyan, N. C. Foot, V. C. Jacobson.

Written Examination.—The following questions for record only, and will have no bearing on the candidate's standing: 1. About how many post-mortems have you attended? 2. In about how many have you assisted? 3. In about how many have you been the responsible pathologist?

Answer five of the following questions: 1. Discuss the chronic inflammatory changes which may occur in the urinary bladder. 2. Contrast in parallel columns the essential characteristics of the blood pictures in: (a) Pernicious anemia. (b) Lymphatic leukemia. (c) Advanced gastric cancer. 3. Discuss the more important chronic pathologic changes which may occur in the knee-joint. 4. Discuss the pathology of typhoid fever. 5. Give in detail the necropsy technic in a case of suspected poisoning by mouth. 6. Discuss the pathology of wound healing. 7. Discuss heredity in relation to malignant neoplasms.

Laboratory Examination.—Each candidate was given gross specimens and microscopic sections chosen from the following: *Gross.*—Acute fibrinous pericarditis; acute fibrinous pericarditis; lobar pneumonia; chronic tuberculosis; infarction; cirrhosis; cystic colloid goiter; arteriosclerosis and cysts; nephroma (carcinoma); carcinoma with ulcer; typhoid ulcers; hemorrhage; carcinoma of cervix; carcinoma; malignant papilloma.

Microscopic.—Chronic glomerulonephritis; hyperplasia of thyroid; carcinoma of lip, etc.

PHYSIOLOGY

Examiner.—Dr. W. S. Carter, Galveston, Texas.

Associate examiners.—Drs. J. C. Aub, C. K. Drinker, W. O. Fenn, W. E. Swift, P. G. Stiles, F. H. Pratt, J. E. Uridil, Dr. McKeene, Dr. Cattell.

Written Examination.—Answer any five of the following questions: 1. (a) What is the influence of the inorganic salts of the blood upon the heart? (b) Where does the contraction begin and how is it conducted to the other parts of the mammalian heart? 2. How does the composition of the alveolar air compare with that of the tidal air, and how does the exchange of gases take place between the air and the blood in the lungs? 3. What are the functions of the bile, and what is the effect upon intestinal digestion when bile is prevented from entering the alimentary canal by a biliary fistula? 4. What part does the pancreas take in carbohydrate metabolism, and what disturbances of metabolism result when the pancreas is removed? 5. Describe the normal movements of the small and large intestine. 6. Tell how the eye accommodates for near and far objects.

Practical Examination.—Each candidate was given an examination on clinical pulse tracings, reflexes, blood pressure, heart sounds and physiologic tracings.

MEDICAL JURISPRUDENCE

Examiner.—Surgeon-General H. S. Cumming, U. S. Public Health Service, Washington, D. C.

Written Examination.—1. What are the privileges and obligations of the physician under the Harrison Narcotic Act? 2. What are the clinical manifestations of acute arsenic poisoning? Of subacute or chronic poisoning by the same agent? 3. What are the clinical manifestations of atropin poisoning, and how would you confirm the clinical diagnosis? 4. What is the object of laws requiring examination and license for practitioners of medicine? 5. Discuss the duties of a coroner.

Colorado April Examination

Dr. David A. Strickler, secretary, Colorado State Board of Medical Examiners, reports the written examination, held at Denver, April 5, 1921. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 12 candidates examined, 8 passed and 4 failed. Fourteen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Medical Evangelists.....	(1918)		75.7
Kansas City University of Physicians and Surgeons....	(1921)		85.4
Columbia University	(1915)		75.1
Osteopaths	76.6, 79.1, 81.8,	83, 85.4	

FAILED

Kansas City College of Medicine and Surgery.....	(1921)	74
St. Louis College of Physicians and Surgeons.....	(1920)	50.5, 66.7
Eclectic Medical College.....	(1908)	62.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama.....	(1914)		Alabama
Hahnemann Medical College and Hospital, Chicago....	(1903)		Arizona
Northwestern University	(1907)		Arizona
Northwestern University Woman's Medical School....	(1892)		Oklahoma
Rush Medical College.....	(1920)		Illinois
Indiana University School of Medicine.....	(1920)		Indiana
University Medical College of Kansas City.....	(1909)		California
University of Missouri.....	(1903)		Missouri
John A. Creighton Medical College.....	(1920)		Nebraska
Columbia University	(1916)		New York
Ohio State University College of Medicine.....	(1916)		Ohio
Medico Chirurgical College of Pennsylvania.....	(1898)		New Jersey
University of Toronto.....	(1905)		North Dakota, (1906) Minnesota

Book Notices

TEXTBOOK OF TRACHEO-BRONCHOSCOPY (TECHNICAL AND PRACTICAL). By Sanitätsrat Dr. M. Mann, Senior Physician to the Department for Diseases of Ear, Nose and Throat, in the Municipal Hospital Dresden-Friedrichstadt. Translated by A. R. Moodie, M.A., M.D., Ch.B. Cloth. Price, \$9. Pp. 292, with 65 illustrations. New York: William Wood & Co., 1921.

This is a translation of the original German edition which appeared six years ago, few copies reaching the United States owing to the war. Briefly described, the book must be considered as a complete encyclopedia and extensive atlas of tracheobronchoscopy. After a short discussion of the involved anatomy, the history of the subject is reviewed, the author presenting the methods and instruments of the various schools (Killian, von Schrötter, Chiari and others). Several American instruments are described and illustrated with due credit to the "inventive spirit and that great sense of personal independence" of Americans. It is the necessary omission of mention of the specially designed instruments which have appeared in the last five years from the hands of such men as Jackson, Lynch and Arrowsmith which offers the only criticism to the work. The actual text is built of case histories, each subject containing extensive bibliographies. Though fully one third of the book is devoted to the extraction of the various types of foreign bodies, the author lays great stress on the endoscopic findings in tumors and general diseases of the trachea and the bronchial system, and similarly in the findings in lesions of these structures due to disease of the neighboring parts. It is evident from the text that the author hopes (with Ephraim, Freudenthal and others) that tracheobronchoscopy will become a common medium for the treatment of many intrathoracic and pulmonary conditions.

GYNECOLOGY. By Brooke M. Anspach, M.D., Associate in Gynecology, University of Pennsylvania, with an Introduction by John G. Clark. Cloth. Price, \$9. Pp. 752, with 526 illustrations. Philadelphia: J. B. Lippincott Company, 1921.

This book appears to be one of the most satisfactory of the many works on gynecology now available. The author's long experience in the teaching and practice of gynecology are reflected in the spontaneous, first-hand style which characterizes the text. The subdivision of the subject which the author announces in his preface, and which he follows in his book, is into: (1) normal anatomy and physiology; (2) morbid anatomy and physiologic abnormalities that are dependent on developmental defects; (3) the acquired causes of disease; (4) general symptomatology, with methods of investigation, and (5) systematic arrangement and description of the diseases affecting the generative tract, with morbid anatomy, symptomatology, diagnosis and treatment. The opening chapter deals briefly but satisfactorily with the embryology of the female generative organs. An excellent innovation is that of considering in the next chapter the various developmental anomalies which are encountered clinically. The chapter on anatomy is adequate, that on physiology perhaps not so full as one might wish, in view of the many recent advances in this growing fringe of gynecology. Especially satisfying is the concise little chapter on female urology, and that on pelvic inflammatory disease, the latter presenting a crystallization of the best modern opinion as to etiology, symptomatology, diagnosis and treatment. The last hundred pages or so is devoted to a useful discussion of such subjects as operative technic, post-operative complications, and mechanical and medicinal aids to treatment. There is also a short chapter on radium and roentgen-ray therapy, in which this subject of such growing importance to gynecologists is discussed in a sane and conservative manner. It is rather curious to note how authors of textbooks differ in the importance which they assign to various subdivisions of their subjects, as indicated by the amount of space assigned to them. For example, Anspach practically ignores the subject of endocrinology as related to gynecology, devoting to it a scant two pages or so. The author of another popular textbook of gynecology, on the other hand, gives to the subject of internal secretions a solid fifty pages, besides many other references elsewhere in the book. This, of course, includes much unreliable material,

and not a little that is rather irrelevant. While the latter plan is not to be commended, it does seem that Anspach's consideration of this subject is much too niggardly, even from the most coldly scientific point of view. An excellent feature is the well selected working bibliography at the end of each chapter. These lists of references are well selected, the only criticism being the incomplete form of many of the references through the omission of volume number, page, etc. The author, contrary to many gynecologists, still appears to consider "pathologic anteversion" an important factor in dysmenorrhea, and even recommends (page 591), though half heartedly, the various plastic operations on the cervix which are now so happily becoming obsolete. Throughout the work the discussion of therapeutic measures, nonoperative as well as operative, is very meaty, and will be a big help to both general practitioners and specialists. The general get-up of the book is excellent, the typography exceptionally good, and the illustrations numerous and satisfying. In short, the virtues of the book are many, and its faults few, so that it merits a rather emphatic stamp of approval.

INJURIES AND DISEASES OF THE BONES AND JOINTS: THEIR DIFFERENTIAL DIAGNOSIS BY MEANS OF THE ROENTGEN RAYS. By Frederick H. Baetjer, M.D., Associate Professor of Roentgenology, Johns Hopkins University, and Charles A. Waters, M.D., Instructor in Roentgenology, Johns Hopkins University. Cloth. Price, \$10 net. Pp. 349, with 333 illustrations. New York: Paul B. Hoeber, 1921.

A more descriptive title of this work would be the "Roentgen-Ray Diagnosis of Injuries and Diseases of the Bones and Joints," for such in fact it is. It is not a treatise on orthopedic surgery, but a valuable and acceptable aid both to the orthopedic surgeon and to the general surgeon in the interpretation of the roentgenographic findings of the structures considered. It is entirely new and based on the authors' personal observations of a varied and abundant clinical material. The illustrations are clear and well selected, and the reading matter is concise. The discussion of bone tumors, with their manner of distribution in the bones and methods of growth, forms an interesting chapter. Much emphasis is placed throughout the text on the influence of age and sex on the pathologic condition and roentgen-ray appearances. The authors also stress the importance of a thorough knowledge of normal and pathologic anatomy as fundamental to proper roentgen-ray interpretation.

FUNCTIONAL DIAGNOSIS. By Max Kahn, M.A., Ph.D., M.D., Director of the Department of Laboratories, Beth Israel Hospital. In Collaboration with Morris Hirsch Kahn, M.D., Chief of Clinic in Cardiovascular Diseases and Internal Medicine, Mount Sinai Hospital Dispensary, and Jacob Rosenbloom, Ph.D., M.D. Foreword by William J. Gies, M.S., Sc.D., Ph.D., Professor of Biological Chemistry, College of Physicians and Surgeons, Columbia University. Leather. Price, \$6. Pp. 382, with 52 illustrations. New York: W. F. Prior Company, 1920.

The present volume is apparently a reprint of the section on functional diagnosis appearing in Tice's System of Medicine, although there is nothing on the book to indicate this fact. The text is divided into six chapters, the first three concerning gastro-intestinal, pancreatic and liver function tests by Max Kahn, the fourth chapter, the functional capacity of the circulation by Morris H. Kahn, the fifth, functional tests of endocrine glands by Jacob Rosenbloom, and the sixth, kidney function tests by Max Kahn. The tests are described in detail, all of the various methods used being mentioned. There is, however, very little discussion of the author's personal belief as to the relative value of the various tests. There is an excellent bibliography following each article, and a comprehensive index serves as a guide to the numerous methods described.

MANSON'S TROPICAL DISEASES. A Manual of the Diseases of Warm Climates. Edited by Philip H. Manson-Bahr, D.S.O., M.A., M.D., Physician to the Hospital for Tropical Diseases, London. Seventh edition. Cloth. Price, \$10. Pp. 960, with 462 illustrations. New York: William Wood and Company, 1921.

A previous edition of this well known work appeared in 1917. The present edition contains the newer information relative to Noguchi's work on yellow fever. The book has been entirely reset, numerous valuable colored plates and charts have been added, and the reviser has had the assistance of many colleagues of the London School of Tropical Medicine. The book has thus been kept at the high place which it previously occupied as a textbook on tropical diseases.

Medicolegal

Decisions Under the Harrison Narcotic Law

(*Rothman et al. v. United States* (U. S.), 270 Fed. R. 31; *Di Preta v. United States* (U. S.), 270 Fed. R. 73; *Dysart v. United States* (U. S.), 270 Fed. R. 77)

The United States Circuit Court of Appeals, Second Circuit, in affirming judgments of conviction of Rothman and two Cohens, says that they were indicted for unlawfully selling heroin and for conspiracy respecting such sale. Rothman was a physician, and one of the Cohens was the owner of a pharmacy. The court does not think that the indictment was invalidated because it did not negative certain exceptions in Section 2 of the Harrison Narcotic Law, as the proviso found in Section 8 that it shall not be necessary to negative the exemptions was intended to apply to the entire act. The court also follows the rule that when a government detective, suspecting that a person is engaged in an unlawful business seeks information under an assumed name directly from him, and that person responds thereto, violating a law of the United States, he cannot, when indicted for the offense, set up that he would not have violated the law, if the inquiry had not been made of him by the government official. The meaning of the act is determined by the court, and not by the treasury department. Ignorance of the law excuses no one. It could be no excuse that the defendants relied on a treasury decision which was wrong. If a conspiracy was proved to have existed between the defendants, it was not necessary to prove that all of the defendants did the overt acts which they were alleged to have done. All that was necessary was that one or more of such parties did an act to effect the object of the conspiracy. Every act of each member of the conspiracy in pursuance thereof was in contemplation of law the act of them all, and was evidence against each of them.

The same court, in affirming a judgment of conviction in the second case, wherein Di Preta, a physician, was the defendant, says that the testimony was ample to the effect that he sold to all and sundry so-called prescriptions for what are called "habit-forming drugs," and sometimes suggested that the recipients of these prescriptions should have them filled at one Petraglia's drug store. The indictment was framed under the second section of the Harrison act, and charged Petraglia with dispensing the drug substantially in the language of the statute, which was sufficient. It then charged Di Preta with aiding and abetting under Section 332 of the Criminal Code, which makes a principal of any one who aids or abets in the commission of "any act constituting an offense defined by any law of the United States." The count was not invalid because it did not negative the exceptions of the statute in favor of physicians, nor because it did not give any details as to how or in what manner Di Preta abetted Petraglia. Subdivision *b* of the second section does except the dispensing of drugs by a dealer to a consumer in pursuance of a written prescription (under certain circumstances not here material). But a prescription issued under the circumstances amply shown in this case is not a prescription at all. Consequently it is no exception; nor is it necessary to negative the exceptions under this section of the statute. At common law Di Preta would have been an accessory before the fact; but the penal code makes him a principal. Thus the acts of the principal become the acts of the accessory or aider, and such accessory may be charged as having done the act himself, and be indicted and punished accordingly.

In the third case, wherein the United States Circuit Court of Appeals, Fifth Circuit, affirms a judgment of conviction of defendant Dysart, a physician who was registered under the law, the court holds that there was no variance between the offense charged in the indictment and the evidence adduced where the indictment charged unlawful sales of morphin sulphate and what the defendant did was to issue prescriptions. Nor was there error in admitting evidence to the effect that the defendant had issued prescriptions to a large number of persons other than those described in the

indictment, when in his charge to the jury the trial court limited the effect of such evidence to the intent with which the prescriptions for persons named in the indictment were issued, and distinctly charged the jury that conviction could not be based on prescriptions for persons not so named. As so limited and explained, the evidence was admissible. It threw light on the intent of the defendant in respect to the vital question in the case of whether he was lawfully dispensing drugs in the course of his practice, or was using his profession of physician to cover up a violation of the law.

Reasonableness of Requiring Morbidity Reports

(*Smythe v. State* (Miss.), 86 So. R. 870)

The Supreme Court of Mississippi, Division B, holds that, under a provision of the code empowering the state board of health to make and publish all reasonable rules and regulations necessary to enable it to discharge its duties and powers to carry out the purposes and objects of its creation, a regulation requiring every licensed physician practicing in the state to file a morbidity report on the first day of each month was not unreasonable. The court says that there was no merit in the contention that the rule was unreasonable. Its purpose was to enable the health authorities to take proper and prompt measures for the prevention and spread of disease, and to promote the general health of the people. Not only was it not unreasonable, but it was an important and valuable aid in the preservation of the public health. But in the prosecution of a physician for knowingly violating such a rule or regulation of the state board of health, where the evidence wholly failed to show that the defendant had knowledge of the regulation, or that there had ever been any such publication of the regulation as to charge him with knowledge thereof, a peremptory instruction requested by him for a verdict in his favor should have been granted. The only attempt in this case to show any sort of publication of the rule, or that defendant Smythe had knowledge thereof, was found in the testimony of a witness for the state who testified that there was in the office of the state board of health a mailing list consisting of about 13,000 names, including about 1,700 physicians; that the name of Dr. Smythe appeared on that mailing list; and that it was customary to mail the publications of the board to the people whose names appeared on that list. The defendant testified that he had never received a copy of these regulations, and that he had no knowledge of the existence of the rule requiring reports to be made on the first day of the month, and that, prior to the administration of a named county health officer, it had been the custom in that county to file these reports on or about the tenth day of each month, and that in so doing the physicians were acting under the directions of the county health officers. There was no presumption that the defendant had knowledge of a mere rule or regulation of the state board of health, and under the evidence, the peremptory instruction requested by the defendant should have been granted. Therefore the court reverses a judgment of conviction of the defendant of unlawfully and knowingly violating a rule or regulation of the state board of health, and discharge him.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Oct. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 27-29.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
New England Surgical Society, Worcester, Mass., Sept. 21-22.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

August, 1921, 22, No. 2

- *Calcium and Phosphorus in the Serum in Relation to Rickets. J. Howland and B. Kramer, Baltimore.—p. 105.
- Topographic Anatomy of Its Changes at Birth and in Period of New-Born. G. J. Noback, Minneapolis.—p. 120.
- *Lesions of Corpus Striatum in Childhood; of Clinical Cases Illustrating Various Syndromes. B. Crothers, Boston.—p. 143.
- *Pyloric Stenosis. L. W. Sauer, Evanston, Ill.—p. 166.
- *Congenital Aneurysmal Dilatation of Ductus Botalli. D. M. Dry, Philadelphia.—p. 181.
- *Interpretation of Seasonal Variation of Rickets. A. F. Hess and L. J. Unger, New York.—p. 186.
- Studies of Infant Feeding. Cases of Cow's Milk and Human Milk in Their Relation to Infant Feeding. Action of Rennin on Casein. A. W. Bosworth, Boston.—p. 193.
- Vital Capacity of Lungs of Children. P. W. Emerson and H. Green, Boston.—p. 202.
- *Fragility of Red Blood Corpuscles in Infectious Diseases. R. M. Greenthal and Wm. S. O'Donnell, Ann Arbor, Mich.—p. 212.
- *Rapid Clinical Method for Determination of Reducing Substance in Cerebrospinal Fluid: Methylene Blue Method. Michio Kasahara and Shunjiro Hattori, Kyoto, Japan.—p. 218.

Calcium and Phosphorus in Rickets.—Data are presented by Howland and Kramer to show that nonrachitic infants and young children, the concentration of calcium is from 10 to 11 mg. per hundred c.c. of serum. The concentration of inorganic phosphorus is about 5 mg. per hundred c.c. of serum. The constancy of the concentration of calcium, phosphorus and bicarbonate in the serum of normal children undoubtedly determines the constancy of the inorganic composition of normal bone. During the period of active rickets, the calcium concentration may be normal or slightly reduced. The reduction does not seem to depend directly on rickets. There are reasons for believing that in many instances the reduction is associated with a latent form of tetany. The inorganic phosphorus of the serum is regularly reduced in active rickets, sometimes to an extreme degree. During the process of healing, whether occurring spontaneously or as the result of the administration of cod liver oil, the phosphorus content of the serum gradually rises to a normal figure and often somewhat above this. Relapses are accompanied by a fall in the phosphorus concentration of the serum. All the children under 2½ years of age, in whom the authors found an inorganic phosphorus content of the serum of 3.0 mg. or less, have been suffering from active rickets.

Lesions of Corpus Striatum.—Six cases are presented by Crothers. A number of syndromes characterized by disturbances of associated movements, variations in muscle tone, and speech defects are definitely associated with sharply localized lesions of the corpus striatum. They are easily distinguished, in typical cases, from spastic pyramidal tract syndromes and from the ordinary chorea. In atypical cases confusion necessarily arises and careful sorting out of signs is essential. Crothers believes that a critical reexamination of children showing involuntary movements over a period of months or years, will reveal unsuspected cases. Moreover, the six cases reported demonstrate the dangers of relying on casual impressions in judging mental status, when speech defects and motor disorders complicate the picture. Experience with the syndromes shows fairly conclusively that such disorders cannot be considered rarities, and also demonstrates that general attention has not been called to this group.

Thick Cereal in Pyloric Stenosis.—The use of thick cereal in thirty-five cases of pyloric stenosis brought about a rapid gain in weight in twenty-four cases and was effective in twenty-eight of the thirty-five cases. Sauer points out that the preparation and administration of the food are important. Patients should be operated on if the thick cereal fails to bring about improvement in from one to two weeks. Under certain conditions, one should not wait too long before operation. Complications following operation are not infrequent. Thick cereal feedings may be valuable when vomiting continues after operation.

Congenital Aneurysmal Dilatation of Ductus Botalli.—The heart described by Dry had a patulous ductus arteriosus which was dilated to the extent of being aneurysmal.

Seasonal Variation of Rickets.—Hess and Unger show that milk from pasture-fed cows (summer milk) failed to prevent the development or to decrease the incidence of rickets during the winter. On the other hand, treatment with ultraviolet rays or with sunlight brought about calcification of the bones during the winter as demonstrated by means of the roentgen rays. These contrasting results lead to the conclusion that hygienic factors, especially sunlight, and not dietetic factors, play the dominant rôle in the marked seasonal variation of this disorder.

Fragility of Erythrocytes in Infectious Diseases.—No distinctive reaction to the fragility test was found by Greenthal and O'Donnell in any of the infectious diseases studied, accordingly the fragility test has no diagnostic value. Fever per se has no effect on the fragility of the red cells. In certain cases of infectious diseases one may find a distinct increased resistance. These cases are usually of great severity and the prognosis is grave.

Determination of Reducing Substance in Cerebrospinal Fluid.—The procedure of the methylene blue method devised by Kasahara and Hattori for the qualitative determination of the glucose in the spinal fluid is as follows: Two-tenths c.c. of cerebrospinal fluid is drawn up with a graduated pipet into the test tube. One c.c. of 0.004 per cent. methylene blue solution (Methylenblau f. Bac. Gruebler) is added to the fluid, and then three drops of 10 per cent. potassium hydroxid solution are poured into it. This mixture is heated and boiled for a few seconds. If it contains 0.05 per cent. glucose, the depth of the color varies, strictly depending on the quantity of this substance present. The quantitative determination of the glucose in the spinal fluid by means of the methylene blue solution is best performed in the following way: To 1 c.c. of 0.004 per cent. methylene blue solution are added three drops of 10 per cent. potassium hydroxid solution. Adding the spinal fluid to be tested from a buret, the minimal volume of it, with which this mixture becomes perfectly colorless by boiling is determined. When the minimal volume (c.c.) is determined, the amount of the glucose present is calculated

0.01

from the formula: $\frac{\text{minimal volume}}{n} = p$, where p is the number of c.c. of cerebrospinal fluid used. If, for example, the minimal volume of the spinal fluid used is 0.5 c.c. the amount of the glucose present is:

$$\frac{0.07}{0.5} = 0.02 \text{ per cent.}$$

American Journal of Medical Sciences, Philadelphia

June, 1921, 161, No. 6

- Breathing of Air of Lowered Oxygen Tension as Test of Circulatory Function. A. Stengel, C. C. Wolferth and Leon Jonas, Philadelphia.—p. 781.
- *Broncho-Esophageal Fistula and Traction Diverticulum. J. B. Hawes, Boston.—p. 791.
- Chronic Nephritis: From Point of View of General Practitioner. Its Diagnosis, Prognosis and Treatment. A. I. Ringer, New York.—p. 798.
- *Treatment of Tetanus. S. O. Freedlander, Cleveland.—p. 819.
- *Gonorrheal Endocarditis. D. C. Smith, Charlottesville, Va.—p. 824.
- Epidemic Encephalitis: Five Cases; Necropsy Findings. Predominating Symptomatology; Relation to Influenza. K. M. Lewis, G. King and R. Dinagar, New York.—p. 831.
- *Report of Epidemic with Certain Cases Presenting Picture of Meningo-Encephalitis. C. E. Nixon and T. H. Sweetser, Minneapolis.—p. 845.
- *Aneurysm of Hepatic Artery. Report of Case. E. Weiss, Philadelphia.—p. 859.
- *Primary Sarcoma of Appendix: Case of Lymposarcoma of Appendix with Acute Intestinal Obstruction in Young Woman. H. I. Goldstein, Camden, N. J.—p. 870.
- Influenza and Epilepsy: Relations of Mental Disease and Influenza. K. A. Menninger, Topeka, Kan.—p. 884.

Broncho-Esophageal Fistula.—Hawes reports two cases. One was a case of simple broncho-esophageal fistula following an acute pulmonary infection. The fistula healed spontaneously and the lung seemed to suffer no ill effects from the passage through it of barium or food, liquid or solid. In the second case a definite diagnosis of pulmonary tuberculosis had been made in 1916 and in 1919, based on (1) signs in the lungs and (2) hemorrhages. The patient, a very conscien-

tious woman, had practically isolated herself from her children for fear of infecting them. Roentgen-ray examination demonstrated a sinus communicating between the process in the lung and the esophagus.

Treatment of Tetanus.—Four cases of tetanus are reported by Freedlander in which recovery occurred after injecting large doses of antitoxin intravenously. The amounts administered were 213,000, 755,000, 189,000 and 188,000 units, respectively.

Gonorrheal Endocarditis.—The diagnosis in Smith's case was based on a recent history of gonorrhea, negative cultures, morphology of organism in smears and the character of lesions found at necropsy. None of the above findings alone would be sufficient for making a diagnosis of gonorrheal endocarditis, but when taken together they prove beyond a doubt that the gonococcus is the etiologic factor.

Meningo-Encephalitis.—Nixon and Sweetser report eleven cases divided into three groups according to the symptomatology. The first group presented the syndrome of an acute toxic condition; the second group that of a meningitis or meningo-encephalitis, and the third group the clinical and pathologic findings of epidemic encephalitis. In these cases there was a definite diminution of acuteness in the latter cases and there was an evident contagiousness present in the whole group of cases.

Aneurysm of Hepatic Artery.—Fifty-five cases of aneurysm of the hepatic artery are recorded in the literature. The main clinical features are pain, jaundice and hemorrhage. Rarely are tumor or bruit present and then only in the terminal stages. Under favorable circumstances the treatment is ligation of the hepatic artery. Weiss reports one case with necropsy findings.

Primary Sarcoma of Appendix.—Only seventeen cases of primary sarcoma of the appendix were found recorded in the entire medical literature of the world by Goldstein. All the cases showed symptoms resembling attacks of acute or recurrent appendicitis. Goldstein adds one case to the list.

American Journal of Public Health, Boston

July, 1921, 11, No. 7

- Vitamins and Certain Aspects of Their Relation to Public Health. J. C. Drummond, London.—p. 593.
- Sanitary Inspection. A. Wolman, Baltimore.—p. 598.
- What Health Officers Can Do to Promote Rat Extermination. E. A. Goldman, Washington, D. C.—p. 606.
- Accurate Method for Determining Alkalinity in Hypochlorite Solutions. J. A. Wesener and G. L. Teller, Chicago.—p. 613.
- Deficiency Diseases in Labrador. V. B. Appleton, San Francisco.—p. 617.
- Finding Tuberculosis Through Survey and Clinics. M. J. Fine, Newark, N. J.—p. 622.
- Reporting Communicable Diseases—Physician's Point of View. C. E. McCombs, New York City.—p. 624.
- Epidemiologic Study of Endemic Focus of Leprosy. M. F. Boyd and W. F. Fox, Galveston, Texas.—p. 628.
- Seasonal Variation in Multiplication Rate of Micro-organisms Within the Body. W. F. Wells, Albany, N. Y.—p. 636.
- Office System in Public Health Administration. R. Britten, Washington, D. C.—p. 639.

American Journal of Roentgenology, New York

June, 1921, 8, No. 6

- Relation of Science of Physics to Radiation Therapy. H. Schmitz, Chicago.—p. 285.
- *Roentgen Ray Treatment of Hypertrophy of Prostate. S. Stern, New York.—p. 292.
- *Roentgen Ray Studies of Heart. C. L. Martin, Dallas, Texas.—p. 295.
- *Analysis of Eleven Hundred Roentgen Ray Examinations of Gastro-Intestinal Tract. R. H. Lafferty, Charlotte, N. C.—p. 315.
- Congenital Atresia of Esophagus. E. H. Skinner, Kansas City, Mo.—p. 319.
- Roentgen Ray Work from Viewpoint of Internist. G. Dock, St. Louis.—p. 321.
- Intensity of Scattered Roentgen Rays in Radiography. R. B. Wilsey, Rochester, N. Y.—p. 328.
- Measurements of Scattered Radiation. M. B. Hodgson, Rochester, N. Y.—p. 338.
- Bucky Diaphragm. H. W. Van Allen, Springfield, Mass.—p. 340.
- Some Accessories to Potter-Bucky Diaphragm. D. R. Bowen, Philadelphia.—p. 343.

Roentgen-Ray Treatment of Prostate Hypertrophy.—Roentgen-ray treatment of hypertrophy of the prostate has been found of value by Stern. Many of the patients so treated will not only be temporarily benefited but may escape

operation altogether. Patients whose condition is far advanced, those that have reached catheter life, will be only temporarily and subjectively benefited by the treatment. Prophylactic roentgen-ray treatments, to safeguard against recurrence of symptoms in improved cases, have also been found of value.

Roentgen-Ray Heart Studies.—Diseases of the myocardium, endocardium, pericardium, great vessels and kidneys produce cardiac shadows of different shapes, so that Martin believes some of them may be used as points in differential diagnosis. He utters a word of warning to the enthusiastic roentgenologist who would attempt cardiac diagnosis. Clean-cut cardiac lesions are not particularly common, and the combined lesions that may appear often tax the skill of the best internist with his various methods of investigation. Certain stages in various cardiac disorders produces shapes of the heart outline that are almost identical. If, instead of trying to make a diagnosis, the roentgenologist sends the internist a description of the cardiac shadow and states whether or not it is enlarged and denotes the chambers or vessels which show enlargement, he is rendering a service that is based on sound scientific principles.

Roentgen-Ray Examinations of Gastro-Intestinal Tract.—It is interesting to note that 33 per cent. of duodenal ulcer cases studied by Lafferty were accompanied by a patulous and chronic appendix. He believes that the occurrence is enough to suggest the plausibility of a theory as to the cause of duodenal ulcer, viz., that the chronic appendix reflexly causes a pylorospasm or duodenospasm, and that this is followed or accompanied by a hyperacidity, possibly causing or contributing to an erosion which gives a seat for the invading organism.

Annals of Medical History, New York

June, 1921, 3, No. 2

- Montaigne and Medicine. J. S. Taylor, Washington, D. C.—p. 97.
- Story of a Great Consultation; Jerome Cardan Goes to Edinburgh. C. L. Dana, New York.—p. 122.
- Lines to a Skeleton. A. J. Vardill.—p. 135.
- Unrecognized Anglo-Saxon Medical Text. C. and D. Singer, Oxford, England.—p. 136.
- First Scientific Work on Spectacles. C. A. Wood, Chicago.—p. 150.
- Charles Caldwell, Biographic Sketch. W. S. Middleton, Madison, Wis.—p. 156.
- Lafayette Houghton Bunnell, M. D., Discoverer of Yosemite. H. A. Kelly, Baltimore.—p. 179.

Archives of Dermatology and Syphilology, Chicago

August, 1921, 4, No. 2

- Subacute Malignant Pemphigus with Extensive Bullae. J. E. Lane and R. A. Lambert, New Haven, Conn.—p. 141.
- *Syphilis and Tuberculosis. L. Hollander and F. C. Narr, Pittsburgh.—p. 153.
- *Synovial Lesions of Skin. G. M. MacKee and G. C. Andrews, New York.—p. 162.
- *Stomatitis and Aplastic Anemia Due to Neo-Arsphenamin. J. E. Moore and A. Keidel, Baltimore.—p. 169.
- *Influence of Arsenical Preparations on Cutaneous Tests. A. Strickler, Philadelphia.—p. 177.
- *Experiences with Sodium Arsphenamin (Diarsenol) H. E. Michelson and D. M. Siperstein, Minneapolis.—p. 184.
- Review of Literature and Discussion of Silver Arsphenamin. H. E. Michelson and D. M. Siperstein, Minneapolis.—p. 193.
- Cream of a Year at Beirut. W. B. Adams, Beirut, Syria.—p. 207.
- Roentgen-Ray Dermatitis and Radium Dermatitis: A Comparison. G. M. MacKee and G. C. Andrews, New York.—p. 213.
- Remedies for Rhus Dermatitis. J. B. McNair, Washington, D. C.—p. 217.

Simultaneous Syphilis and Tuberculosis.—A case is presented by Hollander and Narr in which the patient showed gross syphilitic and tuberculous lesions. Available statistics of the coexistence of syphilis and tuberculosis are reviewed. The possible malignancy of tuberculosis in the cases described is attributed in part at least to iodid medication.

Synovial Lesions of Skin.—Two cases are reported by MacKee and Andrews. The first was of twenty years' duration. The lesion occurred in a man, 26 years of age, and was situated over the dorsal aspect of the distal interphalangeal articulation of the middle finger of the right hand. It consisted of a pea-sized, smooth, shiny, translucent, rounded, cystic tumor with a thick wall; it was not painful; there were a few visible venules in its walls. On palpation the tumor was firm but not hard. There was a sense of fluctua-

tion. The second case was of five months' duration, and occurred in a woman 48 years of age. The lesion was situated over the dorsal surface of the distal interphalangeal joint of the right index finger. It was painless, globular, tense, semi-translucent, pearly in color and the size of a large pea. Pressure caused a hyperemic areola at its circumference and a pallor of its central portion. This was probably caused by the occlusion of the small vessels in the walls of the lesion. The walls were thick, tough, smooth, shiny and slightly telangiectatic. Fluctuation was present.

Arsphenamin Stomatitis and Aplastic Anemia.—Moore and Keidel present the history of a patient who developed a fatal aplastic anemia after neo-arsphenamin. The literature is reviewed, attention is drawn to the relation of this type of reaction to dermatitis exfoliativa following arsphenamin, and the practical application of early recognition of the characteristic blood changes in the prevention of these reactions is pointed out.

Influence of Arsenic Preparations on Skin Tests.—Strickler states that the repetition of a luetin test in nonsyphilitic patients is capable of producing positive luetin tests in about 21 per cent. of all subjects. The intravenous administration of arsphenamin apparently stimulates the production of a luetin test in nonsyphilitic patients, and in their series they were able to produce 53 per cent. positive luetin tests following this form of intravenous specific therapy. In Strickler's experience the intravenous administration of cacodylate of sodium acts in the same manner as arsphenamin, only more feebly. The repetition of the tuberculin (von Pirquet) test may produce a positive finding, but very infrequently, occurring only once in a series of fourteen subjects. The intravenous administration of arsphenamin is capable of producing a positive tuberculin (von Pirquet) test, previously negative. This occurred in three instances in a series of ten patients. The anaphylactic food test made by either the endermic or scratch method does not seem to be influenced by the intravenous administration of either arsphenamin or cacodylate of sodium.

Value of Sodium Arsphenamin.—Michelson and Siperstein believe that the therapeutic efficiency of sodium arsphenamin is apparently equal to that of the other arsphenamins (clinically) and the effect on the Wassermann reaction is about on a par with that of the other arsphenamins.

Archives of Neurology and Psychiatry, Chicago

August, 1921, 6, No. 2

- *Anatomic and Physiologic Studies of Eighth Nerve. E. Sachs and B. Y. Alvis, St. Louis.—p. 119.
- *Cortical Olfactory Center. S. Uyematsu, Hathorne, Mass.—p. 146.
- Case of Friedreich's Ataxia. J. H. Lloyd and H. S. Newcomer, Philadelphia.
- *Comparative Results of Colloidal Mastic and Colloidal Gold Tests. A. Keidel and J. E. Moore, Baltimore.—p. 163.
- *Diagnostic Criteria in Epidemic Encephalitis and Encephalomyelitis. L. F. Barker, Baltimore.—p. 173.
- Physical Findings in Psychoneuroses. E. A. Strecker, Philadelphia.—p. 197.

Anatomy of Eighth Nerve.—In their study of the eighth nerve, Sachs and Alvis failed to find fibers running directly from the semicircular canals to the nuclei of the vestibular nerve. The fibers running from Deiters' nucleus anteriorly in the posterior longitudinal bundle are few in number and stop before they get to the third and fourth nuclei so that it is doubtful whether there is any connection between Deiters' nucleus and the other nuclei. This is the oculo-vestibular tract spoken of by Wilson and Pike. No fibers were found passing from Deiters' nucleus to the lateral lobes of the cerebellum where the centers Bárány has described lie. All anatomic evidence to support Bárány's contention as to the connections between Deiters' nucleus and the cerebellum is lacking. Fibers from Deiters' nucleus end in the posterior corpus quadrigeminum of the opposite side, but no neuron goes directly to the external geniculate. All fibers of the vestibular nerve end in one of the three vestibular nuclei or in the nucleus tecti of the vermis. Circus movements, rolling over and over, ataxia, swinging of the head, attitude of the head, hitherto described as due to a lesion of the eighth nerve or destruction of the semicircular canals, are due to injuries to the cerebellar nuclei or middle peduncle. The so-called cerebellar attitude of the head is

due to involvement of the middle peduncle. Nystagmus and deviation of the eye downward and outward are the only constant symptoms observed after pure lesions of either the semicircular canals or eighth nerve. As the vestibular fibers lie so near the floor of the fourth ventricle, the symptoms described by Bárány as due to isolated lesions in the pons may be produced by, and probably usually are due to, the internal hydrocephalus which is a common accompaniment of posterior fossa lesions.

Unilateral Involvement of Olfactory Lobe.—Two patients presenting unilateral involvement of the olfactory lobe, one of congenital absence, the other of softening due to arteriosclerosis are reported by Uyematsu. Both had a lesion in the same area of the homolateral lobus pyriformis, the lesion being reasonably regarded as a secondary degeneration following the primary involvement of the peripheral olfactory center. In both cases, Uyematsu found a well marked degeneration of the anterior part of the lobus pyriformis. The first case was, however, that of an epileptic subject, and therefore the changes might be of an epileptic nature and not of a secondary degeneration. The second case was undoubtedly that of an arteriosclerotic brain disease, but the changes in the lobus pyriformis were different than in other parts, indicating their secondary nature. Considering these two cases, Uyematsu believes it is not unreasonable to conclude that the degeneration of the lobus pyriformis in the first case was also secondary. From the study of these two cases, and also from data presented by various observers, he is inclined to believe that the lobus pyriformis must be the chief olfactory center in the human brain. The cornu ammonis and the rest of the limbic lobe showed little evidence of degeneration.

Comparison of Colloidal Tests.—The results obtained show that there is a fairly close parallelism between the colloidal gold and the colloidal mastic tests; and that when agreement is lacking, the mastic test seems to detect abnormalities more frequently than does the gold. This fact, and the simplicity of performance of the mastic test, lead Moore and Keidel to conclude that the test should be an indispensable part of the route of spinal fluid examinations.

Symptoms in Epidemic Encephalitis.—The occurrence in a patient of (a) pathologic drowsiness (lethargy), (b) cerebral nerve paralysis (especially ophthalmoplegia), (c) an acutely developing parkinsonian syndrome, (d) a cataleptic or a catatonic state, (e) myoclonia, (f) chorea, (g) pupillary disturbances, (h) violent neuralgia, (i) a poliomyelitic syndrome, (j) a peculiar delirium, (k) a psychotic state or (l) signs of meningeal irritation in times when encephalitis is epidemic, Barker says, should make one think of the possible existence of epidemic encephalitis.

Archives of Ophthalmology, New York

July, 1921, 1, No. 4

- Phacrisis. I. Barraquer, Barcelona, Spain.—p. 307.
- Glaucoma and Nasal (Sphenophalatin Meckel's) Ganglion. M. H. Post, St. Louis.—p. 317.
- Mercury Tonometer. M. Cohen, New York.—p. 326.
- Surgical Treatment of Epithelioma of Cornea. L. M. Francis, Buffalo.—p. 331.
- Corneal Suture in Cataract Extraction. E. C. Ellett, Memphis, Tenn.—p. 341.
- Congenital Atresia of Puncta Lacrimalia of One Side. H. Gradle, Chicago.—p. 349.

Canadian Medical Association Journal, Toronto

July, 1921, 11, No. 7

- Etiology of Epidemic Influenza. H. B. Maitland and G. C. Cameron.—p. 485.
- Cardiac Irregularities. R. A. Jamieson.—p. 498.
- Epidermophyton Infection. D. K. Smith.—p. 502.
- Use of Living Sutures in Operative Surgery. W. E. Gallie and A. B. LeMesurier.—p. 504.

Colorado Medicine, Denver

July, 1921, 18, No. 7

- Faith Healers; with Special Reference to Aimee Semple McPherson. C. S. Bluemel, Denver.—p. 143.
- *Arthritis—Sacro-Iliac and Lumbosacral; Usual Types Due to Overstrain. G. W. Miel, Denver.—p. 146.
- *Sudden Death Following Artificial Pneumothorax; Report of Case with Necropsy. C. O. Giese and L. A. Conway.—p. 148.

Arthritis Due to Overstrain.—In the treatment of arthritis at the lumbosacral articulation, due to overstrain, in the passive or later stages, the considerations are much the same as in the sacroiliac condition, or in these combined, but Miel says a back-supporting device is more essential and this should extend higher, and endeavor be made to keep the body fully erect—"stressed" by Goldthwait—so lessening irritation at this joint. To support the back, Miel resorts to two devices. He makes a sufficient back pad, five by eight inches in size, of two pieces of firm pasteboard, including between them a piece of light and flexible rubber composition splint board, held together by adhesive strips. It is then cottoned on one side and covered by bandage. It is then placed over the region requiring support, the patient erect, and held in place by two adhesive straps, the lower, longest, reaching the descending portion of the ilium. Miel covers and supports more fully a wide outing-flannel bandage of some five yards length, applied snugly and neatly as an ascending spiral, secured with adhesive plaster. A two-inch piece is applied at each side, extending two inches below, to have hold on hips, and also a strip in front and another at the back to fix the turns. This completes the support and it is used a week or more and discontinued to be supplanted, if found necessary, by one of the sacro-iliac supports available.

Case of Sudden Death Following Artificial Pneumothorax.—A tuberculous individual who had on several previous occasions undergone slight operations on the throat under local anesthesia, and puncture of whose chest had been done on six previous occasions with the introduction of air on three of these occasions, developed alarming symptoms some minutes after the introduction of 200 c.c. of air at the site of previous punctures and immediately following a second puncture in an adjoining interspace without the introduction of air. At no time did the manometer record a positive pressure. The symptoms, marked and well defined, were undoubtedly cerebral. There was a probable injury to the lung at the second puncture, but none could be demonstrated. Death occurred twenty-one hours following the operation. The necropsy findings, either microscopic or macroscopic, were insufficient to explain the symptoms. Giese and Conway are inclined to attribute death to pleural reflex, rather than air embolism.

Delaware State Medical Journal, Wilmington

April, May, June, 1921, 12, No. 2

Some Errors in Diagnosis and Treatment of Heart Affections. A. Robin, Wilmington.—p. 4.

Florida Medical Association Journal, St. Augustine and Jacksonville, Fla.

July, 1921, 8, No. 1

Treatment of Asthma in Pulmonary Tuberculosis. A. F. Higgins, Tampa.—p. 1.

Diagnosis and Treatment of Pulmonary Tuberculosis. R. E. Stephens, Santord.—p. 2.

Iowa State Medical Society Journal, Des Moines

July 15, 1921, 11, No. 7

Relation of Family Doctor to Specialist, General Public and Future of Medicine in Iowa. D. Macrae, Council Bluffs.—p. 228.

Symposium on Surgical Diagnosis. Part I: Case History. O. C. Morrison, Carroll.—p. 234.

Id. Part II: Physical Examination. J. C. Hancock, Dubuque.—p. 236.

Id. Part III: Laboratory Procedures. F. H. Lamb, Davenport.—p. 244.

Id. Part IV: Roentgen Ray Examination. T. A. Burcham, Des Moines.—p. 250.

Id. Part V: Summary; Final Correlation. C. S. James, Centerville.—p. 254.

Acidosis, Explanation of Condition. T. Byrnes, Atlantic.—p. 257.

Journal of Experimental Medicine, Baltimore

August, 1921, 34, No. 2

Periodicity in Eliminative Activity Shown by Organism. W. Ashby, Rochester, Minn.—p. 127.

*Study of Transfused Blood. Blood Destruction in Pernicious Anemia. W. Ashby, Rochester, Minn.—p. 147.

*Experimental Syphilis in Rabbit. Affections of Eyes. W. H. Brown and L. Pearce, New York.—p. 167.

Preservation of Stock Strains of *Spirocheta Pallidum* and one Demonstration of Infection in Rabbits. W. H. Brown and L. Pearce, New York.—p. 185.

*Experimental Rickets in Rats. Diet Producing Rickets in White Rats, and Its Prevention by Addition of an Inorganic Salt. H. C. Sherman and A. M. Pappenheimer, New York.—p. 189.

Studies on Pneumonic Exudate. Effect of Preservation, Temperature, Dialysis and Salt Concentration on Enzyme in Pneumonic Lung. F. T. Lord and R. N. Nye, Boston.—p. 199.

Studies on Pneumonic Exudate. Presence of Enzyme and Antienzyme in Pneumonic Lung. Local Ferment-Antiferment Balance. F. T. Lord and R. N. Nye, Boston.—p. 201.

Studies on Pneumonic Exudate. Presence in Pneumonic Exudate of a Large Amount of Specific Antigen. F. T. Lord and R. N. Nye, Boston.—p. 207.

Studies on Pneumonic Exudate. Presence in Pneumonic Lung of Soluble Substance Inhibiting Agglutination by Homologous Serum. F. T. Lord and R. N. Nye, Boston.—p. 211.

Blood Destruction in Pernicious Anemia.—Evidence is presented by Ashby to show that there is no hemolytic toxin producing the anemia in pernicious anemia. Partial evidence is presented to show that the periods of active blood destruction which are seen as the exception in pernicious anemia cases during a series of transfusions are due to the activity of the blood-destroying organs of the body rather than to the intrinsic weakness of the pernicious anemia blood corpuscle. It is questionable whether blood destruction is as important a factor in producing the anemia of pernicious anemia as it is at present usually assumed to be.

Experimental Syphilis of Eye.—Brown and Pearce found that a variety of affections might occur following scrotal or testicular inoculations of *Treponema pallidum*. Those observed included ciliary injection, conjunctivitis, keratitis, and iritis which might occur separately or in combination with one another, except that keratitis and iritis were always accompanied by a reaction in the ciliary vessels and usually by a conjunctivitis. Several forms of each of these affections are described, and while some of them were regarded as presenting a very characteristic picture, it was recognized that the conditions present in other cases were not sufficiently distinctive to permit of a clinical diagnosis. With a few exceptions, however, the pathology of the lesions was sufficient to identify them as processes of a syphilitic nature. It was also found that this group of lesions usually arose from a common focus of infection which was located in the episcleral tissue immediately surrounding the cornea. From this point, the infection tended to spread to the conjunctiva and the cornea, or toward the canal of Schlemm and the spaces of Fontana and thence to the ciliary body, the iris, and choroid. The localization of the lesion and the mode of extension were held to be responsible for the combination of manifestations usually observed. From an analysis of the circumstances under which affections of the eyes occurred, it was found that the great majority of them occupied a definite position in the scheme of tissue reactions, being the only generalized lesions developed or the last type of lesion to appear. These facts, together with the unusual frequency of relapse in these affections, were believed to indicate that a low degree of protection was conferred upon these tissues by reactions taking place elsewhere and that the protection afforded by the local reaction was of a feeble character. This deduction was in part confirmed by the fact that it was found possible to increase or decrease the incidence of eye lesions by the use of experimental means which varied the scheme of reaction in animals inoculated with a given strain of *Treponema pallidum*.

Producing Rickets by Diet.—A simple diet is presented by Sherman and Pappenheimer which regularly induced rickets in young rats. The substitution of 0.4 per cent. secondary potassium phosphate for a small part of calcium lactate in this diet completely inhibited the development of rickets. Quantitative determinations of calcium in the bodies of parallel rats showed a marked increase of calcium content in the rats receiving the added phosphate over those which developed rickets. While it is thus shown by roentgen rays and by histologic examinations and by quantitative chemical analysis that added potassium phosphate increased the assimilation and normal deposition of calcium, it may be the quantitative relationship between the inorganic ions rather than actual deficiency of any one of them which was here the determining factor in the cause or prevention of rickets. These experiments do not exclude the possibility of other causes of rickets than those discussed.

Journal of Parasitology, Urbana

June, 1921, 7, No. 4

- Cytamoeba Bacterifera in Red Blood Cells of Frog. R. W. Hegner, Baltimore.—p. 157.
Two New Monistomes from Asia. E. C. Harrah.—p. 162.
Protozoa Parasitic in Fresh-Water Fishes of New York. R. Kudo.—p. 166.
Gregarines. M. W. Kamm.—p. 175.
Occurrence of Moniliformis Sp. in Rats in Texas. A. C. Chandler. Rice Institute.—p. 178.
Case of Urethral Myiasis. N. Leon, Jassy, Roumania.—p. 184.

New York Medical Journal

July 20, 1921, 114, No. 2

- Modern Commentaries on Hippocrates; Humoral Theory and Application. J. Wright, Pleasantville.—p. 77.
Lung Mapping by Injection of Bismuth Mixtures in Living. H. L. Lynah, New York.—p. 82.
Proofs of Constitutional Nature of Cancer. L. D. Bulkley, New York.—p. 85.
Neuralgias of Superior and Inferior Maxillary Branches of Fifth Nerve Caused by Dental Pulp Nodules. N. P. Norman, New York, and H. M. Johnston, Berkeley, Calif.—p. 88.
Influence of Prostate on Health of Man Past Middle Life. H. G. Bugbee, New York.—p. 92.
Urologic Life Extension. T. W. Williams, Milwaukee.—p. 95.
Treating Syphilis. L. L. Michel and H. Goodman, New York.—p. 102.
Schellberg Treatment for Chronic Colonic Infections. W. H. Galland, Croton-on-the-Hudson.—p. 106.
Coordination or Reestablishment Clinic in Hospitals and Dispensaries. J. M. Taylor, Philadelphia.—p. 110.
*Unusual Hypophysial Syndrome. E. D. Friedman, New York.—p. 113.
Etiology and Elimination of Tuberculosis. G. L. Curtis, New York.—p. 114.

Unusual Hypophysial Syndrome.—The chief complaints in Friedman's case, that of a man, aged 19, were dwarfism and obesity, of nine years' duration, hypertension, recurrent pains in the region of the spine for six months. Nine years ago the patient began to grow stout. He gained much weight in two months. Since then there had been very little growth in height. His abdomen became pendulous, his fingers stubby, feet remained small, and face became ruddy. Six months ago shooting pains developed in the region of the spine and chest. About one and a half months ago a pain developed in the right upper quadrant of the abdomen. This seemed to shift with change in position, and lasted about two weeks. He had shortness of breath and palpitation of the heart after exertion. His speech became somewhat hesitant. He had some impairment of memory. There was tremor after exertion. He had dimness of vision for the last two months, and occasional headaches. Nocturia was present, but no polydipsia. The mammae were well developed and the fat distribution was of the feminine type. There was an overgrowth of hair at the bridge of the nose, and the body was covered with fine lanugo hairs. The genitals were small. The fingers were stubby. The knee jerks were diminished. The skin showed ringworm in the axilla and pubis, erythema and telangiectasis of the face and striae distensae on the abdomen and thighs. Roentgen-ray examination of the skull showed undeveloped sinuses, the left being opaque. The sella was normal. Posterior clinoids as well as the bones of the body of sphenoid appeared markedly atrophic and thin. Entrance to the sella was narrow. There was a dense shadow in the middle fossa.

Surgery, Gynecology and Obstetrics, Chicago

August, 1921, 33, No. 2

- *Operation for Removal of Pineal Tumors. W. E. Dandy, Baltimore.—p. 113.
*Jejunal Ulcer. E. S. Judd, Rochester, Minn.—p. 120.
*Clinical Solution of Salt Solution in Conditions of Increased Intracranial Tension. F. E. B. Foley, St. Paul.—p. 126.
*Early Squamous Cell Carcinoma of Cervix. T. S. Cullen, Baltimore.—p. 137.
Rare Tumors of Cervix of Uterus of Inflammatory Origin; Condyloma and Granuloma. L. R. Wharton, Baltimore.—p. 145.
Roentgen Ray After Inflation of Pelvic Cavity with Carbon Dioxid Gas as an Aid to Obstetric and Gynecologic Diagnosis. R. Peterson, Ann Arbor, Mich.—p. 154.
Radium in Carcinoma of Uterus. W. Kohlmann, New Orleans.—p. 158.
Histologic Changes Incident to Radium and Roentgen-Ray Treatment of Uterine Carcinoma. O. Frankl and I. Amreich, Vienna.—p. 162.
Removal of Ventral Tumors of Sacrum by Posterior Route. H. E. Pearse, Kansas City, Mo.—p. 164.
*Study of Organism Associated with Transplantable Carcinoma of White Mouse. J. W. Nuzum, Chicago.—p. 167.
*Incidence of Carcinoma in Gastro-Intestinal Diverticulosis. R. R. Mellon, N. W. Soble, S. C. Davidson and W. F. Fowler, Rochester, N. Y.—p. 177.

- Ranula of Branchial Origin. Louis Carp, New York.—p. 182.
*Control of Chronic Pain. F. Dyas, Chicago.—p. 184.
*Application of Silver Foil as Preventive of Peritoneal Adhesions. A. J. Puls, Milwaukee.—p. 186.
Hadra-Martin-Rawls Operation for Cystocele. T. J. Doederlein, Chicago.—p. 190.

Removal of Pineal Gland Tumors.—The operation described by Dandy is designed to remove the tumor directly. The approach is made possible by a very large parieto-occipital bone flap, the mesial margin of which extends to the superior longitudinal sinus. The dura is then opened and reflected over the inferior longitudinal sinus. In doing so, the cerebral veins which bridge the subdural space between the brain and the longitudinal sinus are gradually elevated, doubly ligated with fine silk ligatures, and divided. It is well, if possible, to avoid ligation of the rolandic vein for a transient hemiplegia will follow. Usually, however, it is necessary to ligate all the veins posterior to the rolandic vein. After division of the cerebral veins the entire posterior of the cerebral hemisphere can be retracted and the fal exposed. The inferior longitudinal sinus is quickly passed and the corpus callosum brought into view as the brain is still further retracted. There is no evidence of an underlying tumor. The posterior half of the corpus callosum is then carefully incised in the midline for a distance of 3 or 4 c. and the hemispheres still further retracted. The tumor will then be brought into full view. Under the fornix of the corpus callosum the vena Galena magna will always be brought into full view at its entrance into the sinus rectus. In one of the cases reported, the tumor lay anterior to the large vein of Galen and between it and the corpus callosum. In the other case about one-half centimeter of the great vein of Galen was free between the upper margin of the tumor and the beginning of the sinus rectus, an amount sufficient to permit double ligation and division of the vein between the ligatures. In the first case the tumor tubercle stripped readily from the vein and no bleeding resulted from the dissection. After the tumor was extirpated the great vein of Galen was seen as a tortuous trunk which when straightened would probably measure 4 centimeters in length; the third ventricle was not opened during the enucleation of the tumor. The bed from which the tumor was removed was the roof of the third ventricle. In the second case the tumor was so large that an adequate exposure was obtained only by dividing the falx cerebri. During the removal of this tumor the third ventricle was opened and the tumor extended so deeply that the operator's finger reached the posterior clinoid process of the sella turcica. A great deal of room is afforded by the release of fluid from the lateral ventricle by a puncture early in the operation, thus allowing the reduced bulk of brain to be easily retracted from the operative field.

Jejunal Ulcer.—Judd analyzes 101 cases of jejunal ulcer following gastro-enterostomy. In ninety-three cases ulcers were at the stoma; below the stoma in eight cases; the foreign material was found at secondary operation in twenty-six cases. Of fifty-five cases of primary operation done at the Mayo Clinic, foreign material was found at secondary operation in nine cases (16.25 per cent.). Of forty-six cases of primary operation done elsewhere, foreign material was found at secondary operation in seventeen cases (37.77 per cent.).

Injection of Salt Solution in Intracranial Tension.—In the human subject Foley shows that intravenous injection of hypertonic salt solution or the ingestion of salt produces a fall of cerebrospinal fluid pressure and a diminution of brain bulk. In conditions of pathologically increased tension the response is conditioned by the details of the pathologic alterations. The determining factors appear to be the size of the lesion which increases brain bulk and the amount of fluid available for absorption. The induced fall of pressure is inversely proportionate to the former and directly proportionate to the latter. A distinction is made between increased intracranial fluid tension per se and increased intracranial tension which is due to enlargement of brain bulk. From observations of cases of obstructed and dilated ventricles an intraventricular absorption of fluid following salt ingestion seems to occur. Foley believes that the procedure has a definite field of clinical usefulness in cases exhibiting high grades of intracranial pressure. The most striking results

are to be obtained in those cases in which cerebrospinal fluid obstruction exists.

Early Squamous Cell Carcinoma of Cervix.—The tumor in Cullen's case was accidentally discovered when the body of the uterus was being curetted for hemorrhage caused by hyperplasia of the endometrium and by a small submucous myoma.

Organism in White Mouse Carcinoma.—An intensive study of a transplantable carcinoma of the white mouse known as the Crocker carcinoma No. 11, was made by Nuzum. This investigation has extended over a period of more than two years, involving several hundred cultivation experiments with cancer tissue in the special tissue ascitic fluid mediums. More than 1,200 white mice were inoculated with cultures and tumor tissue. Employing the special tissue ascitic fluid medium under partial anaerobic conditions a minute, filtrable, gram-positive micrococcus has been isolated quite constantly from emulsions or pieces of carcinoma tissue removed under sterile precautions. The minute coccal bodies present some difficulty in isolation in the original cultures but transfers to subculture generations gradually effect a more rapid and luxuriant growth once the organism becomes adapted to artificial cultivation. It has been carried to the twelfth subculture generation under anaerobic conditions. The minute micro-organism has been seen in stained sections of early carcinoma produced by trocar inoculation of tissue grafts in the usual manner. It has been frequently demonstrated in contact smears of carcinoma cells stained by Gram's method. It has never been encountered in the many control tubes of culture medium incubated simultaneously with the cultures. Injection of pure cultures of the organism subcutaneously into the breast tissue of mice has frequently reproduced tumor nodules which grow progressively for periods of from ten to thirty days and slowly regress in the majority of cases. Microscopic sections of such tumor nodules removed at twenty-four hour periods reveal a mass of newly formed tissue cells rapidly dividing and supported by a newly formed stroma which becomes vascularized. A method has been found whereby pure cultures of the organism have reproduced new growths. Subcutaneous injections of anaerobic culture of the minute organism under these favorable experimental conditions, designed to exclude the probability of carrying over liver cancer cells, have in several isolated instances led to the production of tumors which grew steadily producing cachexia of the mouse. Histologic studies have shown that these tumors do not vary in structure from the original growth known as the Crocker carcinoma No. 11. Transplants from the tumor growths produced by injections of the organism have yielded similar growths in 80 per cent. of a series of inoculated mice. The organism has been readily recovered from these experimental tumors.

Carcinoma in Gastro-Intestinal Diverticulosis.—Gastro-intestinal diverticulosis is an important abdominal condition which does not have the recognition from the abdominal surgeon that it deserves. The gastric cases are the rarest. The one reported by Mellon was diagnosed preoperatively by means of the roentgen ray, and confirmed by pathologic examination. The conditions prevailing in these curious formations seem to facilitate the development of carcinoma, which fact makes their early recognition and removal a matter of first importance to the patient. Ulceration is not a necessary condition for the development of carcinoma. Whether carcinoma develops or not, diverticula are always a source of danger to the patient, owing to the sequels of infection and obstruction.

Control of Chronic Pain.—In cases of chronic pains in the arm Dyas recommends that the brachial plexus be exposed by incision under local anesthesia when permanent analgesia is required for the relief of pain due to malignancy. With the plexus exposed either alcohol injection of the cords or section should be done.

Silver Foil to Prevent Abdominal Adhesions.—Puls proposes the application of silver foil to the amputated stumps of the infected fallopian tubes. It may possibly inhibit the vitality of latent germs embedded in the tissues of the severed adhesions, but it acts especially as a protection against subsequent adhesions of the denuded peritoneum which cannot be closed by suture.

Virginia Medical Monthly, Richmond

July, 1921, 48, No. 4

- *Ocular Interpretations of Disorders of Pituitary Body and Their Non-surgical Treatment. G. E. De Schweinitz, Philadelphia.—p. 179.
- *Surgical Treatment of Certain Types of Dyspepsia. S. McGuire, Richmond.—p. 184.
- Study of Consecutive Series of Nephrectomies. J. S. Horsley, Richmond.—p. 187.
- Acute Obstructive Laryngitis in Children. G. J. Tompkins, Lynchburg.—p. 193.
- Elephantiasis and Kondoleon Operation. T. M. Green, Wilmington, N. C.—p. 196.
- *Migrainous and Pituitary Headaches Contrasted. J. A. Hodges, Richmond.—p. 203.
- Ureteral Stricture. R. L. Rhodes, Augusta, Ga.—p. 205.
- Radium in Treatment of Cancer of Uterus. J. J. Mundell, Washington, D. C.—p. 208.
- Pyorrhea Alveolaris as Etiologic Factor in Nonrelief of Symptoms After Surgical Operation. G. H. Bunch, Columbia, S. C.—p. 210.
- Electrocardiograph in Diagnosis. D. Vanderhoof.—p. 212.
- *Circumcision Prevents Syphilis. A. Irvine, McDowell, W. Va.—p. 214.

Pituitary Disorders Treated Nonsurgically.—De Schweinitz points out that in stages of glandular insufficiency it appears to be a fact that the effectiveness of organotherapy is probably enhanced by simultaneous administration of mercury (preferably by inunctions), and the gland extracts, even though the presence of syphilis is not demonstrable by the usual methods. It is probable that a combination of thyroid and pituitary gland extracts is more efficient than either of the extracts alone, and that this combination, associated with mercury is more effective than is an extract of one gland, even though given in conjunction with unguentum hydrargyrum. The value of radium in the treatment of pituitary body lesions has unquestionably been demonstrated in cases in which it has been applied both primarily and after operative procedures.

Surgical Treatment of Dyspepsia.—Every one suffers at times from indigestion due to imprudence in eating, but no one has constant, persistent, dyspepsia, lasting for months or years, unless it is due to some organic disease. A case of indigestion, McGuire says, ought not to be subjected to surgery until it has been carefully and properly treated by medical measures without success, but every patient who fails to secure relief in a reasonable time should be examined to see if there is not some indication for operative intervention.

Migrainous and Pituitary Headaches Contrasted.—Hodges asserts that headache is the result, physiologic in part and in part pathologic, of enlargement of the pituitary gland, situated, as it is, in bony and unyielding walls which do not allow symmetrical development, and, consequently, pressure symptoms are produced. Migrainous headaches occur paroxysmally in neurotic individuals, often with a history of direct heredity, and at any time of life, and are congestive in type, and characterized by periodic attacks of pain, continuing for variable periods in the course of the fifth nerve, and often associated with nausea or vomiting and various vasomotor disturbances, which are intractable to treatment. Pituitary headaches are localized and persistent in type, and occur in patients showing clinical dyspituitary disorders and, because of dysfunction of the pituitary gland in these patients, there occur pressure symptoms of headache, vertigo and vomiting, which are usually relieved by continuous and proper glandular feeding. The prognosis in migrainous headaches is uncertain and discouraging and generally irresponsive to any treatment before a patient is 40 years of age. After approximately that age, there may be improvement or sometimes, spontaneous recovery, while in pituitary headache, the prognosis is favorable and satisfactory, if treated early by appropriate glandular extract.

Circumcision Prevents Syphilis.—Irvine states that national circumcision would prevent forty thousand deaths in the United States each year, and in a few years, would stamp out practically all acquired syphilis in men and women and inherited syphilis in infants. Nation-wide circumcision would do more good than all the mercury iodid and arsphenamin in the world, many times over. Prevention of the abrasion on the penis is the keystone to the arch in the prevention of syphilis, and the simple surgical operation of circumcision does this.

U. S. Naval Medical Bulletin, Washington, D. C.

July, 1921, 15, No. 3

- Interesting Cases from the Surgical Service of the United States Naval Hospital, New Orleans, During 1920. W. J. Riddick and E. A. Stephens, M. C., U. S. N.—p. 507.
- Hysteria in the Naval Service. W. A. Bloedorn, M. C., U. S. N.—p. 515.
- Case of Hysterical Spastic Paralysis or Contracture. A. H. Ehrenclo, M. C., U. S. N.—p. 521.
- Roentgen-Ray Procedure and Technique. I. E. Jacobs, M. C., U. S. N., and C. B. Worster, U. S. N.—p. 524.
- Interpretation of Abdominal Muscular Rigidity. L. W. Johnson, M. C., U. S. N.—p. 529.
- Case of Echinococcus Cyst. C. S. Norburn, M. C., U. S. N.—p. 530.
- Surgical Instruments Which Will Withstand the Action of Corrosives. G. C. Thomas, U. S. N.—p. 532.
- Aseptic Technic for Canal Instruments. H. E. Harvey, U. S. N.—p. 533.
- Trauma Caused by a Fall from a Great Height. H. H. Lane, U. S. N.—p. 535.
- Administration of Neosalvarsan. J. B. Bostick, U. S. N.—p. 536.
- Diet Deficiency in Vincent's Angina. C. H. Morris, U. S. N.—p. 540.
- Vincent's Infection of Gums and Buccal Membranes. J. B. Goodall, U. S. N.—p. 542.
- Penetrating Wound of Pelvis. F. B. Gardner, U. S. N.—p. 544.
- Traumatic Rupture of Spleen; Removal. F. H. Bowman and E. M. Foote, U. S. N.—p. 545.
- Temporary Wrist Drop, Operation and Prompt Recovery. J. I. Yohannan, U. S. N.—p. 547.
- Plastic Operation on Muscles of Shoulder. R. W. Auerbach, U. S. N.—p. 548.
- Simple Operation for Trichiasis. H. S. Cragin, U. S. N., R. F.—p. 551.
- Case of Adenocarcinoma. M. Boland, U. S. N.—p. 552.
- Chancroidal Infections. W. F. Pearce, U. S. N.—p. 554.
- Case of Syphilis Innocently Acquired with Primary Lesion on Palm of Left Hand. J. W. Jones, U. S. N.—p. 556.
- Case of Carcinoma of Testicle. W. J. Corcoran, U. S. N.—p. 557.
- Removal of Unusually Large Abdominal Tumor. E. L. Jones, U. S. N.—p. 558.
- Retrospect of Naval and Military Medicine. J. S. Taylor, U. S. N.—p. 561.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

July 23, 1921, 2, No. 3160

- Medical Profession: A Horizon of Hope. D. Drummond.—p. 103.
- Industrial Hygiene: Its Rise, Progress, and Opportunities. T. Oliver.—p. 108.
- Superfoetation. R. E. Ingram-Johnson.—p. 116.
- July 30, 1921, 2, No. 3161
- Evolutionary Wounds. A. Keith.—p. 137.
- *Stillbirth: Its Causes, Pathology, and Prevention. F. J. Browne.—p. 140.
- Psychologist in Public Life. H. B. Brackenbury.—p. 145.

Prevention of Stillbirths.—The great fact that emerges from Browne's investigation is that a very large percentage of the stillbirths and neonatal deaths could have been avoided by adequate antenatal supervision. Browne suggests as an ideal, antenatal supervision and care of every unborn infant by the compulsory, or preferably by the voluntary, notification of the pregnancy of every expectant mother.

Indian Journal of Medical Research, Calcutta

Special Indian Science Congress Number, 1920

- Organization of Medical Research in India. J. W. Cornwall.—p. 1.
- *Malaria Survey of Calcutta and Environs. M. O. T. Iyengar.—p. 8.
- Maggot Trap: Means for Safe Disposal of Horse Manure and Similar Refuse. F. W. Cragg.—p. 18.
- *Relapsing Fever in India, with Special Reference to Its Seasonal Prevalence. F. W. Cragg.—p. 22.
- Distribution of Indian Species of *Genus Xenopsylla*, with Reference to Immunity of Certain Area from Plague Epidemics. F. W. Cragg.—p. 29.
- Geographic Distribution of Freshwater Gastropod Molluscs of Indian Empire and Its Direct Bearing on That of Human Disease. N. Annandale.—p. 35.
- Influence of Deficient and Imbalanced Dietaries in Favoring the Development of Gastro-Intestinal Infections. R. McGarrison.—p. 38.
- Filariasis. P. N. Das.—p. 44.
- Variation in Results Obtained with Bacteriologic Sugars. G. Mackey.—p. 55.
- Bleeding of Healthy Rabbits. A. G. McKendrick.—p. 58.
- *Simple Method of Performing Widal Test. S. N. Goré.—p. 60.
- *Injection of Lymph Subcutaneously as a Protection Against Smallpox. C. F. Fearnside.—p. 71.
- Examination and Disinfection of Drinking Water. J. Morison.—p. 79.
- Purification of Water by Filtration. J. Cunningham and T. N. D. Raghavachari.—p. 86.

Malaria Survey of Calcutta.—Iyengar conducted a mosquito survey of Calcutta and its environs during the past two

years and this paper deals with the results, more especially from the point of view of sanitation and the prevention of disease.

Relapsing Fever in India.—The special feature of the disease seen in India, to which Cragg directs attention, is the seasonal prevalence in its relation to transmission by the louse. Cases studied by Cragg occurred during the summer so that the louse appears very unlikely to be the transmitting agent in the hot weather epidemics of relapsing fever.

Modification of Widal Test.—While Wright's technic requires considerable practice and fresh pipets every time before the test can be satisfactorily performed, in the modification described by Goré very little practice is required and the same tubes are used repeatedly.

Subcutaneous Smallpox Inoculation.—After touching the recipient's arm with tincture of iodine, the needle is inserted under the skin and a small amount of lanolinized vaccine is injected hypodermically. Four injections are made, a little lymph being injected each time, the skin being touched with tincture of iodine on withdrawal of the needle. The data given on the comparative value of the external and internal methods of vaccination favor the latter. To prove that the method is successful, Fearnside vaccinated two persons, who had been inoculated with the vaccine subcutaneously by the ordinary method of scarification and all were negative, which establishes the fact that it is protective.

January, 1921, 8, No. 3

- Experiment in Eradication of Plague Infection Carried Out in Poona and Adjacent Districts. J. C. G. Kunhardt and G. D. Chitre.—p. 409.
- Further Experiments in Plague Prevention Carried Out at Poona. J. C. G. Kunhardt and G. D. Chitre.—p. 446.
- *Detection of Indol in Bacterial Cultures. R. H. Malone and S. N. Goré, Bombay.—p. 490.
- *Cotton Wool Plug Test for Indol. S. N. Goré, Bombay.—p. 505.
- Malaria in Mesopotamia. S. R. Christophers and H. E. Shortt.—p. 508.
- Incidence of Malaria Among Troops in Mesopotamia, 1916-1919. S. R. Christophers and H. E. Shortt.—p. 553.
- Anti-Malaria Operations at Busra, 1916-1919. S. R. Christophers and H. E. Shortt.—p. 571.

Detection of Indol.—Neither the nitroso-indol nor the ros-indol reaction was found by Malone and Goré to provide a specific test for indol, but the latter, in virtue of its great delicacy, is the reaction of choice for detecting indol in bacterial cultures. The method which combines delicacy and specificity, and best fulfils the conditions laid down for a routine test is that described under the heading "Goré's cotton-wool test."

Goré's Indol Test.—Goré's test consists in moistening the under surface of the cotton-wool plug of the culture tube with a few drops of Bohme's solution, and heating the tube for a few minutes. In the case of a positive result, a rose color appears on the under surface of the plug.

Naval Medical Association Bulletin, Tokyo

March, 1921, No. 32

- *Case of Fistula Connecting a Gall Duct with a Bronchial Tube. K. Shinkai.—p. 1.
- Reliability of Herman and Perutz's Precipitating Reaction of Syphilis. M. Hirano.—p. 2.
- Neutralization of Toxic Action of Corrosive Mercuric Chlorid on Small Animals. R. Watanabe.—p. 3.

June, 1921, No. 33

- Roentgen-Ray Examination of Organs in Abdominal Cavity by Introducing Oxygen into Latter. M. Imayoshi.

Biliary-Pulmonary Fistula.—A patient, aged 51, who was suffering from cough died from heart failure. His expectoration had amounted to from 300 to 500 c.c. a day; was greenish yellow in color and had an offensive odor. At the necropsy multiple gummas were found in the liver, kidneys, and many other organs. A part of an intrahepatic gallduct was enormously dilated and its wall partly obstructed by many gallstones, a cave thus being formed in the liver. This cave communicated with a second cave formed behind the liver under the diaphragm, and containing a small amount of gall and several stones. A part of the right lung was adherent to the diaphragm, and a fistula ran through this adherent part, from the second cave to a bronchial tube. The cause of the formation of this fistula, it is suggested, might possibly be attributed to cholelithiasis or to a blow on the abdomen received two years previously.

Lancet, LondonJune 4, 1921, **1**, No. 23

Relation of Heart Disease and Pregnancy. J. Mackenzie.—p. 1163.
Surgery of Pituitary Gland. A. J. Walton.—p. 1168.
New General Anesthetic: Ethanesol. R. L. Mackenzie and C. L. Hewer.—p. 1173.

*Chaulmoogra Oil in Leprosy and Tuberculosis. L. Rogers.—p. 1178.
Case of Jaundice from Late Salvarsan Poisoning. J. Elliott.—p. 1180.
Case of Pulsating Empyema. J. Broadbent.—p. 1181.
Case of Webbing of Left Arm. J. S. Manson.—p. 1182.

Chaulmoogra Oil in Leprosy and Tuberculosis.—The successful treatment of leprosy by injections of soluble preparations of the fatty acids of chaulmoogra and other oils and its bearing on the tuberculosis problem are discussed by Rogers.

Medical Journal of Australia, SydneyJuly 2, 1921, **11**, No. 1

Lectures on Medical Ethics. A. V. M. Anderson.—p. 1.

*Immunity in Children to Tuberculosis. P. de Luca.—p. 7.

Immunity in Children to Tuberculosis.—Observations and the clinical results in children during seven years, as well as the experimental work in animals, lead de Luca to the conviction that Besredka's recent opinion regarding immunity is true. To produce absolute active immunity in tuberculosis de Luca has employed in children crude cod liver oil or iodine compounds in large doses. These substances act as a stimulant and intensify the biliary secretion, which frequently produces erosion or desquamation of the intestinal mucous membrane and thus favors the absorption of the antigen. In these conditions the intestinal walls become a local source of antibody production. From this localized laboratory of antibody, of course, its distribution to the circulation probably takes place and the complete cure of the patient must await a sufficient concentration of these antibodies in the organism. The first active immunity for oral route against tuberculosis in children has been practiced in New South Wales by de Luca seven years ago. The first children vaccinated were his two daughters. From that date till today, in Australia and in Italy (during the war, 1915-1919), 119 children from 1 to 12 years of age have received tubercle vaccine as treatment and to establish absolute immunity. All children before the treatment have suffered from mild tuberculous infection: enlarged glands, asthma, sinusitis, synovitis, tubercular abscess, etc., and nearly all have recovered from the local lesion after three or four months' treatment and were protected against further infection. No children treated have become affected with phthisis or have died from tubercular disease; all the children were followed till January, 1920. De Luca concludes that active and absolute immunity can be established in tuberculous children by the oral route, if the intestinal mucosa has been prepared by the crude cod liver oil. He claims also that repeated administration per os of detoxicated culture of tubercle bacilli is productive of a much stronger immunity than subcutaneous or intravenous in inoculations and are less likely to produce bodily reactions.

Medical Journal of South Africa, JohannesburgMay, 1921, **16**, No. 10

Case of Heart-Block Due to Gumma. R. L. Girdwood.—p. 183.

Functions of a Sanitary Inspector in Modern Community. A. J. Orenstein.—p. 187.

Ether Representing Ethanesol. T. G. Hall.—p. 191.

National Medical Journal of China, ShanghaiJune, 1921, **7**, No. 2

Diseases of Eye. T. M. Li.—p. 40.

*Bacteriologic Examination of Smears from One Thousand and Four Consecutive Eye Cases. P. T. Chih.—p. 52.

Diagnosis and Treatment of Diphtheria. E. Tso.—p. 55.

Bacteriology of Eye.—In the total number of 1,004 cases examined by Pa, organisms were found 497 times, including forty cases counted more than once on account of mixed infection. The Morax-Axenfeld bacillus was found, 166 times, or 33.4 per cent.; staphylococcus, ninety-seven times, or 19.3 per cent.; pneumococcus, ninety-five times, or 19 per cent.; Koch-Week's bacillus, sixty-six times, or 13 per cent.; xerosis bacillus, twenty-nine times, or about 6 per cent.; streptococcus, seven times, or about 1.4 per cent., and the gonococcus, nine times, or about 1.8 per cent.

South African Medical Record, Cape TownJuly 9, 1921, **19**, No. 13

Stock-Taking. E. G. Dru Drury.—p. 244.

Proptosis Due to Suppuration of Maxillary Antrum. P. Jabkovitz.—p. 252.

Tubercle, LondonJuly, 1921, **2**, No. 10

*Subcutaneous Tuberculin Test. N. Bardswell.—p. 433.

Hemoptysis Treated by Artificial Pneumothorax. T. Begtrup-Hansen.—p. 441.

*Fever and Temperatures in Pulmonary Tuberculosis. E. E. Prest.—p. 444.

Subcutaneous Tuberculin Test.—Failure to react to tuberculin, Bardswell says, does not exclude tuberculous disease. A negative response, however, would appear to indicate that tuberculous disease, if present, is quiescent and does not call for active treatment. When the general clinical picture of a patient strongly suggests pulmonary tuberculosis, a negative response should be ignored. A general or febrile reaction only gives no useful information: it has no diagnostic import. A focal reaction indicates the existence of a tuberculous lesion. This reaction is of much less significance from the point of view of diagnosis and treatment, than the presence of tubercle bacilli in the sputum. It is in patients in whom a positive diagnosis can be made with some confidence upon general clinical grounds that the focal reaction is most likely to be obtained. In practice, however, the test is indicated in few, if any, of these cases. For a focal reaction, should it occur, but confirms the diagnosis already made, while the absence of the reaction does not in any way discount a positive diagnosis. If, as should be the case, the subcutaneous test is applied only to those patients in whom, after full investigation, the diagnosis still remains uncertain, the most informative response of the inoculations, namely the focal reaction, is scarcely ever obtained. In short, it is in the cases in which assistance is most needed that the tuberculin test is least likely to give any indications. In Bardswell's opinion, the test is not a means whereby the existence or absence of tuberculous disease can be determined. Neither, when a tuberculous lesion is present, does the test give any information as to its activity. The test has disadvantages in that the general reaction so often produced gives rise to discomfort and unpleasant symptoms. Further, in unskilled hands, the test may do definite harm.

Temperature in Pulmonary Tuberculosis.—The most important point in treating pulmonary tuberculosis which tends to be autotoxic, Prest maintains, is to prevent the tissues from being seriously injured by too much toxin. This can usually be done by putting the patient to bed; this applies especially to early cases. If an effort is to be made to bring about a cure by a reaction produced either by exercise or the injection of tuberculin, then for good to be accomplished it must be comparatively transitory in duration; if otherwise, the patient will become indistinguishable from a patient suffering from acute disease and irrevocable damage will be done to the lung. It would appear that in some cases in which tuberculin has been given without proper control, a cure or the reverse has often been merely a matter of chance as to whether improvement were effected by any given dose before some serious calamity occurred. Chronic cases are always a difficulty and are, as a rule, due to neglect of rest in the early stages; they might be roughly defined as cases which have lost their sensitiveness to toxin. Rest in these cases is extremely beneficial, probably because it tends to restore a lost sensitiveness, but all kinds of methods of treatment may be tried, such as auto-inoculation by violent exercise or injections of tuberculin. The few brilliant results obtained by giving big doses in these cases are very little guide as to the correct method of giving tuberculin. In hilum or glandular tuberculosis in children, the necessity for complete rest or for a modified amount of exercise can be gaged from symptoms, perhaps, rather than from temperatures; if these patients gain weight, cease to sweat, cease to be tired and do not complain of headaches and generally improve, then a certain amount of exercise is indicated; though Prest has always found the ultimate prognosis much better when the patient has a normal temperature with a 36.5 C. morning temperature.

Annales de Médecine, Paris

1921, 9, No. 6

*Acute Nephritis. K. Petré. —p. 393.

*Lesions in the Air Passages of the Gassed. P. Menetrier and A. Coyon. —p. 409.

*Experimental Pneumonia. G. Roussy and R. Leroux. —p. 419.

*Colloidal Gold in General Paresis. J. Haguenau. —p. 430.

*Incubation of Tuberculosis. R. Debré, J. Paraf and L. Dautrebande. —pp. 443 and 454.

Acute Nephritis.—Petrén found edema, plus erythrocytes in the urine, in 30 of his last 47 cases of acute nephritis. In his series before 1914, the albumin disappeared completely from the urine in 47 per cent.; between 1914 and 1917, in 70 per cent. and in 94 per cent. since then. The albumin was more likely to disappear when the proportion was small. The prognosis also seemed to be better when the patients entered the hospital at an earlier stage of the disease. The blood pressure was as low as 130 in only 4 of the total cases of the last series; in 7 the pressure ranged from 180 to 215. In all the cases the tension returned to normal as recovery progressed, and the uremia also subsided apparently without leaving a trace. In some cases the uremic headache subsided after lumbar puncture. He keeps the patients in bed, and allows for four or five days only a mixture of equal parts of milk and cream. Then he adds unsalted butter, potatoes and rice, thus avoiding foods rich in nucleins. After several days of this, he adds bread and cereals and a few days later allows cooked fruits, legumes and, finally, eggs. He comments on the psychologic influence of progressively augmenting the diet in this way.

Pathologic Anatomy of the Air Passages in the Gassed.—Menetrier and Coyon describe the necropsy findings in eight soldiers dying within two weeks after exposure to yperite. Out of 2,947 gassed in the month ending Nov. 9, 1918, and treated in their hospital, forty-nine died. An obliterating bronchiolitis entailed slow progressive asphyxia. Symptoms of septicemia became superposed on the asphyxia, the same as with other war wounds not protected against infection.

Bronchopneumonia.—Roussy and Leroux here present the results of experimental research to confirm their recent assertion that thrombosis is often responsible for bronchopneumonia in the elderly. With a mechanical plus infectious factor, they induced bronchopneumonia regularly in the first three dogs they experimented on.

Colloidal Gold Reaction in Spinal Fluid.—Haguenau extols this test as simple and convenient, differentiating general paresis from other forms of neurosyphilis.

Serial Tuberculin Skin Tests.—This is a study of the period preceding the development of allergy after infection with tuberculosis. It seems evident that the local lesion resulting from the infection and the general antibodies which induce the reaction to tuberculin tests develop simultaneously. There was always exact coincidence between the appearance of the local lesion and the first positive response to the skin tuberculin test. The experiences with infants related show that this silent period of incubation varies in length with the intensity of the infection.

Bulletins de la Société Médicale des Hôpitaux, Paris

July 8, 1921, 45, No. 24

Vasodilating Action of Garlic. M. Loeper and M. Debray. —p. 1032.

Imported Kala-Azar at Paris. Klippel and Monier-Vinard. —p. 1037.

Idem. P. Carnot and E. Libert. —p. 1039.

*Phthiriasis with Melanoderma. L. Tixier and H. Duval. —p. 1046.

*Cure of Familial Hemophilia. P. Emile-Weil. —p. 1048.

*Protracted Epidemic Encephalitis. Rathery and Cambessédès. —p. 1051.

*Abortive Epidemic Encephalitis. P. Marie and G. Lévy. —p. 1054.

*Unilateral Melanoderma. R. A. Gutmann and J. Dalsace. —p. 1062.

*Experimental Gangrene. Milian and Périn. —p. 1065.

*Kidney Chromosome Gage. C. Lian and G. Siguret. —p. 1067.

Jaundice as Sign of Anaphylaxis. C. Flandin and P. Vallery-Radot. —p. 1072.

*Senile Arc in the Cornea in Tuberculosis. Lortat-Jacob and Turpin. —p. 1075.

*Anaphylaxis to Eggs. P. Pagniez, P. Vallery-Radot and J. Haguenau. —p. 1077.

Tuberculin Reaction During Menstruation in the Tuberculous. L. Bernard, M. Salomon and Joannon. —p. 1088.

Coprolology of the Tuberculous. P. Le Noir and R. Goiffon. —p. 1091.

Melanoderma with Phthiriasis.—The intense pigmentation in the woman of 82 affected only the covered portions of the body, and it persisted after delousing. There were no symptoms of suprarenal insufficiency.

Cure of Familial Hemophilia.—Weil relates that the child of 7, a pronounced bleeder, was given an injection of 20 c.c. of normal horse serum every second month, to a total of 15 injections, and the tendency to hemorrhage seemed to be arrested. There has been no return of hemorrhage during the seven years to date. This is the more remarkable as the boy belongs to one of the classic bleeder families that have been written up in medical annals, the hemophilia traced back to the eighteenth century. Two theses were devoted to this family in 1841 and 1885. Weil has now a record of eight cases of familial hemophilia given long series of serum injections in this way, and they never failed. He always supposed the action was purely palliative, but the permanent cure in the case here described proves that familial hemophilia is curable, and we now have a prospect of blocking its transmission to later generations.

Epidemic Encephalitis.—In the case described the epidemic encephalitis developed in two phases separated by a long intermission during which the woman conceived and bore a healthy child. The second and still persisting phase is marked by sialorrhea so intense that the woman can be traced by the track of saliva she leaves. The parkinsonian and other symptoms indicate severe disturbance in the medulla oblongata. Marie and Lévy report four cases of epidemic encephalitis in which the parkinsonian symptoms were restricted to one arm. Souques has witnessed hemiplegia develop from this shaking palsy of one arm. Sicard mentioned that he had never seen a case of shaking palsy recover when the thumb and forefinger presented the "cigarette-rolling" sign. As long as this *signe de l'émission* is absent, improvement may be hoped for.

Unilateral Melanoderma.—The pigmentation of the chest and abdomen coincided with changes in the sympathetic system, as evidenced by vascular and secretory phenomena.

Experimental Gangrene.—Three cases are described of fulminating gangrene of the male external genitals. In one case fluid from the ulceration was inoculated in laboratory animals, and the rabbits developed extensive gangrene; the other animals proved refractory.

Colorimeter for Kidney Tests.—Lian and Siguret mount in a revolving stand the test tubes containing the different dilutions of phenolphthalein for the colorimeter test. The principle of this nephrometric chromoscope can be applied to estimate the albumin, etc., in body fluids. They urge more general use of the Rowntree and Geraghty technic.

The Senile Arc in the Tuberculous.—Lortat-Jacob prefers to call it the corneal circle, as it is not a sign of old age but only of a general tendency to sclerosis. In thirty tuberculous cases studied, some of the patients were from 34 to 45 years old. In all, the tuberculosis was of the chronic fibrous type, a relatively favorable form, and hence the discovery of the senile arc is a good sign, like Landouzy's camptodactylia. The latter is most common in women while the senile arc occurs predominantly in men.

Anaphylaxis to Eggs.—The youth of 17 developed urticaria, asthma, and sometimes an intense attack resembling the phenomena of induced anaphylaxis in animals. From the age of 5 he has displayed this idiosyncrasy, colic and diarrhea coming on half an hour after eating soft white of egg, or pruritus and urticaria in from two to ten minutes. The yolk of egg and hard cooked whites caused no disturbance. The case was studied in detail for nearly a year. It confirmed anew that urticaria and asthma are superposable in this respect. Attempts to desensitize this patient failed to yield conclusive results, although the most varied methods were given thorough tests. After long showing marked improvement, a particularly violent recurrence of asthma discouraged the family and put an end to the tests.

Monographies Oto-Rhino-Laryng. Internat., Paris

1921, No. 2

*Pathology of Nasopharyngeal Cavity. A. Poppi (Bologna). —p. 117.

Relations Between Adenoids and the Pituitary.—The 128 pages of this monograph with its 52 illustrations discuss the embryology, anatomy, physiology and pathology of the nasopharynx and its interrelations with organs in the vicinity,

especially the pituitary and thymus. Poppi accepts as demonstrated that pathologic conditions in the nasopharynx are the cause of abnormal conditions in the circulation of the pituitary, and, by reflex action, may modify the circulation in remote organs, upsetting the balance in the endocrine system. Removal of the adenoid vegetations breaks this abnormal chain, but hitherto there has been little if any attempt to link up adenoids with remote internal disease and clinical surgery. The monograph is in French, with twelve page summaries in English, Spanish and Italian. The first monograph in the series was by H. Tilley, on frontal and ethmoidal sinusitis.

Paris Médical

July 9, 1921, 11, No. 28

- *Medicosocial and Medicolegal Matters. P. Cornet and A. Peytel.—p. 33.
- *Occupational Diseases. V. Balthazard.—p. 38.
- *Social Insurance. P. Boudin.—p. 42.
- The Hospitals of France. H. Reynès.—p. 43.
- Provisions for Medical Care of Ex-Soldiers. G. Maunoury.—p. 45.
- *Gage of Disability. Rieux.—p. 46.
- *Fees for Treatment of Industrial Accidents. F. Decourt.—p. 49.
- *Medical Secrecy in the Courts. E. H. Perreau.—p. 53.

Medicosocial and Medicolegal Questions of the Day.—

Cornet and Peytel emphasize that the medicosocial tasks of the physician are growing constantly vaster and more complex. The general practitioners are often the ones whose advice is most valuable, as they speak from practical experience, not mere theories. They recall further that physicians must not forget that they have to aid in the application of laws enacted with their collaboration. The civil responsibility of physicians is only for imprudence or negligence contrary to ordinary common sense, so that jurisprudence in this respect is very elastic. At the same time, recent court decisions have held the physicians responsible for having written morphin by mistake for quinin; for having overlooked absolutely unmistakable syphilis, and for gross errors in the number of grams of dangerous drugs prescribed. The physician is not held responsible for radiodermatitis, even very serious, unless the application was only for "beauty purposes." The French courts are very strict in their judgment of such cases where a simple blemish was thus transformed into an actual lesion. A Lyons court acquitted a physician in a damage suit as he had applied only the dose given in a certain textbook, while the Caen court condemned a physician who had failed to specify the dose of a toxic drug ordered or the mode of application, and had not supervised its use.

Occupational Diseases.—Balthazard discusses the application of the new French law in regard to workmen's compensation for injury from lead poisoning and from mercury poisoning. There are twenty-two trades listed as liable for poisoning with mercury.

The Proposed Social Insurance in France.—Boudin analyzes the bill which is now under discussion. It forms a volume of 228 pages which has been distributed to the members of both houses. It is mostly the work of Cahen Salvador, a *conseiller d'état* in the labor department of the government. The bill provides for the free choice of physician by the insured, the necessity for contracts arranged between the insurance companies and the local or national organizations of physicians, a control board of equal numbers of officials and physicians, and insurance for wage-earners with incomes up to 10,000 francs. The employers retain 5 per cent. of the annual wage to pay the dues.

Standards for Estimating Degrees of Disability as Basis for Pensions.—Rieux has the chair of medical expert testimony and military legislation at the Val-de-Grâce military medical school. He criticizes the prevailing legislation, pointing out inconsistencies, such as, that those disabled by disease get a higher pension in proportion than those disabled by wounds. He says that all the men who contracted malaria in the Near East campaigns are now apparently cured, their blood free from parasites. Amebiasis, on the other hand, still lingers, but often is mistaken for persisting malaria, and hence fails to receive proper emetin or other treatment.

The Official Tariff for Treatment of Industrial Accidents.—Decourt is vice president of the Union des Syndicats Médi-

caux, and to his initiative is due the new legislation on this subject. He describes its spirit and the details of its workings.

Professional Secrecy and the Courts.—Perreau is a legal authority, and he explains the justice of some recent court decisions which apparently conflict with professional secrecy. In one case a midwife confessed to having made a practice of abortion and gave the names of the women, and they were all prosecuted, notwithstanding their lawyers' appeal for the sacredness of professional secrecy. The decision of the court was based on the fact that the abortion did not form part of the legitimate practice of midwifery, and consequently was outside the pale of professional secrecy. The abortions were not for therapeutic but for criminal purposes only. Perreau continues "A physician utilizing his technical knowledge for some act foreign to the purposes of his profession is not practising his profession while doing so." In another case the principal of a school called in a physician to report on the health of one of the teachers. He made a written report and then explained the technical terms in person to the principal. The teacher was dismissed, and he sued the physician for damages for the loss of his position, but the courts threw out his claim. Recent legislation and decisions in France have confirmed more and more solidly the principle of professional secrecy.

Presse Médicale, Paris

July 6, 1921, 29, No. 54

- *Physiologic Urobilinuria. M. Brulé and H. Garban.—p. 533.
- Treatment of Ascaridiasis. A. Riff.—p. 534.
- *Postoperative Peptic Ulcer. Léon-Meunier.—p. 536.

Physiologic Urobilinuria.—Brulé and Garban found small amounts of urobilin constantly in the urine of supposedly normal adults and in healthy children, even in the new born. It is impossible to measure the exact amount, but by comparing the intensity of fluorescence we can compare the findings instructively. They accept as beyond the physiologic limit any fluorescence evident by ordinary daylight.

Postoperative Peptic Ulcer.—Meunier discusses the period between the gastro-enterostomy and the development of the peptic ulcer. The mucosa of the jejunum is not constructed to resist the action of the unneutralized gastric juice, and the diet should be regulated after a gastro-enterostomy to reduce gastric secretion as much as possible. He warns that meats stimulate the reflex psychic secretion while starchy dishes do not, and fats depress secretion by their action on the secretory nerves. The surgeons like to have the success of their operation confirmed by gastronomic feats, but Meunier forbids all meat for six months after a gastro-enterostomy, and has every meal commence with butter, cream or potatoes with half their weight in butter, or two tablespoonfuls of olive oil are taken. Vegetables, spaghetti, eggs and fruits are freely allowed but with little seasoning, and always mashed soft or stewed. A glass of milk is taken between meals, and a malted beverage after meals. Twenty-two patients who have lived under these restrictions have never shown any signs of peptic ulcer, while he has been called on to treat five cases of peptic ulcer during the same period, since 1918. An early diagnosis of a peptic ulcer is possible by giving the patient a glass of distilled water to drink containing about nine drops of ammonia, fasting. The stomach content obtained without aspirating, the patient horizontal, is then examined for hematin. This test should be negative. Then a second glass of the ammonia water is ingested after a tablespoonful or two of charcoal have been stirred into it. The alkaline fluid laves the peptic ulcer as it passes, and it washes out the hematin which is refound in the stools in case the test is positive. This test should always be applied when tardy pains develop after a gastro-enterostomy. The combination of negative stomach and positive stool hematin findings testifies to a jejunal ulcer, the treatment of which can be only surgical.

July 16, 1921, 29, No. 57

- *Total Laryngectomy. E. J. Moure and G. Portmann.—p. 561.
- Diagnosis of Mixed Chancre. G. Thibierge and P. Legrain.—p. 563.
- *Superposed Infections in Tuberculosis. M. Lavergne.—p. 565.

Total Laryngectomy.—Moure and Portmann describe with eight illustrations the technic for removal of the entire larynx

after cutting a large square flap to turn back on one side. The whole operation is done at one sitting, under regional anesthesia. All their thirty-one patients thus treated since 1913 recovered except one that died the fourth day.

Superposed Infections in Tuberculosis.—Lavergne relates the case of a child, now nearly 4, whose mother developed pulmonary tuberculosis, with bacilli in the sputum ever since, when the child was about 11 months old. It has been with its mother constantly during this period, and thus has been submitted to repeated reinfections, but it shows no trace of tuberculosis, at most a slight subdulness under the right clavicle. According to the prevailing ideas, this child should have developed tuberculosis, while in fact the child seems to have developed immunity under the influence of the repeated small infections with its mother's bacilli. The fact that the exposures did not begin until the child was nearly a year old was probably responsible for its conquering the infection, instead of succumbing to it. Possibly the future may reveal that effectual prophylaxis against tuberculosis may be realized by frequent injections of a very few tubercle bacilli of attenuated virulence.

Chirurgia degli Organi di Movimento, Bologna

June, 1921, 5, No. 3

*Coxa Vara. A. Anzoletti.—p. 249.

*Skeletal Malformations. B. Schiassi.—p. 299.

*Streptothricosis of Joints. G. Bolognesi.—p. 340.

*Osgood-Schlatter Disease. S. Solieri.—p. 353.

Coxa-Vara.—Anzoletti discusses the mechanism of, and the principles for, correcting coxa-vara, comparing the various methods.

Nervous and Vascular Symptoms from Skeletal Anomalies.—Schiassi reports a group of cases in which some malformation in the lumbar-sacral region or elsewhere induced pains difficult to comprehend. In two cases described there was a peculiar sciatica in men of 42, finally explained by radiology, and benefited by this knowledge in that positions were then assumed which relieved the nerves from pressure. In another group the anomaly in the vertebrae was in the cervical region. One woman of 21 had neuritis of the left brachial plexus, with a trophic lesion in the finger, the whole developing after a period of hard manual work. In a second case there was mild neuritis of the right brachial plexus. Thrombo-arteritis was pronounced in both, and the limb was gangrenous in the second case. A cervical rib was found responsible in both cases, and it was removed. In a third case there were disturbances in arteries, veins and lymphatics, and the cervical rib seemed to be the site of a tuberculous process in the woman of 23. Schiassi discusses with illustrations the operative treatment that might be applied in such cases of thrombosis of the first portion of the subclavian from any cause.

Streptothricosis of Joints.—Bolognesi reports a case of chronic suppurating osteo-arthritis of the ankle in a boy of 11, with fistulas. Bacteriologic examination was constantly negative until a streptothrix was cultivated from the lesion, and the disease was reproduced in rabbits, guinea-pigs and dogs by injection of a scrap of culture of the fungus directly into the knee or other joints. He had obtained similar positive results with a sporotrichum. The boy in question is on the road to complete recovery under large doses of potassium iodid. Some of the subacute and chronic joint lesions deceptively resembled tuberculous processes. Others were more of a fibrous arthrosynovitis with hyperplasia, production of papillary vegetations.

Osgood-Schlatter Disease.—Solieri operated in a case described in a boy of 12, applying Soule's method of fastening the tuberosity of the tibia in place with a peg from the crest of the tibia below. This cures at once without waiting for the problematic spontaneous cure. He gave thyroid treatment in his case to supplement the operation.

Policlinico, Rome

June 27, 1921, 28, No. 26

*Rat-Bite Disease in Woman. Stretti and Mantovani.—p. 875.

*The Digestive Tract in Pernicious Anemia. P. Biffis.—p. 877.

Vaccine Therapy of Typhoid in Children. G. Salvetti.—p. 884.

Rat-Bite Disease.—Stretti and Mantovani describe a spirochete which they cultivated from the blood of a woman who had been bitten by a rat at Bologna and had developed typical sodoku. A rapid cure followed intravenous injection of 0.15 gm. of neoarsphenamin. The disease was reproduced in guinea-pigs inoculated with the blood.

The Digestive Tract in Pernicious Anemia.—In Biffis' 30 cases of pernicious anemia no cause could be discovered in 20, but in 5 of the 7 women the anemia had developed in connection with a pregnancy. In 50 per cent. the motor function of the stomach was exaggerated, and achylia was evident in all but one case. The achylia, however, seemed to be a consequence rather than a cause of the pernicious anemia. The rapid evacuation is due to insufficiency of the pylorus. Diarrhea was frequent but never severe, although protracted in some. Its subsidence under administration of hydrochloric acid shows that the achylia was mainly responsible for it.

July 4, 1921, 28, No. 27

*Statistics of Morbidity Among Wage-Earners. F. Mazzone.—p. 907.

Inflammation of Reduced Inguinal Sac. A. Angeli.—p. 915.

Cinchonin as Substitute for Quinin. G. Bini.—p. 919.

Morbidity Among Wage-Earners.—Mazzone reports the results of extensive statistical research among telephone workers, etc., as an aid for discussion of compulsory insurance.

Rivista di Clinica Pediatrica, Florence

March, 1921, 19, No. 3

*Funnel-Shaped Thorax and Endocarditis. A. F. Canelli.—p. 129.

*Vaccine Therapy in Enteritis in Infants. L. M. Spolverini.—p. 162.

*Measurement of Respiration. D. Pacchioni.—p. 170.

*Nervous Manifestations After Diphtheria. P. Busacchi.—p. 180.

Chronic Endocarditis with Deformed Thorax.—The boy of 11 had been long under observation and the necropsy findings confirmed the diagnosis of chronic endocarditis. There was a funnel shaped depression in the sternum, and the child had had an attack of febrile rheumatism early in life.

Vaccine Therapy in Prevention and Treatment of Enteritis in Infants.—Spolverini injected 46 infants with an aqueous emulsion of a polyvalent stock vaccine, made with various strains of colon bacilli. The infants were between 5 and 11 months old, and all but 4 had a slight tendency to diarrhea. In these 4 there was actual enterocolitis. The three injections of the vaccine were made at the beginning of summer. Only one of the infants was entirely breast fed, and 16 got nothing but the bottle. The effect, both curative and prophylactic was extremely encouraging. Even if it should prove that the immunity conferred by the vaccine lasts only a few months, this is enough to tide the child past the most dangerous period and season. No effect was apparent in 7 of the children; 4 in this group were debilitated, but one infant was in very good general condition. The only difficulty is to persuade the mothers to allow their healthy babies to be given the three injections to protect them against hypothetical bowel disturbance during the heated term. He obtained their consent only by showing them the curative action of the vaccine in the children with enterocolitis.

Apparatus Measuring Depth of the Respiration in Infants.—Pacchioni's spirometer is described with illustrations. The elastic pad is belted to the epigastrium.

Postdiphtheric Nervous Phenomena.—Busacchi refers to the involuntary movements associated with the volitional movements in children with paralysis after diphtheria. In some this synkinesia is restricted to the face, and it may precede the paralysis. Sometimes the movements occur in connection with pronouncing certain letters. The child's character may change, fluctuating between whining peevishness and wild glee, the face growing very red at times. Others present motor phenomena suggesting chorea by their sequence and automatism, but not so irregular. The raising of the eyebrows, frowning, wrinkling the eyelids, etc., occur rhythmically and symmetrically.

Brazil-Medico, Rio de Janeiro

June 4, 1921, 35, No. 23

*Leprosy in Northern Brazil. A. Da Matta.—p. 287.

Leprosy in Northern Brazil.—Da Matta says that in his twenty-six years of practice in Amazonas he has never seen

but two Indians with leprosy. This rarity of leprosy among the Indians is confirmed by the lack of any reproductions of leprosy mutilations in the pottery figures from prehistoric Peru, although reproductions of other mutilating diseases and deformities are common. None of the early travelers in Brazil mention leprosy among the Indians. He estimates at from 800 to 1,000 the total number of lepers in the Amazon region.

Mitteil. a. d. Med. Fak. Univ., Tokyo

Dec. 9, 1920, 25, No. 1

- *Influence on Nephritis of Alkaline Reaction of Urine. M. Hara.—p. 1.
- *Phagocytic Action of Calcium Chlorid on Tuberculosis. S. Nagai and M. Ito.—p. 25.
- *Tissue Proteases. S. Nakagawa.—p. 67.
- Histology of Crocodile Viscera. H. Taguchi.—p. 119.

Influence on Nephritis of Alkaline Reaction of Urine.—Hara's experiments on rabbits confirmed the injurious action on the kidneys of acid infused or produced in the body. A diet which induces an alkaline reaction in the urine has a pronounced protecting action against experimental nephritis. (In English.)

Calcium Chlorid Promotes Phagocytosis.—Nagai and Ito relate that calcium chlorid acts on the leukocytes, stimulating them to exaggerated phagocytosis. The leukocytes incorporated the tubercle bacilli more readily and in larger numbers under the influence of the calcium chlorid by mouth or vein. The opsonin content does not seem to affect the outcome, nor the age of the patient. The details of the extensive experimental and clinical research are given in full. They throw light on the efficacy of calcium chlorid in treatment of a certain stage of tuberculosis, as they have established in treating the tuberculous inmates of the Tokyo city poorhouse. (In English.)

Tissue Proteases.—This is the first of a series of articles on ferments, as studied in Inada's service.

Deutsche medizinische Wochenschrift, Berlin

June 30, 1921, 47, No. 26

- Causes and Treatment of Sterility in Women. G. Winter.—p. 733.
- Studies on Tuberculosis. VI. R. Jaffé.—p. 734.
- Specificity of the Tuberculin Reaction. E. Sons and F. von Mikulicz-Radecki.—p. 735.
- Antivenereal Prophylaxis. F. Neufeld.—p. 737.
- Spirochetes in Visual Tract in Paresis. Igersheimer.—p. 738.
- Bacteriologic Studies on Symptomatic Anthrax. Uchimura.—p. 738.
- Exclusion Operations in Chronic Gastric Ulcer. Rotter.—p. 739.
- Roentgen-Ray Treatment for Pathologic Fractures. Kohler.—p. 741.
- Cause of Fibrillation in One Chamber of the Heart; Paroxysmal Tachycardia. S. de Boer.—p. 742.
- Compression of Esophagus at Two Points in Arteriosclerotic Cardiac Insufficiency. M. von Falkenhausen.—p. 743.
- Prepyloric Residue in Gastric and Duodenal Ulcer. Lenk.—p. 744.
- Diphtheria of Vagina in Parturient. W. Lang.—p. 744.
- Cure of Jaksch's Anemia with Purpura by Blood Transfusion. W. Arkenau.—p. 745.
- Isopropyl Alcohol for Hygienic and Cosmetic Purposes. H. Boruttau.—p. 747.
- Present Status of Pathology and Pathogenesis of Scurvy. W. Koch.—p. 749.
- Management of Normal Postpartum Period. L. Blumreich.—p. 750.

Jahrbuch für Kinderheilkunde, Berlin

1921, 95, No. 1-2

- *Nature and Import of Erythema Nodosum. H. Ernberg.—p. 1.
- *Injury of Fetus from Roentgen Rays. E. Stettner.—p. 43.
- *The Biologic Reactions to Protein Therapy. B. Epstein.—p. 52.
- *Antigens in Milk of Tuberculous Cows. B. Epstein.—p. 64.
- *Sensitizing Action on Pulse from Thyroid and Pituitary Extract. E. Schiff and A. Bálint.—p. 73.
- *Intubation Experiences. M. Hohlfield.—p. 80.
- "Kidney Function in Infants." J. C. Koch.—p. 88. Reply. E. Stransky and A. Bálint.—p. 92.

Erythema Nodosum.—Ernberg is chief of the Stockholm children's hospital, and he reviews eighty-six hospital cases of erythema nodosum in children in addition to a number of private patients. Study of this material has convinced him that erythema nodosum is the manifestation of an anaphylactic process in the course of tuberculosis. The tuberculous focus is usually in the glands connected with the lungs; it may escape detection without roentgen examination. The erythema may temporarily subside but the irregular temperature during the intervals shows that the disease is still lurking in the body. The erythema nodosum in every feature—

even under the microscope—resembles the lesion induced artificially by the tuberculin test. The benefit from tuberculin treatment is a further argument in favor of this view, as also the resemblance of erythema nodosum to other known superficial processes of an anaphylactic nature. This conception of erythema nodosum in children represents progress, as it warns of tuberculosis already installed, and the danger of delay in measures to cure it.

Injury of Fetus from Roentgen Exposures.—In the case illustrated by Stettner, as also in Aschenheim's case, roentgen-ray treatment had been applied to a uterine myoma without suspicion of an existing pregnancy. The eyes of the two children born at term were deformed, as also the ears and genitals, and there was general disturbance in coordination and in the mental functions when the children were examined after the age of 2. The symptoms were those of both inflammatory origin and of development defects. The growth in height is seventeen months below normal in his case, and the ossification fourteen months backward.

Protein Therapy in Tuberculosis in Children.—Epstein has made 1,800 parenteral injections of normal horse or sheep serum in 46 tuberculous children from 3 months to 14 years old. The amount was usually 2 c.c. and the injections were made daily. Only 7 of the 46 children responded with fever to the injections. None of the others showed the least rise of temperature, tested at three hour intervals. On the other hand, preexisting fever sometimes subsided. Even in those whose temperature rose, this occurred without any regularity. The response to the normal serum thus differed essentially from the responses to parenteral injection of milk. No focal reaction was ever observed. Evidences of serum sickness were noted in 47 per cent. of the cases, but they were mild and left no permanent injury. They developed at once in 3 cases; in the course of six to ten days in 8; between the tenth and fortieth days in 10, and between the fortieth and ninetyeth in 4. In 4 of the total 46 there was an actual shocklike reaction occurring once after a large number of injections had been made without reaction; the shock passed off rapidly and harmlessly. In 4 others there were symptoms suggesting serum sickness severe enough to call for suspension of the treatment. In some of these a change from horse to sheep serum or the reverse arrested the disturbances, and the change of serum had a desensitizing action so that the serum previously used could be resumed. The weight increased during this protein therapy after a preliminary decline. The child organism does not seem to become accustomed to the protein therapy in time but rather to become more sensitive.

Tuberculous Antigens in Milk of Tuberculous Cows.—Epstein's research has apparently confirmed the presence of an antigen in the milk of tuberculous cows while normal cow's milk contains nothing of the kind. The antigen content varies in different animals and at different times. He injected intradermally 0.1 c.c. of the milk of cows with advanced tuberculosis. The milk had been boiled for ten minutes and was absolutely free from tubercle bacilli. In sixty-four injections of this kind there was a reaction like that to the tuberculin Pirquet test in the children; it was always positive in the tuberculous children, never positive in the nontuberculous. In control tests with normal cow's milk, four children gave an apparently contradictory response, but the supposedly normal cows soon developed symptoms of tuberculosis. Their milk had revealed its presence before any other sign had called attention to it.

The Substandard Pulse in Children.—Schiff and Bálint here describe the results of tests with epinephrin on children with stable and unstable pulse. Thyroid and pituitary extracts seemed to sensitize to the action of epinephrin.

Experiences with Intubation.—Hohlfield fastens with adhesive plaster on the cheek the end of the thread tied to the tube, and only 4 of the 428 intubated children pulled the tube out. Some of the children bit the thread off, and when this occurred he drew out the tube and replaced the thread. In 56 of the cases the attendants had to remove the tube in a hurry on account of suffocation; in several, more than once. By wrapping adhesive plaster around the thread where it

passed between the teeth it was protected against being bitten. In 64 cases the tube was coughed out once, and in 32 more than once. The style of tube seems to be a factor.

Münchener medizinische Wochenschrift, Munich

June 10, 1921, 68, No. 23

- *Stones in Pelvic Portion of Ureter. Killeuthner.—p. 691.
- Diastatic Ferments. W. Biedermann.—p. 692.
- War Conditions and Growth of German Youths. Kaup.—p. 693.
- The Pregl Solution in the Service of Surgery. Schmerz.—p. 696.
- *Blood Reinfusion in Extra-Uterine Pregnancy. Schweitzer.—p. 699.
- Seborrhoe Rosacea. P. G. Unna.—p. 701.
- *Etiology and Therapy of Chronic Eczemas. Hilgermann.—p. 702.
- Venous Murmurs Elicited by Certain Arm Movements. Muck.—p. 706.
- New Derivatives of Quinin. A. Heffter.—p. 707.
- A Simple Diagnostic Roentgen Apparatus. H. Kress.—p. 708.
- Examination and Therapy of Common Foot Pains. Lange.—p. 709.

Stones in Pelvic Portion of Ureter.—Killeuthner states that of the various false diagnoses rendered in the presence of stone of the ureter on the right side, appendicitis is the most common. From his records he collected no less than eight cases in which after appendectomy he had found stones in the lower portion of the ureter. To be sure, the two conditions are occasionally concomitant. If pains continue after appendectomy, the possibility of stones in the ureter should be considered. The differential diagnosis is often exceedingly difficult. In both conditions the pains may be localized at McBurney's point. By palpation, differentiation of the appendix and the ureter is often not possible with any degree of certainty; neither through the distended abdominal walls, nor through the vagina or the rectum. The gastro-intestinal symptoms, arrest of peristalsis, vomiting and meteorism are common to both affections; likewise the appearance of bladder symptoms and dysuria. Increased temperature and high pulse rate may also occur in both conditions. Roentgenography is the surest means of avoiding diagnostic errors, but in from 4 to 8 per cent. of the cases even this procedure will fail of its purpose.

Experiences with Own Blood Transfusion in Extra-Uterine Pregnancy.—During the period from Jan. 1, 1919, to April 1, 1921, Schweitzer operated in 34 cases of ruptured tubal pregnancy with hemorrhage. In 21 cases he reinfused the patient's own blood. He found this in the main a useful and in many cases a life-saving procedure. It is easy to carry out. Its freedom from danger depends on three factors: freedom from infection; absence of blood clots, and intact condition of the blood cells. The first two conditions are easily complied with, but the third is not so easy to control. Schweitzer lost one patient, a married woman 27 years old, from hemoglobinuria, although in the reinfusion of the patient's own blood he had proceeded in the same manner as in his other cases. If it should be discovered that hemoglobinuria, in spite of all known precautions as regards injury to the blood cells, cannot be prevented, he fears that the harmlessness of this salutary procedure will be brought into question. While other writers have reported disturbances following own blood reinfusion, such as marked cyanosis, dyspnea, pains in the thorax, convulsive jerks, and chills, which they interpreted as due to the toxic effects of the waste products of the decomposing blood, no permanent injuries or deaths have been reported heretofore as the direct result of own blood reinfusion.

Etiology and Treatment of Chronic Eczemas.—Hilgermann relates that his experience, extending over many years, with eczemas leads him to regard bacteria or fungi, or the two in symbiosis, as the causative agents. Constitutional predisposition and other epidemiologic factors are of only secondary influence, though they must not be underestimated, since they favor the implantation of the organisms. Staphylococci, diplobacilli, micrococci and *B. capsulatus* have been isolated; also of the fungi, the mucor, aspergillus, streptothrix and yeast-plants. Only by means of bacteriologic technic; that is, by obtaining cultures of the inciting organisms and the preparation of autovaccines, can chronic eczemas be permanently cured. Vaccine therapy must be continued until the efflorescence disappears. After a course of vaccine treatment consisting of from 12 to 14 injections in increasing doses, a few more injections should be given after pauses

of from six to eight weeks. The cells are thus aroused to renewed activity and produce intensely active protective substances.

June 17, 1921, 68, No. 24

- Median Prostatectomy. F. Berndt.—p. 727.
- Autoexamination of Cornea, Lens and Vitreous. O. Haab.—p. 728.
- *Direct Injections in Cardiac Paralysis. H. Guthmann.—p. 729.
- *Epinephrin in Cardiac Failure During Narcosis. H. Frenzel.—p. 730.
- *Intracardiac Injections for Resuscitation. E. Vogt.—p. 732.
- Diagnostic Value of Wildbolz' Urine Test. Bosch.—p. 733.
- *Contagiousness of Measles. M. Baur.—p. 736.
- Prolongation of Incubation in Measles by Infections. Baur.—p. 736.
- The Physician in Relation to Aeronautics. W. Schnell.—p. 737.
- Simple Brace for Curved Spine. L. Aubry.—p. 740.
- Cor pulsans. L. Huisman.—p. 742.
- General Paresis Rare Among Uncivilized Nations. Gärtner.—p. 743.

Intracardiac Injection of Epinephrin-Strophanthin in Acute Cardiac Paralysis.—Guthmann recalls that the intracardiac administration of drugs in moments of grave danger by reason of weakness or arrest of the heart, action is such a natural intervention that it has been tried on several occasions. He says that hitherto no life has been thereby saved, although Dörner reports that in one case he was able to keep one patient alive for five hours after he seemed to have expired. If we examine the reports of writers on the subject it becomes evident why the intervention has always failed; namely, because the injections acted on the heart only as an energetic stimulant but did not produce any therapeutic effect. If we do not succeed in removing the cause of the cardiac weakness or standstill within a short time after the injection, the heart action must necessarily again soon fail. Guthmann reports in detail the results in five cases of the intracardiac injection of 1 c.c. epinephrin plus 1 c.c. strophanthin. In two of the cases the patients recovered, although when the intracardiac injections were given, the heart sounds could not be heard. The epinephrin acts instantaneously but the effect soon wears off. At this point, the strophanthin begins to act. The pulse becomes more regular, the motor power of the heart is increased and the vessels may be seen to contract. Only by the combination of the two drugs can an instantaneous and a lasting effect on the heart be secured. No ill effects resulting from the injections were observed.

Intracardiac Injections of Epinephrin in Cardiac Standstill Occurring During Anesthesia.—Frenzel reports that in eight severe cases on record of cardiac standstill associated with anesthesia, in two of which heart massage had proved ineffectual, intracardiac injections of epinephrin were given with permanently favorable results in five. No ill effects from the epinephrin were observed. The danger of untoward accidents occurring as the result of the injections is very slight if the proper technic is used. The lasting effect of the injections depends to a great extent on the moment chosen for the intervention; only from early injections may good results be anticipated. Frenzel thinks therefore that in view of these facts intracardiac injections in cardiac standstill resulting during anesthesia should be regarded as a routine measure for resuscitation, and that during every narcosis the instruments needed for intracardiac injection of epinephrin should be ready at hand. It should be noted, however, that epinephrin is not stable and should be renewed every three months. If artificial breathing and heart massage fail after three minutes to revive the patient, an intracardiac injection of 1 mg. of epinephrin should be given, while other resuscitative measures are continued. He reports a permanently successful case from his own experience.

Basis of Intracardiac Injections for Resuscitation.—Vogt distinguishes three forms of intracardiac injection: (1) intrapericardial; (2) intramyocardial, and (3) intraventricular, and says that intraventricular injections are the most effective. He discusses the surgical indications for such injections. They must be given within ten minutes after cardiac standstill. In most of the successful cases they were given within five minutes after respiratory standstill. If the injection is not given promptly, the more sensitive cerebrum cannot recover even though it should be possible to restore the heart beat. Camphor, caffeine and digitalis preparations do not have a strong enough effect, and may injure the heart tissues. Strophanthin has many good features, but one great disadvantage is that if by accident it is injected intramuscularly,

the myocardium may be badly damaged, for which reason Vogt rejects strophanthin. He states that even Fränkel, who introduced it into therapeutics, warns against its intracardiac use, while van den Velden, to whom we owe the idea of intracardiac injections, has given up its use entirely. Preparations of the suprarenal glands are the best remedies; their effect is often little short of miraculous. The maximal dose of 1 c. mm. must not be surpassed. Especial caution is needed in the presence of high blood pressure. Preparations of the pituitary gland are almost as effective as epinephrin, and do not necessitate quite the same caution in administration. A mixture of the two has been tried, but it remains to be seen whether there is any advantage in this. The technic of the injections is discussed, and he cites Pieri's recent compilation of 20 successful cases out of 76 in which massage of the heart was applied in circulatory failure. In the 15 successful cases on record of direct injection into the heart, 2 of the patients were over 50. Epinephrin was used in 9 of the cases, and strophanthin in one. In one of Vogt's own cases the heart was kept beating for twenty-four hours under the influence of a suprarenal preparation.

Contagiousness of Measles.—Baur has analyzed the data in connection with fourteen cases of measles in the infant ward of the Cologne University Children's Hospital, and concludes that the contagiousness of measles is confined to the catarrhal stage and to the first day of the exanthem. It reaches its maximum during the transition from the prodromal stage to the stage of eruption. Twenty-four hours after the eruption has developed the disease is not contagious.

Wiener Archiv für innere Medizin, Vienna

June 30, 1921, 2, No. 3

- *Osteo-Arthropathy with Cancer of Lung. M. Weinberger.—p. 357.
- *Acquired Hemolytic Jaundice. H. Pollitzer, H. Haumeder and S. Schablin.—p. 375.
- *Vascular Spasm in Intermittent Claudication. E. Zak.—p. 405.
- *Activation of Chronic Malaria. W. Schlesinger.—p. 421.
- *Tetany. H. Elias and E. A. Spiegel.—p. 447.
- *Blood Pressure in Diabetes. K. Hitzenger.—p. 461.
- *Chemistry of Pleural Effusions. M. Landsberg.—p. 467.
- *Dyspnea. L. Hess.—p. 477.
- *Relations Between Blood and Gastric Juice. M. Leist.—p. 491.
- *Reaction to Tuberculin in Nephritis. A. Müller-Deham and K. Kothny.—p. 509.
- *Nonneurogenous Nature of Gastric Ulcer. S. Jatrou.—p. 535.
- *Pathology of Secretion of Bile. I. H. Beth.—p. 563.
- *Cardiac Dyspnea. H. Eppinger and W. Schiller.—p. 581.
- "Residual Nitrogen in Infectious Diseases." F. Wagner.—p. 625.
- "Vascular Sclerosis." H. Eppinger.—p. 629.
- *Puncture of an Artery. F. Högl.—p. 631.

Hypertrophic Osteo-Arthropathy with Cancer of Lung.—Weinberger reports an extreme case of hypertrophic pulmonary osteo-arthropathy in which the changes in the bones were an early symptom of a cancer originating in a bronchus. It is the third case of the kind, with necropsy findings, on record, and he is inclined to assume toxic action from the neoplasm. It is analogous to the bone changes in phosphorus and arsenic poisoning, and the periosteitic changes in tuberculous dogs to which Wirth has recently called attention.

Acquired Hemolytic Jaundice.—In the ten cases described, six of the patients were men. The destruction of erythrocytes was three times as great in the women as in the men. Men seem to resist better the latent anemization evident in the microcytosis common to all the cases. All the patients had chronic fever except one whose temperature kept normal during the two weeks of observation. The connection between the fever and the intensity of the hemolysis was evidenced by the return of the temperature to normal after removal of the spleen. The splenectomy proved invariably successful, even in one case in which the jaundice dated from childhood, and the interval since the operation has been seven years. Special features of the habitus and blood findings confirm that acquired hemolytic jaundice is an independent morbid entity.

Intermittent Limping.—Zak's tests and experiments on the healthy demonstrated that the muscles under volitional control, when the blood supply is impeded, are liable to develop a condition corresponding to that of intermittent claudication. The relative anemia of the arterial vessels induces a

readiness to contract. This entails spasm of the vessel when the accumulating waste metabolic products reach a certain amount, and this is liable to occur even with sound arteries when the central normal dilating impulse is overcome by the local constricting impulse from the conditional reflex.

Activation of Chronic Malaria.—Fifty-one malarial subjects were given intragluteal injections of 2 or 3 c.c. of a 10 per cent. solution of sodium nucleinate. The appearance in the blood of active forms of the plasmodium is the signal for intensive treatment, although in itself it is a favorable sign in that it probably stimulates production of antibodies. To accomplish this without activating the malaria enough to bring on an attack, is a problem which Schlesinger suggests may be solved by administering the nucleic acid in the form of active yeast by the rectum. Calf thymus tissue in the diet has a similar activating effect, and this might be anticipated with other foods rich in nuclein. The flaring up of malaria in the spring may be connected with the young fresh vegetables eaten at that season. The spring regeneration in nature and the parallel rousing of malaria in the spring may thus be linked together. In recent and still active malaria, nuclein-rich foods should be avoided, as further activation would be injurious. He gave yeast and quinin on alternate days in a case of furunculosis superposed on malaria, and both showed marked improvement. It is possible, he remarks in conclusion, that foods rich in nuclein might prove useful in all cases in which stimulation of secretions is desired, especially of the ductless glands. We might even extend this assumption to the possibility of promoting production of antibodies by nuclein-rich foods.

Tetany.—Elias and Spiegel tabulate the findings in respect to the phosphorus content of the blood which is characteristically high in tetany.

Blood Pressure in Diabetes.—In 97 diabetics and 561 non-diabetic controls the blood pressure was found above normal in the elderly and below normal in the younger diabetics, compared with the average for their age.

Resorption of Pleural Effusions.—Landsberg compared repeatedly the chemical composition of the pleural effusion with the clinical course. This demonstrated that the resorption of transudates and exudates is the result of a process of parenteral digestion of protein, a fermentative process of proteolysis by the recuperating tissues.

Pathology of Dyspnea.—Hess incriminates a permanent or paroxysmal spasm of the blood vessels in the lungs as aiding in the production of dyspnea in certain cases. He describes the necropsy findings in four cases of paroxysmal dyspnea. In all there had been endocarditis and the layers of the pleura were adherent. Each presented areas in the lung showing normal conditions along with areas in which conditions indicated chronic stasis. When chronic stasis is due to heart disease, it affects the whole lung, but in these cases normal areas bordered on the stasis area. Such conditions imply spasm of these vessels, and spasm of this kind is ample to explain the attacks of dyspnea. It explains further the failure of our therapeutics when we administer a drug that may happen to have a vasoconstricting by-effect. Our efforts then should be to change to a drug that has a vasodilating action.

Reciprocal Relations Between the Composition of Blood and of Gastric Juice.—Leist determined in sixty persons the chlorid and the water content of the blood serum at the same time that he determined the hydrochloric acid content of the gastric juice. The findings confirm that gastric secretion is independent of the blood so long as the protein content of the serum is within normal range. As soon as the serum shows subnormal protein content, hypochylia or achylia usually becomes evident. As the hypalbuminosis becomes more pronounced, the secretion of hydrochloric acid grows less to correspond. He found hyperchloridemia without hydremia frequent in exophthalmic goiter. Achylia was pronounced in two of eight cases of exophthalmic goiter, and anacidity in five. Hyperchloridemia was evident in all these anacidity and achylia cases, both in those with and those without hydremia.

Hemorrhagic Nephritis with Positive Tuberculin Reaction.—In ten cases of hemorrhagic nephritis, the acute clinical

picture persisted tenaciously, and all in this group presented a most decided reaction to the tuberculin test. The details related sustain the assumption that many cases listed as ordinary nephritis were of this type. There were no appreciable manifestations of active or latent tuberculosis, but that tuberculous infection was responsible for the long rebellious acute or subacute hemorrhagic glomerular nephritis was confirmed by the extreme sensitiveness to tuberculin and the recovery under tuberculin treatment. This does not imply necessarily tuberculous lesions in the kidney itself. The cases belong in the category of Poncet's "tuberculotoxic disease," with some severe chilling or acute tonsillitis as the exciting factor. In some of the cases described the high blood pressure indicated impending contracted kidney, and this in all probability would have been the outcome if it had not been averted by the tuberculin treatment. This assumption supplies a missing link in the etiology of contracted kidney, both the secondary nephritic type and the apparently primary cases.

Nervous Origin of Gastric and Duodenal Ulcer.—Jatrou's tests of thirty persons with ulceration in stomach or duodenum failed to disclose any evidence of special dysfunction of the vegetative nervous system.

Test for Bile Acids in Duodenal Juice.—Beth tabulates the findings in the fluid obtained with the duodenal tube in twenty-four patients with various internal diseases. He compared them with the blood findings, and thus obtained remarkable insight into the functioning of the liver.

Cardiac Dyspnea.—Eppinger and Schiller state, as the outcome of the extensive experimental and clinical research described, that the acidity of the blood is not increased in heart disease. Hence the assumption is untenable that excessive acidity is the main factor in cardiac dyspnea.

Puncture to Obtain Arterial Blood.—Under local anesthesia the skin is incised and the artery loosened up, and two silk threads passed beneath it. Then a snip with fine scissors releases the blood which spurts in a large curve. When enough has been caught in the dish held to receive it, the threads are tied, the artery buried and the skin sutured. This is the technic with the temporal artery. With the radial artery, no ligation is required, the needle being run lengthwise into the artery after it has been lifted out of its sheath. The hole left in the artery closes up when pressed with a gauze sponge for from three to ten minutes. Höglér has applied this technic to the radial artery in eighty cases; it proved highly satisfactory except in two cases with blood pressure above 250 mm. mercury. These required ligation. In future he will use a needle of not more than 1 mm. diameter when the blood pressure is extremely high.

Wiener klinische Wochenschrift, Vienna

June 23, 1921, 34, No. 25

- Favorable Results in Treatment of Epilepsy (Two Cases) by Extirpation of Suprarenal Gland (Brüning). E. Kutscha-Lissberg.—p. 299.
Puberty Gland in Relation to Tuberculosis. H. Mautner.—p. 300.
Theory of Narcosis. H. H. Meyer.—p. 300.
Medicolegal Responsibility of Surgeons. A. Haberda.—p. 301.
No Recurrence of Psoriasis Since Course of Emetin. V. Pranter.—p. 303.

Zeitschrift für urologische Chirurgie, Berlin

June 13, 1921, 6, No. 5-6

- *Incontinence from Spina Bifida. A. v. Lichtenberg.—p. 271.
*Removal of Broken Catheter in Urethra. A. v. Lichtenberg.—p. 282.
*Anastomosis Between Ureter and Pelvis. A. v. Lichtenberg.—p. 284.
*Perirenal Urine Cysts. F. J. Kaiser.—p. 286.
*Cystic Lymphangioma of Scrotum. Koloman Haslinger.—p. 293.
*Temporary Exclusion of Urethra. A. v. Lichtenberg.—p. 297.
*Transplantation of Testicle. R. Lichtenstein.—p. 305.
*Closed Renal Tuberculosis with Cavities. Alois Wolff.—p. 314.

Operative Treatment of Incontinence from Spina Bifida.—Lichtenberg's patient was a boy of 10 who had always been subject to enuresis and was pale and weakly, but otherwise apparently normal. The discovery of latent lumbosacral spina bifida explained the failure of all the various measures that had been applied in treatment. He freshened the edges of the cleft and closed it with an implant from the tibia, after loosening up the meninges and nerves protruding from the cleft. There was no further incontinence, and the boy has grown strong and ruddy during the thirteen months since.

Only about once in four or five weeks is there still any bed-wetting. Necropsy in another case of incontinence of urine from spina bifida explained the mechanism involved. The cleft in the spine can usually be palpated, and the anus gapes. The disturbances are progressive, and the urinary apparatus becomes finally injured beyond repair. Early operative intervention is the only salvation. The technic he used protects the cauda equina against trauma and chilling. Katzenstein has reported two similar operative cases.

When the Catheter Breaks Off in the Urethra.—In this contingency, Lichtenberg introduced into the urethra a lightly oiled metal sound that just fitted into the lumen of the catheter. The broken off fragment was held firm with the left hand through skin and urethra, and the sound was passed into its lumen and pushed in hard and firm. Then, as the sound was gently withdrawn, the broken off portion came with it. The poor quality of the catheters nowadays has brought him two cases of the kind recently in old prostate disturbance. If necessary, a thread could be passed through the fragment of catheter, the needle piercing the skin, urethra wall and catheter, to keep it from being pushed up into the bladder.

Anastomosis Between Ureter and Pelvis.—Lichtenberg shows in six illustrations his technic for ureteropyeloneostomy as he has successfully applied it in three cases.

Perirenal Urine Cysts.—The wheel of a wagon passed across the abdomen of the young man, and after the first collapse and signs of peritoneal irritation and retention of feces and flatus, there was no fever and no hematuria. Then the flank began to enlarge and no urine was voided on that side. These huge urine cysts develop more rapidly than is possible with hydronephrosis or with pneumoperitoneum. The differential diagnosis was easy. The cyst was reached through a lumbar incision, nearly three weeks after the accident, and several liters of urine were evacuated from it. The partly necrotic kidney and upper ureter were removed at the same time, and smooth recovery followed.

Temporary Exclusion of Urethra.—Lichtenberg expresses surprise that more systematic use is not made of an opening into the bladder to divert the urine in cases of complications of stenosis of the urethra. The literature contains various references to old urine fistulas which healed promptly after the urine had been thus diverted, but he does not know of instances on record where the urine was thus diverted solely to allow the healing of a urethral fistula or infected stricture, or with chronic stenosis in which measures to dilate the lumen meet with obstacles. He has now a record of six cases, and urges in such conditions routine suprapubic drainage of the bladder to give the urethra a chance to heal. The obstacles impeding the usual measures may then spontaneously subside.

Transplantation of Testicles.—Lichtenstein relates that the implanted testicle was cast off or absorbed in four cases in which he implanted a testicle in the scrotum after resection of the tuberculous testicle. In another case both testicles had been destroyed by a shell wound, and the man presented the typical symptoms of total castration. Lichtenstein slit a testicle and implanted each half separately on scarified muscle tissue in the inguinal region, under ether, and kept the man in bed for twelve days. The results in this and in twenty-one other cases since 1915 confirm the therapeutic effect of free testicle transplantation, and that this technic offers favorable conditions for survival, and for the continued functioning for years of the implanted testicle. He adds that Lydston's high percentage of cases in which it was cast off is due to his method of implantation in the scrotum. Conditions here are far from being as favorable for vascularization as in a bed cut for it in the fascia over the oblique muscle in the inguinal region, slightly scarifying the muscle. The implant can be a retained testicle from another person who has one normal testicle. The father or brother will sometimes give a testicle for transplantation, especially when it is explained that only a half or third of the testicle is required. In one of his cases the testicle was derived from an operation elsewhere, and had been kept on ice for several hours. The results were faultless, as also in a case in which he implanted a testicle taken from a ram.

Renal Tuberculosis.—Wolff devotes over sixty pages to an illustrated description of nine cases of tuberculous cavities in one kidney which had become completely shut off from the bladder. He reviews the literature on the subject of this "closed cavernous renal tuberculosis" or "spontaneous nephrectomy." As no urine passes into the bladder, the diagnosis can be only presumptive. In four other cases described, the ureter was only intermittently obstructed, and the kidney was removed before the full clinical picture had developed.

Zentralblatt für Gynäkologie, Leipzig

June 18, 1921, 45, No. 24

- Diagnosis and Nature of Pregnancy Nephrosis. Heynemann.—p. 838.
High Blood Pressure in Eclampsia. W. Gessner.—p. 847.
Midwives and the Prussian Reform Movement. Rissmann.—p. 853.
Tuberculosis of Female Genital Organs. M. Rudeloff.—p. 854.
*Treatment of Febrile Abortion. H. Heberer.—p. 859.
Treatment of Puerperal Wound Infection with Dakin's Solution. H. Hellendall.—p. 867.

Treatment of Febrile Abortion.—Heberer says that, no matter what the bacteriologic findings are, the best method of treating febrile abortion lies in the earliest possible evacuation of the uterine cavity.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 11, 1921, 1, No. 24

- *Belladonna Preparations from Different Sources. W. Storm van Leeuwen and P. H. Maal.—p. 3242.
Forensic Hysteria. W. Beyerman.—p. 3253.
*Aviation Accidents and Their Causes. P. M. v. W. Palthe.—p. 3264.
Unsweetened Condensed Milk. I. Graanboom.—p. 3272.
Spontaneous Rupture of Heart. J. M. H. A. Martens.—p. 3274.

Standardization of Belladonna Preparations.—Van Leeuwen and Maal explain with concrete examples how chemical examination alone is not enough to test extracts of belladonna. Unless the physiologic and chemical tests yield concordant responses, the specimen of the drug should not be sold as standardized.

Causes of Aviation Accidents.—Palthe is chief of the medical research department of the aeronautic service and he here analyzes twenty-seven accidents that have occurred there among the thirty-five aviators. The largest proportion were due to failure to estimate distances properly, especially the distance between the aeroplane and the landing stage. The bad "landers" were always found to be defective in estimating distance by the binocular parallax alone without extraneous help. He emphasizes the importance of testing and training this binocular parallax for independent estimation of distances, and adds that the physician must learn by his own experience in flying how to estimate the reactions of the aviator. Regular daily control is also imperative, and the physician must keep in close touch with the flyers, and this on the aviation field.

Acta Medica Scandinavica, Stockholm

June 17, 1921, 55, No. 3

- *Chronic Rheumatic Disease of Joints. K. Petré and R. Johansson.—p. 229. (In English.)
*Lumbago and Similar Pains in the Back. F. Lindstedt.—p. 248.
*Spontaneous Variations in Strength of Wassermann Reaction. T. E. Hess Thaysen.—p. 281.
*Abdominal Reflexes in Multiple Sclerosis. G. Söderbergh.—p. 294.
Meningitis from Influenza Bacillus; Four Cases. M. Christiansen and M. Kristensen.—p. 298.
*Glycosuria and Diabetes in Exophthalmic Goiter. J. Holst.—p. 302.

Chronic Rheumatic Disease of Joints.—Petré has been able to improve conditions to an astonishing extent in cases of arthritis deformans and other chronic rheumatic diseases of joints with heat, applied in various ways including diathermy, massage and, chief in importance, passive movements. Even when the roentgen rays showed actual ankylosis, the results realized were most gratifying. In 8 per cent. of the cases of arthritis deformans it had developed before the age of 40; in 37 per cent. before 50 and in 68 per cent. before 60, hence it should not be called a senile disease. In nearly 90 per cent. it was bilateral. The first sign was always that extreme movements of the joints caused pain. The passive movements in treatment should be vigorous even to the point of inducing brief pain. He gives salicylates at the same time. In treating the shoulder, passive movements are of paramount importance. A very useful form is to have the patient hang by his hands; this

exercise can be kept up at home. Contracture of the knee can be mastered in the same way with heat, massage and passive movements carried even to the point of inducing transient pain. When the roentgen rays show an extensive deformative process in the knee we may succeed in improving one or more symptoms but not all. Treatment with small bags of sand aids materially in overcoming the contracture.

Pains in the Back.—Lindstedt has long been arguing that sciatica is the response of the sciatic nerve to irritation or strain, usually from some upset in the static balance of the body or overexertion. His array of arguments to prove that sciatica is the response of the sciatic nerve to irritation or or reflex action was summarized in THE JOURNAL, March 26, 1921, p. 903. He here reasons the same for lumbago and similar pains in the back, and tabulates data from 1,578 cases which apparently sustain this view of their neuralgic nature. The subjects were young recruits, and in fourteen there was pronounced sciatica besides, including four with both sciatica and lumbago. In all his cases the pain in the back was almost invariably on the same side as the muscular overstrain or static anomaly. A constitutional predisposition to neuralgia is generally evident, or some acquired predisposing factor such as infection, intoxication, worry, meteorologic influences or the like. Sciatica, lumbago and other so-called muscular rheumatism pains thus all belong to the class of equivalent neuralgic pathologic conditions. The article is in German with a three-page summary in English.

Spontaneous Variations in Wassermann Reaction.—Thaysen applied the Wassermann test repeatedly to sixty-six persons during the course of a year or more. All had been under prolonged observation for many years; syphilis was known in twenty-three. The conditions and the technic were scrupulously alike in all the tests, and yet the reactions showed a wide range from negative to positive or dubious, with fluctuations from time to time. The closest analysis failed to reveal any causes for the variations in the responses. The article is in English, and he states that Craig's communication in THE JOURNAL, March 10, 1917, p. 773, is the only report of similar research which he has been able to find in the literature.

Abdominal Reflexes in Diagnosis.—Söderbergh states that in his 26 cases of multiple sclerosis the abdominal reflexes were completely abolished in 10, and they were all present in 2. In the other 14 the abdominal reflexes were found variable at different times. The course of the disease might be estimated from the changes in these reflexes.

Glycosuria and Diabetes in Exophthalmic Goiter.—Holst declares that the relationship between the thyroid gland and the pancreas explains the glycosuria sometimes noted in exophthalmic goiter. The pancreas is evidently responsible for the severer forms of glycosuria under these conditions. He reports 8 cases of exophthalmic goiter with not only alimentary but spontaneous glycosuria, including 3 which must be considered as a combination of exophthalmic goiter and true diabetes, the symptoms becoming aggravated or attenuated in each to correspond. In 9 cases of exophthalmic goiter on record the pancreas was found pathologic. From these and other data cited he draws the practical conclusion that tests for sugar should always be applied as a routine measure in cases of hyperthyroidism, and that diabetics should always be examined for hyperthyroidism symptoms. If sugar is found in a case of exophthalmic goiter, the patient should be put on a strict antidiabetes diet. On the other hand, if symptoms of hyperthyroidism are found in a diabetic, we must consider the possible benefit from reducing the size of the thyroid, thus doing away with part of the factors responsible for the clinical picture. The depressing effect of the roentgen rays on the thyroid might be utilized. The inhibiting action on the pancreas, normally exerted by the thyroid, becomes excessive when the thyroid is functioning to excess; reducing thyroid function will release the pancreas from this pathologic influence, and reduce the requirement of calories. Diabetes thus steps into line as a surgical affection, he says, while exophthalmic goiter joins the list of metabolic disturbances amenable to diet. The details of 20 cases of combined hyperthyroidism and sugar intolerance are given, with the necropsy findings in some.

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THE ACUTE ELEMENT IN THE CHRONIC NEPHROPATHIES *

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It is my desire to emphasize in this paper a point not particularly new but one often ignored in practice: the frequent occurrence of an acute element in the course of cases of chronic nephritis, a group of diseases much studied, but still, as a rule, empirically and badly treated; and to urge a much more careful consideration of the importance of the kidneys as one of the most vulnerable and in our treatment least protected spots in the human organism.

One who follows carefully his cases of the chronic nephropathies will often notice slight rises of temperature which lack evident adequate explanation. If at the same time he is following the urine and the blood he will note that these periods of slight fever are accompanied by certain fairly constant chemical changes. It is seldom that a case of chronic nephritis is strictly afebrile. The urine changes are overlooked, since the customary methods of urine examination are not nearly accurate enough. The quantitative determination of the albumin must be made, not with the centrifuge or the Esbach tube, etc., but by the gravimetric method, a method which is rather time consuming and monotonous but nevertheless very much worth while.

A special study of the nephropathies which has continued over eighteen years has convinced me of the accuracy of the opinion that in chronic nephritis there usually are two processes to consider: first, the chronic, that is, the permanent element, the epithelial cell proliferation and the scar tissue formation, both of which are evidences of healing; and, second, an acute injurious element, of the nature of a definite acute nephritis, which perpetuates the disease and indirectly increases the permanent lesion. We might illustrate the course of the disease as follows: The kidneys with 100 per cent. of their tissue normal are attacked by an acute process, the result of which is the loss of a little functioning tissue. A second, a third, etc., attack reduces it still more. During the intervals between the attacks the renal tissue which remains may function as a normal kidney of smaller size, but as a rule the acute flare-ups follow each other too rapidly to allow the slightly injured renal elements to return quite to normal.

There are pathologically and also clinically several quite different types of chronic nephritis; but we believe that they agree in this, that chronic nephritis is not a progressive disease varying in severity at different periods but nevertheless progressing, but is rather a succession of slight, distinct, acute diseases distributed over years, each adding a little to the permanent injury of the kidney as a whole. The albumin, blood cells, renal cells and casts in the urine are evidences of the acute process and are, in amount and number, fairly proportional, on the one hand, to its severity and, on the other, to the previous good condition of the renal epithelium. The urine between two acute exacerbations may be perfectly normal even though the kidney be quite scarred. After the renal tissue, however, becomes considerably reduced in amount and that remaining permanently injured, the renal functional tests and the renal test meals will indicate in some degree its condition. This explains why the urine of previously normal persons may display such spectacular signs (temporary anuria, blood, a high percentage of albumin, casts of all description, etc.) during slight attacks of acute nephritis, after a football game or a Marathon run, etc., while that of a case of longstanding chronic nephritis may change relatively little during a much more serious flare-up. In fact, the more normal the kidney before the disturbance, the more spectacular will the urine changes be. This explains also why the man who for years has suffered from chronic interstitial nephritis may, a week or two before his death, void a urine practically normal which at death may contain only a trace of albumin and a few hyaline casts.¹

In the light of recent experience, one may well doubt that chronic nephritis is essentially progressive; it is not a process which, once started, tends to continue because of a mechanism of its own; there is no necessary vicious circle which tends to greater and greater injury. The bad prognosis which is usually assumed is not due to the injuries the kidneys have received, but to those they are receiving and will receive. The patient does not suffer from one attack of nephritis, but from one thousand and one. If a case of chronic nephritis continues for several years, it is not because of the trouble (e. g., the scarlet fever) which started it, but because some active process (e. g., infected tonsils, abscessed teeth or infected bowel wall, one or perhaps several causes, one of which may begin after the disease is well under way) which has continued it, and we believe fully that, could the present injury be removed and future ones prevented, nature

* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Emerson, C. P.: *Cylindruria*, J. A. M. A. 46: 5, 89 (Jan. 6, 13) 1906.

would at once attempt and would in large measure succeed in improving the kidney condition. In other

words, our success in treating well a case of chronic nephritis will depend on our ability to detect, to treat and to forestall these acute exacerbations, each one essentially a new disease. These acute flare-ups, are, some of them, of the nature of infectious complications; but others are the direct result of injudicious diet, exposure to cold or wet, overexertion, etc., and he treats his patients best who best succeeds in avoiding them. In support of this view I publish the accompanying charts, some of which are copied from an earlier paper,² and others from a thesis by Dr. James O. Ritchey,³ who has studied the recent cases in the medical wards of the Robert W. Long Hospital.

Chart 1 illustrates an incident in the case of a boy, aged 16 years, with subacute nephritis who had been on a milk diet of 1,500 c.c. until his condition was stable and who then was given two raw eggs. At

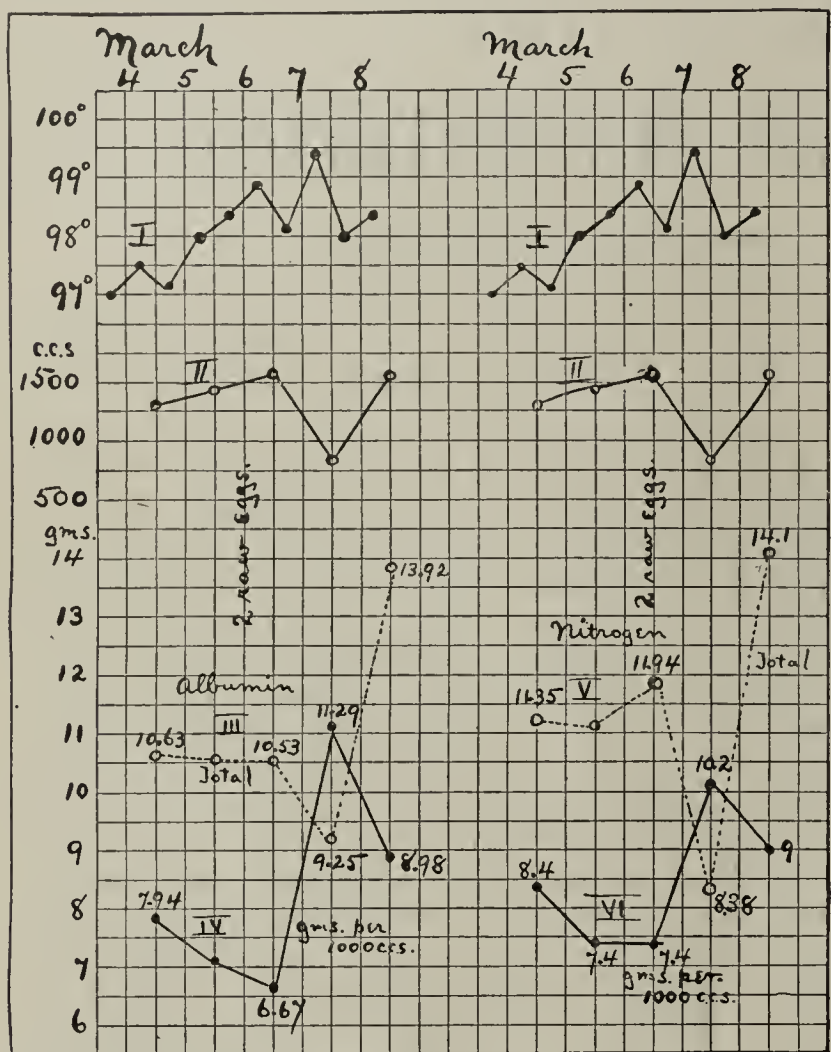


Chart 1 (W. A. G., man, aged 16, white, a sailor).—Curve I, temperature; Curve II, total output of urine in twenty-four hours. These two curves are repeated in both charts. Curve III, total output of albumin in twenty-four hours; Curve IV, output of albumin per thousand cubic centimeters of urine, and therefore a curve parallel to that of the percentage output. Curve V, total nitrogen output per twenty-four hours. Curve VI, the amount of nitrogen per thousand cubic centimeters of urine. This second chart is added to show the interesting parallelism between the albumin and nitrogen curves. March 6, the patient, previously on a diet of 1,500 c.c. of milk each day, was given two raw eggs which evidently increased the severity of the acute element of his nephritis. In this chart the rise in the percentage of albumin accompanies the rise in temperature.

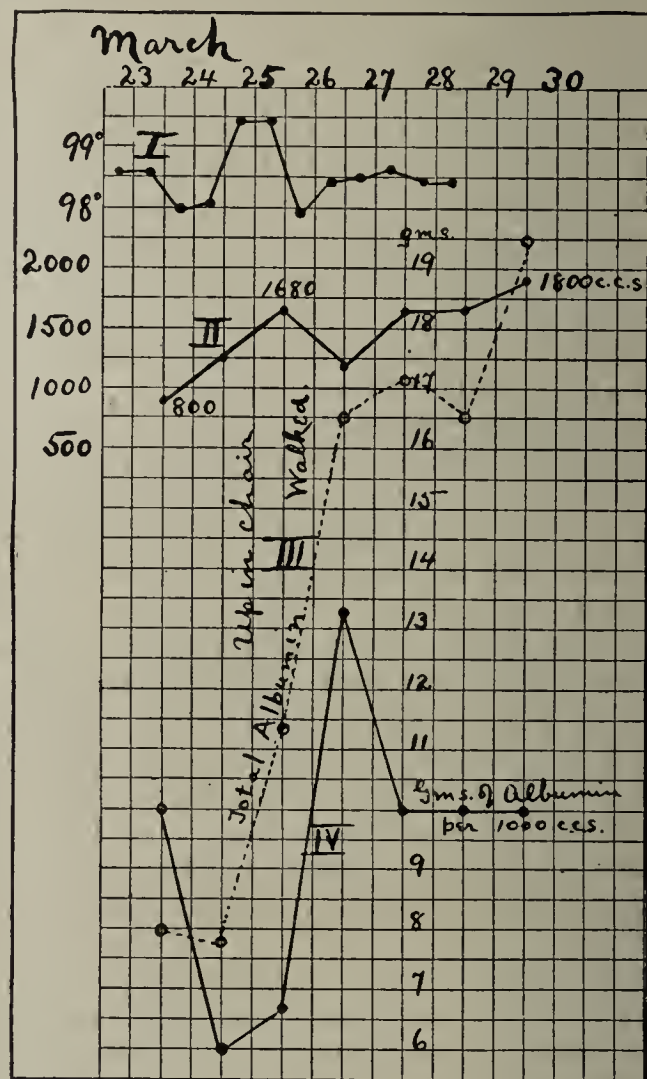


Chart 3 (C. H. L., man, aged 21, laborer, white).—Curve I, temperature. Curve II, total output of urine in twenty-four hours. Curve III, total output of albumin in twenty-four hours. Curve IV, output of albumin per thousand cubic centimeters of urine. March 25, the patient, previously in bed, was allowed to sit in a chair, and on the following day to walk. This chart illustrates the effect of exercise on the acute element of the nephritis.

once the temperature rose, the urine output fell, and the concentration of albumin at once rose. A little later the same boy (Chart 2) was given 3,000 c.c. of milk a day, and then this was reduced to one half. At once the condition would seem to improve. We then gave the boy one creamed sweetbread, which so upset him that it was three days before he could resume the diet, during which time the chart would suggest an acute nephritis. These two charts are fragments of several I have published which show the injurious

2. Emerson, C. P.: Metabolism in Nephritis, Johns Hopkins Hosp. Rep. 10: 323, 1908.

3. Ritchey, J. O.: The Infectious Aspects of Nephritis, thesis for degree of Master of Arts, Indiana University, 1921.

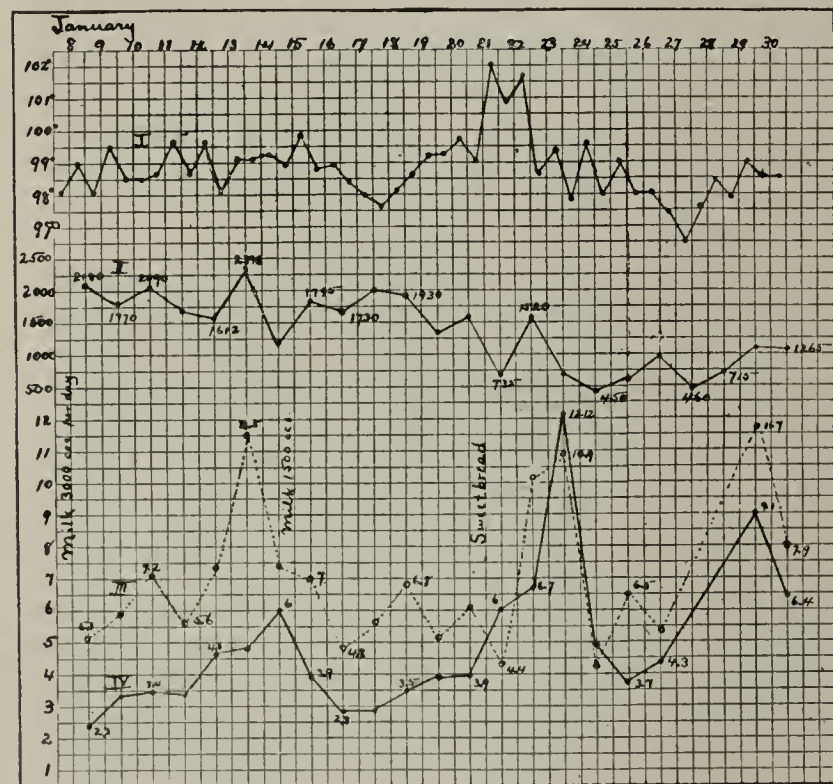


Chart 2 (same patient as in Chart 1).—Curve I, temperature. Curve II, total daily output of urine. Curve III, total daily albumin output. Curve IV, albumin output per thousand cubic centimeters of urine. This boy had been on a pure milk diet, 3,000 c.c. per day. January 15, this was reduced to 1,500 c.c. per day, which seems to have improved his condition. January 21 he was given one creamed sweetbread, which so upset him that he later refused all food. Diet was gradually resumed on the 25th.

effect of errors in diet. Some of these cases were followed carefully daily for weeks, and two for even six months.

Chart 3 illustrates the effect of too rapidly increased exercise. In Charts 4 and 5 (from Dr. Ritchey's thesis) it is seen that the rise in temperature is accompanied by a reduction in renal efficiency as determined by the phenolsulphonephthalein test. Chart 6 gives

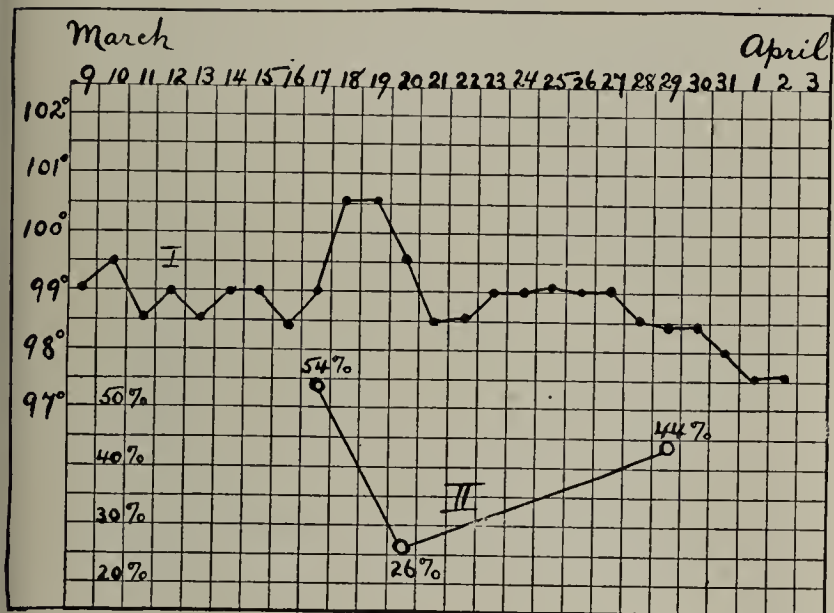


Chart 4 (W. S.).—Curve I, temperature. Curve II, functional renal test (phenolsulphonephthalein). This chart illustrates the depression of renal function during a period of fever.

the picture of urine and blood of a patient with sub-acute nephritis dying in uremia. The fever rises critically; there is marked retention of water, the blood creatinin and urea; the blood pressure, previously very high, begins to drop and the urine picture becomes that of very acute nephritis. It is customary to attribute the fever in such cases to a "terminal infection";

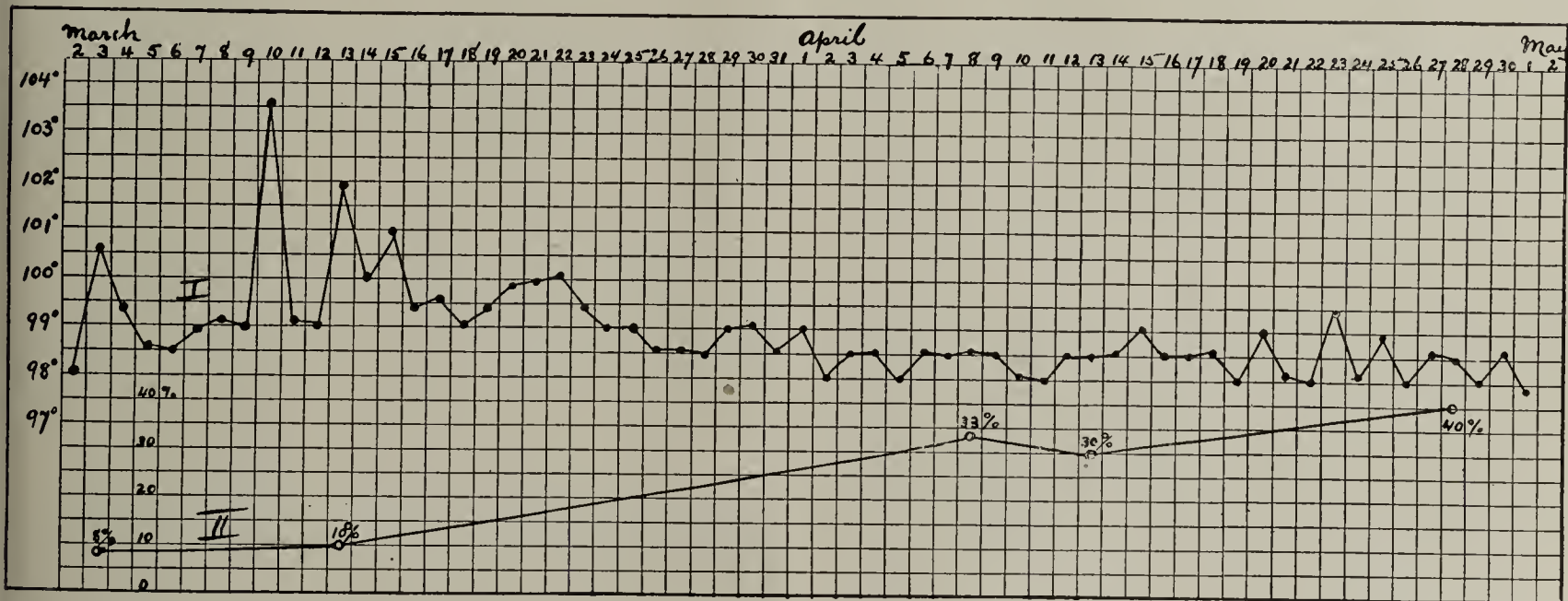


Chart 5 (G. B.).—Curve I, temperature. Curve II, phenolsulphonephthalein output. This, like Chart 4, shows the coincidence of fever and a low renal functional efficiency.

but in this case a very careful necropsy made with this point in view demonstrated nothing but an acute exacerbation of a chronic nephritis. Chart 7 illustrates the point that if the acute element is absent, a change in diet may produce a retention of water, but not an increase of the albumin concentration. Such a patient could receive a more liberal diet. In treating a patient it is the temperature and albumin concentration which we urge be followed; for, as long as these exacerba-

tions recur, either some injurious element remains to be fought or else our treatment is not well planned.

It is very interesting that in all these charts the albumin and nitrogen curves ran parallel. I am not prepared to give an explanation for this interesting phenomena.

The question arises, What is the nature of these acute exacerbations? The present tendency is to attribute all febrile processes to infection and, indeed, some would explain nephritis itself as infectious in nature. This, however, has not been proved by others, our repeated blood and urine cultures made with the most careful technic have failed to support this opinion, and I doubt that nephritis itself or its acute exacerbations are the result of direct infection of the kidney substance. True, the kidney tissue is sometimes infected; but the pathologic and the clinical pictures of those cases are not those of a chronic nephropathy. And yet, probably most will agree that nephritis is usually the indirect result of infection somewhere in the body, and that many of these acute exacerbations indicate the activity of one or more latent focal infections, in the tonsils, teeth, nose, appendix, gallbladder, etc., but also of the bowel wall and the bronchial mucosa, while other flare-ups are evidence of indiscretions in diet, in exercise, of overwork, exposure to cold, etc.

While infection of the upper respiratory tract, of the mouth, teeth, nose and tonsils, etc., would seem especially important in the production of nephritis, yet I would call attention to the intimate, almost specific, relationship between the disturbances of the skin and disturbances of the kidney. Acute nephritis may follow a slight chilling or wetting of the skin, and accompanies various skin rashes, even the apparently insignificant ones. The treatment by sweating, which most

will grant is of value in nephritis, certainly does not owe its beneficial effect to the direct elimination of any toxin or of any urine constituent. It would seem, rather, to be beneficial in direct proportion to its effect on the skin and its functions. Improve that, and you improve the kidneys. And the same thing also might possibly be said of the treatment by purging; for the wall of the bowel is an external membrane, and the granted value sometimes seen of free purgation may be

due not so much to elimination as to its ability to improve the condition of the bowel wall itself.

May I now urge a point of view seldom mentioned, that the kidney is, after all, a very weak organ? While it may "link man's blood plasma with brackish waters of the remotely ancient oceans," nevertheless the kidneys are about the weakest spots in the whole body. It is of interest to one interested in comparative anatomy that the kidney is perhaps the only organ of our body Nature has tried three times to make and abandoned the first two attempts practically without any salvage so far as organs of elimination are concerned. While an argument from comparative anatomy may carry little weight in human pathology, the same fact stands out even more clearly in human embryology. The pronephros is a well developed organ of the small embryo, but soon is entirely abandoned. A part of its duct may give rise to the mesonephros, certainly an important well developed organ of the embryo, and yet of this none is salvaged for the production of the metanephros, Nature's third attempt, our kidney. Of course, one might argue that these three attempts should produce a very superior organ; but pathology indicates the reverse. Its function cannot be very elaborate. The formation of urine is partly mechanical and partly a vital selective reabsorption of simple substances; but even to accomplish this apparently simple function, the kidneys require a surprising amount of oxygen in proportion to their weight. Few organs are as sensitive to disease as they, for at necropsy they are more

Our plea is that we consider the kidneys as very weak spots of the body and treat them accordingly. This means the early removal of all infected foci and particular caution when treating a disease which often affects the kidney. If the kidneys are affected we would urge the importance of following the tem-

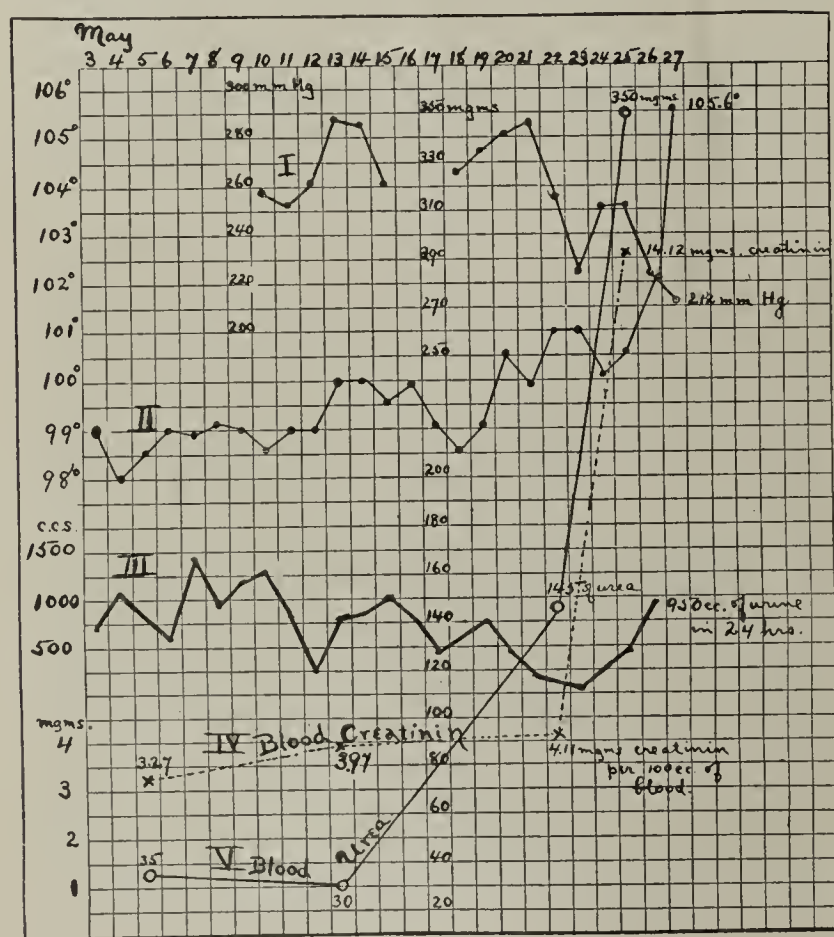


Chart 6 (Mrs. L., aged 45, white).—Curve I, systolic blood pressure. Curve II, temperature. Curve III, total output of urine per twenty-four hours. Curve IV, that of blood creatinin. Curve V, that of blood urea. The patient died, May 27, in uremia. Necropsy disclosed chronic nephritis combined with acute nephritis. No evidence of terminal infections could be found.

often found injured than many other organs whose functions would seem more elaborate. As the direct cause of death the kidneys are the third organ in importance, while indirectly they are even more harmful.

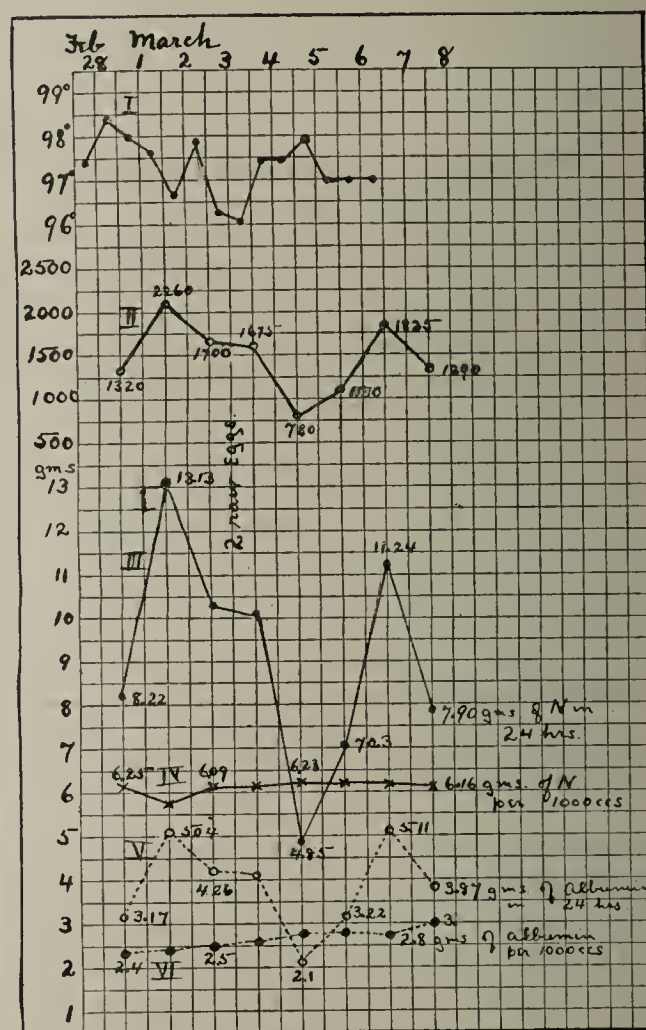


Chart 7 (A. W. M., man, aged 39, white; a farmer).—Curve I, temperature. Curve II, urine output per twenty-four hours. Curve III, total nitrogen output per twenty-four hours. Curve IV, that of nitrogen per thousand cubic centimeters of urine. Curve V, total albumin output per twenty-four hours. Curve VI, amount of albumin per thousand cubic centimeters of urine. This patient had been on a pure milk diet of 1,500 c.c. per day until March 3, on which date he was given two raw eggs. His nephritis evidently contained no superimposed acute element, for although there was a marked reduction in the urine output and consequently in the output of nitrogen and of albumin, yet the temperature and the percentages of these urine constituents did not change.

perature chart and albumin concentration very carefully; for as long as these show even slight rises which cannot be well explained in any other way, they mean either that we must continue the search for infection or that we are not wise in our directions as to the diet, exercise etc., of our patient.

ABSTRACT OF DISCUSSION

DR. CHANNING FROTHINGHAM, Boston: On hearing Dr. Emerson emphasize the fact that the estimation of the nitrogen in the urine may indicate the amount of acute injury going on in the kidney, it would seem as though this test would be a step in advance in giving us some guide for outlining treatment. However, I can not help wondering whether an increase in nitrogen means any actual fresh injury to the kidney. Although, in view of Dr. Emerson's observations, it probably does, I have always been impressed with the difficulty in deciding either by a study of the patient's general condition or by a study of the patient's urine what is going on in the kidney. I think the tendency has been in recent years in renal studies to deviate too much from trying to keep in mind what lesions are actually going on in the kidney. This tendency is, perhaps, excusable somewhat when we realize that there are not tests at the present time which permit us to decide what type of lesion is going on in the

kidney. Although the pathologist can differentiate a half dozen types of acute nephritis, the clinicians are unable to separate them during life. If special studies could classify these cases during life, it would be of tremendous importance so far as prognosis is concerned, as the end-results of the various acute lesions vary considerably. Dr. Emerson has raised an important point in suggesting that chronic nephritis may be simply a summation of repeated acute injuries to the renal tissue. Although I think chronic nephritis does originate in this way, I also feel that chronic nephritis may consist in a progressive degeneration of the renal tissue dependent either on disturbance in its nutrition on account of scars from former lesions, or on some toxin originating elsewhere in the body and coming to the kidney for excretion.

DR. EDWARD C. ROSENOW, Rochester, Minn.: In connection with a series of experiments, results have been obtained which I think have a direct bearing on diseases of the kidney as one of the many causes of diseases of the kidney so well brought forward by Dr. Emerson. During a course of a series of experiments in which bacteria, streptococci chiefly, were successively passed through animals by intravenous injection, it was found that as they were brought from almost no virulence to higher virulence there was a certain point where localized focal lesions in the kidneys were the common result. And in a series of cases, not many but some, some chronic, others acute, by the intravenous injection of organisms from foci of infection, as in the tonsils and teeth, a very striking example of localizing the infection in the kidney has occurred. In a further study of this point, Meisser and Bumpus have shown that many teeth, nonvital teeth, show no infection, yet an organism cultivated from these apparently harmless foci and injected intravenously caused pyelonephritis; the organisms tended to localize in the kidney. The type of lesion in these experiments is such as would make one strongly think that these acute exacerbations represent a slight acute infection; and in the experimental work this interesting fact has been noted, that is, that the kidney has great recuperative powers and will destroy these organisms in a few days so that even though a lesion may be seen, the culture is negative. Somewhere in the body there must be a focus which is responsible for these exacerbations. We have succeeded in producing focal, yet disseminated nephritis, the areas and lesions varying in age, by the devitalization of teeth in dogs and by simultaneously infecting the pulp chambers with organisms which have the power to localize and produce lesions of the kidney.

DR. CHARLES P. EMERSON, Indianapolis: It is evident that I made a mistake in emphasizing as much as I did the percentage of the nitrogen output. We merely noted that the nitrogen concentration of the urine ran almost parallel to the albumin concentration. It is the curve of the albumin-percentage output which we followed and urge you to follow. The nitrogen curve is interesting and curious, but not at all well understood. There are, indeed, many forms of nephritis. We got no farther than to recognize anatomically the large red and the small red kidney, the large white and the small white kidney. But clinically, all patients with any form of chronic nephritis show, at times, slight rises of temperature and definite changes in the blood and urine. We believe that these indicate an acute addition to the disease and a continuation of a process which Nature is trying to heal. Undoubtedly, focal infections are important in the causation of nephritis; but this does not mean that we should at once pull out the infected teeth and remove tonsils, for in some cases we may cause an acute exacerbation which may prove serious, while in other cases it may be too late. We should, if possible, remove infection early and, if later, we should first carefully prepare the patient for operation. The one point I desire to leave with you is this: any protein intoxication, whether it be from a focus of infection, from the food, the result of exposure to cold, or of overexertion, may add an acute element to the patient's disease which shows itself in the patient's urine and temperature charts. These responses usually are too rapid to indicate new renal infections. By watching for these little flare-ups and using care to avoid them, we may in the future be more successful in the treatment of our patients with chronic nephritis.

TRUER STANDARDS IN THE DIAGNOSIS OF HEART FAILURE

A HITHERTO UNEMPHASIZED FORM OF PULSE IRREGULARITY *

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Heart failure seems a subject so trite that to discuss just what is meant by it would appear a superfluity. Nevertheless, for a proper judgment of what is to follow, a clear understanding of what should be meant by the term must be postulated. For this purpose, Alfred Cohn's conception appears most fitting, i. e., a heart fails when it can no longer support an individual in comfort at the particular level of life at which he attempts to live. At the outset then, I should like to have it distinctly understood that this paper is meant to deal only with late cases of heart failure, or in terms of the definition, those cases in which the heart fails to support the individual in comfort at the lowest level of activity, i. e., in bed. These, of course, are the cases which come to our hospital services.

HEART DISEASE AND HEART FAILURE

A careful, and at one time intensive, observation of these patients in an exclusive cardiac ward impressed me with the fact that frequently these patients are being managed with an incorrect attitude and that students are, on occasions, being taught theories that do not square with the actual state of affairs. I refer particularly to the identification of heart disease with heart failure. Sir James Mackenzie showed many years ago that the crux of the situation in heart disease lay in the function of the myocardium; and the estimation of its ability to perform work is the main problem in the study of the heart in the living. This, of course, is the function of the myocardium in general; but it hardly needs elaborating here that this should sometimes be expressed in terms of its detailed properties, such as irritability, contractibility or conductivity, for the organ may fail in one or more of these and yet be sound in the remainder. Furthermore, it should be well understood that the heart can fail in its functions from structural change, but that this is not always true. It is important, consequently, to conceive of change in structure being important only so far as it affects function, and therefore the rightfully growing conviction that a meticulous attention to murmurs means going off at a tangent. I should like to emphasize that heart disease does not imply heart failure, and that myocarditis does not necessarily involve "decompensation."

It seems important, therefore, to be able to distinguish not only what actually is, but what is not heart failure, though it is often regarded as such because of the identity of symptoms that are frequently present. Mackenzie, again, dwells with persistence on the importance of symptoms and their interpretation as the solution of the problem of the detection of early disease. We learned quickly in

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* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

our study that such a line of attack would be of no avail in our analysis, chiefly because heart failure as a rule occurs late in heart disease and, further, because the incidence of certain objective findings, without which we were unwilling to predicate heart failure, preceded or synchronized with the appearance of symptoms. We then turned our attention to the acting organ itself and its extensions (blood vessels), and along these lines we found much more fruitful result.

RHYTHM IN DISEASES OF THE HEART

Ten years ago, it was my privilege to spend a few months in charge, as an extern, of one of Mackenzie's cardiac wards. This was just at the time that Thomas Lewis was working out the problem of auricular fibrillation, and it was found in our ward that all the cases of classical heart failure presented auricular fibrillation. In retrospect, it grew on me that I had not seen in those wards a case of heart failure presenting normal rhythm, and this was impressed on me all the more because I had seen many cases of heart disease other than failure. These had shown either normal rhythms or abnormal ones different from auricular fibrillation, such as tachycardias, bradycardias, extrasystoles and blocks. In a desultory way, I inquired into the cases that came to my notice in private and in a general medical hospital service. These cases all showed the rhythm of auricular fibrillation, and Mackenzie, Lewis, Hay and others wrote of it as a thing taken for granted, that the majority of cases of heart failure show auricular fibrillation, placing the figure as high as 80 per cent.

Led by the experience of those who had studied best and most, and fortified by even the small number of observations I had made myself, the attitude grew of wanting further observation along extracardiac lines in a patient whose symptoms could have been those of heart failure, but in whom examination of the heart itself and the pulse showed no abnormality in rhythm. Parenthetically, it should be stated here that in speaking of rhythm the term is used in a larger sense than that of time only. Variations in pulse amplitude, for the purposes of this paper, will be spoken of as arrhythmia, though such use may be inexact in the true sense of the word.

CASE GROUPS

A study was thereupon undertaken for the purpose of attempting to find means to distinguish between true and apparent heart failure. A ward of eight patients was shunted off from the general medical service, and run to capacity for a period of six months, a short time and small number of patients, to be sure, but enough to give some interesting observations, and perhaps helpful suggestions for further study.

The patients could be readily classified into four groups.

1. Those who, without question, were suffering from heart disease other than failure; paroxysmal tachycardia, heart block, extrasystolic irregularities, etc.
2. The out and out cases of heart failure.
3. The so-called cardiorenal cases.
4. Patients presenting edema, cyanosis and dyspnea, and showing no nephritis, tuberculosis, cirrhosis or other usual causes of this syndrome, and who were ordinarily classified as suffering from heart failure, because no other cause for these findings had been elicited, in other words diagnosed as heart failure by elimination.

As far as the purposes of this paper go, Group 1 needs no discussion.

EDEMA IN TRUE CASES OF HEART FAILURE

Group 2 was interesting and striking. Every patient except one in this group presented auricular fibrillation, the exception showing auricular flutter. As was to be expected this group was the largest. In studying these patients, a striking and curious phenomenon was noted in the part edema played in their progress. I can recall particularly an occasion when in two adjoining beds there were patients with uncomplicated heart failure showing auricular fibrillation neither presenting the findings of any possible nephritic complication. Both patients presented marked dyspnea and cyanosis; one had an extreme edema as high as his shoulders, the other none at all.

Wondering, we attempted to find some means of physical or instrumental examination which could account for this. It was quickly seen that by no means all, in fact less than half, the patients with uncomplicated heart failure presented edema. Naturally, the presence of an accompanying nephritis or cirrhosis of the liver would have satisfied us as to the cause of the edema. Accordingly, it followed that our previous ideas of back pressure, slowing of the blood current and consequent congestion being the cause of edema in heart failure must be untrue. Methods of examination as far as we were equipped revealing no solution, a reasonable hypothesis was that in the chemistry of the blood and respiration might be found the answer, and to undertake this study we had neither time nor training.

We did not have the idea that this conception was in any way original. Thomas Lewis had written briefly on the subject, and with a co-worker had been able to isolate a volatile acid in some cases of dyspnea. Their article is most suggestive. Later in this country, Edsall and his assistants have been working along these lines, and facts are accumulating to show that we have been quite at fault in considering edema in heart failure to be dependent on back pressure, or slowing of the blood current from a failing myocardium. It seems apparent that in some cases it is, but that in as many it is not.

Along this line another striking observation was noted. In at least two cases that I can recall, it was most extraordinary, as the heart failure progressed day by day to a fatal conclusion, to watch the edema diminish and finally to have the patient die entirely without it, while it had been markedly present when the patient had been doing fairly well. On the other hand, other patients with apparently the same degree of heart failure would progress to death with an increasing and extreme anasarca. Prospects are encouraging that in the next few years some one will explain these phenomena, probably along the lines indicated above.

ABSENCE OF HEART FAILURE IN GROUP 3

Group 3, the "cardiorenal" cases, interested us exceedingly because at the outset we had the notion that the term had been loosely used. We speculated as to what part of these patients' illness was cardiac, how much renal, and, if there was a real mixture, by what means the amount of each could be estimated. Into this group we put the cases which for years had been cataloged as of this variety. These were the patients with chronic nephritis, presenting marked edema particularly of the extremities, cyanosis, dyspnea, usually

a rapid pulse, high blood pressure, often a mitral insufficiency, an hypertrophied heart and sclerotic arteries.

It was in one way surprising to find, after a careful study of these cases, no justification for considering them cardiac in the sense that they were suffering from heart failure. They are frequently misjudged in their course, and the edema, dyspnea and rapid pulse which frequently arise in the course of their nephritis are too often mistaken as signals of a failing myocardium, and mishandled accordingly.

I should not like the impression to arise from what I am about to say that I am of the opinion that necropsy is of much help in proving or disproving the existence of heart failure. This can be estimated only in terms of function, and estimation can be made only in the living. Still, I think we will all agree from experience that a heart which has failed utterly from chronic heart disease does often at necropsy show gross and microscopic changes so vast as to corroborate, if not actually confirm, the diagnosis. With this in mind, it was striking to find, in many if not all of the "cardiorenal" cases, the expected hypertrophied heart, firm, of good color, and showing in gross and under the lens but little myocardial change. The conclusion that these patients had but little heart failure was arrived at before necropsy supported the findings. We finally became aware at the close of the study of these cases that rather than dealing with an element of heart failure, we were dealing with the disease nephritis, in which the one organ *par excellence* that stood out as not failing, but on the contrary working like a Trojan and even overacting, not to say "compensating," was the heart.

This does not mean to indicate that it is one of my purposes here to imply that chronic nephritis is seldom complicated by heart failure. Indeed, it is; but that group of cases, the actual "cardiorenal" ones, all presented auricular fibrillation. These patients suffered for the most part from the type of the disease due to infection early in life, in whose history the infection could easily be traced, as tonsillitis, rheumatic fever or chorea followed by mitral disease, and finally nephritis and auricular fibrillation. It is the latter type of patient who, in the well worn discussion over "cardiorenal" cases, is "primarily cardiac," and of the first named group which is so often spoken of as "primarily renal." The distinction is necessarily of great value from the point of view of management. It does not seem so important to decide which element preceded, but rather to express conditions by saying that one group has heart failure with the nephritis, and the other has not.

CASES DIAGNOSED BY ELIMINATION

Group 4 interested us most of all, and tempts me to go ahead of the story by speaking at this point of standards without which we were averse to predicating heart failure. The reason for this is that had these standards been applied, a sizeable number of these patients would not have suffered from the error of being classified as cardiac failure. This group readily subdivides itself into two heads, first those patients presenting what I should like to speak of as the cardiac trilogy—edema, cyanosis, and dyspnea—who frequently are cataloged as suffering from heart failure though distinctly from something else. It must be evident that the true diagnosis in this group is elusive, and revealed

only after most careful study, and, frequently, a lapse of considerable time. In one of the series this was nearly one year.

REPORT OF CASE

History.—An Italian gardener, aged about 65, single, entered the University of California service in the San Francisco Hospital, Feb. 24, 1920, complaining of "pain in the heart" (pointing indefinitely to the precordium). Other than having had what he called malaria ten years before, there was nothing of note in his family or past history, except the denial of venereal history. His present illness he dated from about a year before admission, when he had "caught cold," coughing almost incessantly for three months, and raising some whitish sputum. He had had no night sweats. At about the same time, he had a dull, constant pain in the lower abdomen. About four months previous to admission, he had noted some pain, dull and aching, just below the sternum. It was relieved by eating, coming on one hour after food was taken. There was much belching, but no nausea or vomiting. Occasionally he had noted some bright red blood in small amount in the stool, but the stools had never been tarry.

The patient laid much more stress on the dyspnea, which had occurred on the slightest exertion for the last five or six months, and, particularly, on the swelling of the legs which had been present in marked degree for two or three months, and was still present on admission. One morning five months previously, he awoke and found himself unable to talk. He knew what he wanted to say, but realized that he was merely mumbling. He had no pain or paresis of which he was aware.

Examination.—The patient was well developed, with no emaciation or cachexia, but having typical "mitral facies," i. e., he was markedly cyanotic, moderately dyspneic, and had a rather advanced edema of the lower extremities. Other than a slight inequality of the pupils, the eyes were normal. Oral hygiene was extremely poor. There were small, shotty glands in both cervical posterior triangles, and both inguinal regions. The heart on inspection showed nothing abnormal, and, on percussion, was about normal size, the right border apparently just outside the sternum. The sounds were quite faint, but there was a distinct systolic murmur to be heard at the apex and just a little inside, but not in the axilla. The pulse was slow (68), the systolic pressure 150; no irregularity or abnormality was shown either to the finger or on a sphygmogram, and the radials felt of a medium amount of thickness. The lungs showed nothing to be noted here. The liver was distinctly felt, about 6 cm. below the costal margin in the right mammillary line. It was fairly hard, but not nodular.

Laboratory Findings.—These were for the most part unenlightening; urine normal: phenolsulphonephthalein, 55 per cent. in two hours; Wassermann test negative; stool normal and showing no gross or occult blood. Fractional gastric analysis was not normal, showing microscopic blood, the absence of ferments, and the presence of a large amount of mucus. The total acidity reached 14 in one hour and forty-five minutes, and no free hydrochloric acid was found. (These findings were discussed but dismissed, because much stress is not laid on occult blood brought up through the tube, and our wards at that time contained many patients with chronic disease of various kinds, showing an absence of free hydrochloric acid.) Gastro-intestinal roentgen-ray examination at this time revealed nothing abnormal.

Diagnosis.—Considerable discussion as to diagnosis ensued among the members of the staff. It is difficult to appreciate, from the printed word, the picture of heart failure which this man presented. His cyanosis, labored breathing and swollen extremities were so typical that most who saw him diagnosed heart failure at once and regarded it as extraordinary that it should be doubted. Nevertheless, it was doubted by a striking minority, who claimed that it was not justifiable to diagnose heart failure, in the absence of other findings, to explain dyspnea, cyanosis and edema together: that heart failure is to be diagnosed by positive findings in the heart and pulse, not by a process of philosophy. The minority claimed the privilege of laying the burden of proof on the affirmative, and ventured to insist that no diagnosis was warrantable at that time. The future, it was asserted, would bring forth evidence

for saying what was the matter with the patient, but for the present it was considered feeble clinical medicine to diagnose heart failure for want of something more probable. Further attention was called to the remarkable behavior of the edema in this patient, in that it would disappear when he was up and about the ward, and reappear when he remained in bed—a truly paradoxical deportment for a classical cardiac edema.

Subsequent History.—We kept the patient with us for three months, waiting for something to happen that would enlighten us. His general condition improved without any other change, so he was discharged to the Relief Home, where he worked as a gardener, and here again it is to be noted that while at work his edema was absent. He returned to us about six weeks later with an intercurrent bronchopneumonia, was discharged once more, and then returned to us after an interval of six months with an entirely different picture. This time he was plainly critically ill, complaining of “dropsy” and obstinate vomiting. He showed an extreme edema of the lower extremities, and an enormous ascites. His cardiac examination and pulse were as before, the pressure remaining the same. After tapping the abdomen, it was easy to palpate a large epigastric nodular mass fulfilling the characteristics of a stomach tumor, and through the fluoroscope this was confirmed beyond question. Gastric contents were characteristic of carcinoma of the stomach. Examination of the ascitic fluid revealed many large cells undergoing division, which we took to be tumor cells. After a month’s downhill course, the patient died the typical death of carcinoma of the stomach, with obstinate and incessant vomiting, toxemia and inanition, by this time not at all resembling a patient with heart failure.

Necropsy.—A most extensive carcinoma of the stomach was found, with extensions or metastases on the peritoneal surface. The heart was normal in size, showed no striking abnormality, either microscopic or gross, not even the mitral insufficiency which had been assumed because of the systolic murmur.

COMMENT

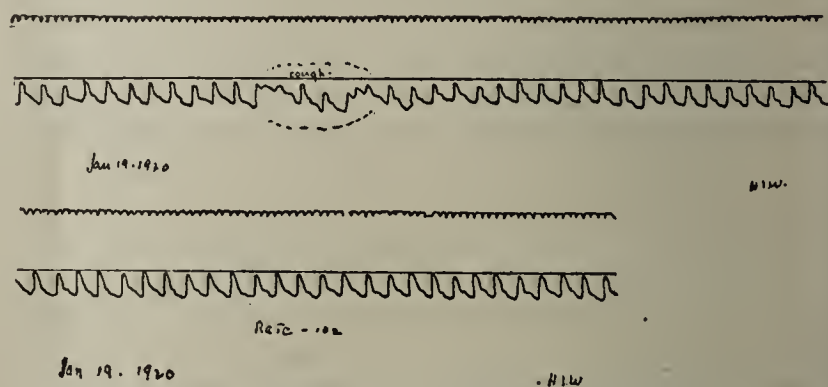
Looking at this case in retrospect, it would be impossible to say what caused the edema unless it was of a chemical nature. Speculation on this point would be fruitless just now, but the important point is that it could not have been from heart failure. This statement seems warranted from studies made during life, when the detailed analysis of the heart’s function showed no abnormality (unless some one would care to put the cart before the horse and argue that cyanosis, edema and dyspnea in themselves are sufficient evidence of cardiac abnormality, which it is the very purpose of this paper to dispute), and after death, when we could acquit it of structural disease.

PATIENTS WITH APPARENTLY UNAFFECTED PULSE

The second division of Group 4 consists of the smallest number of cases, but the most puzzling of all. These are the cases which present the usual cardiac symptoms in a degree more marked than any of the other cases, particularly the dyspnea and cyanosis, with an absence often of edema. They show no nephritis, and the blood pressure remains normal, or even a little high, to the end. The pulse is rapid, around 110, and to the palpating finger betrays no irregularity; but the most striking feature of the examination is the presence of an enormous heart, a cor bovinum, with no valvular insufficiency. These retrograde, with the typical course of a patient with heart failure, and with apparently no evidence in the pulse of such a condition being present. These cases come to the necropsy table showing nothing more enlightening than they did before, revealing this enormous organ showing true hypertrophied muscle fiber, but no evidence of myocardial disease, unless hypertrophy itself be considered such.

These cases, few as they are, give pause for real reflection, and I was given to wonder whether they really were heart failure, or whether the heart had not hypertrophied in response to a call outside itself. Progress in their solution seemed to come to an insuperable obstacle, until finally, in three of these cases, it was possible to elicit evidence, in the pulse itself, of disordered action of the heart. This is the evidence of which I have spoken in the title as a hitherto emphasized form of arrhythmia.

As has been stated earlier in this paper, there are those who might be captious about using the word arrhythmia in describing an abnormality in the heart’s mechanism other than disturbance in the time mechanism. For those I should be willing to discard the word and speak merely of an abnormal phenomenon, for disturbance in time mechanism it is not. The important and curious feature of the abnormal pulse which was noted in cases of the last group, is that the time is quite regular, but the volume or amplitude at any rate is quite irregular. We speak of the pulse of auricular fibrillation as being the perpetually irregular pulse, showing irregularity in both time and amplitude; but the pulse noted in these cases, all of whose auricles were beating in ordered sequence, was perpetually irregular only in amplitude.



Tracing showing persistence of irregularity in volume of each beat, not so marked as the day before. Decided increase in this irregularity following cough.

The interpretation of this phenomenon can only be one thing: an impairment of the function of contractility, to an extreme degree; in fact, the most extreme degree possible short of failure to contract at all. I dwell on this form of pulse because I do not recall its having been emphasized previously. Pulsus alternans, which is a common and simple form, we all know; but this perpetual dissimilarity in the size of ventricular systole must mean an impairment of contractility even more serious.

CONCLUSIONS

It is to be hoped that this paper has not given too much the impression of an attempt at new dogma or even dogma at all. It merely tries to chronicle my experience from an intensive clinical study; and that experience has shown me that chronic late heart failure does not exist without actual objective evidence in the heart and pulse. I consider the diagnosis of heart failure one to be approached with proper respect, and do not deem making it merely from the presence of dyspnea, cyanosis and edema, proper respect. I demand the eliciting of such evidence as change in the size of the organ, alteration in the character of the sounds, abnormality in pulse volume and blood pressure, disturbance in time mechanism, such as auricular fibrillation or flutter, extrasystoles, pulsus alternans,

block, or even permanent irregularity in amplitude. It seems superfluous to state that not all these are demanded or even many of them together, but they are cited as the kind of evidence which seems valid.

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ABSTRACT OF DISCUSSION

DR. PAUL D. WHITE, Boston: If I were asked to interpret this radial or brachial tracing I should interpret the top tracing as a bigeminal pulse due to premature contractions, every second beat; the small beats, which are marked, come, if anything, a little early, and the criterion of alternation of pulse must be, if not a regular pulse, usually with such small beats as these, a delay of the weaker beats. Probably, in the first tracing, there was a pseudo-alternation, the small beats being due to premature contractions. In the second tracing, as Dr. Wiel has said, there is a variation in the force of the beats occurring in a wavelike rhythm. We must know the respiratory rate before we can say that there is not a variation due to inspiratory and expiratory changes in pressure. We know that in inspiration there is an increase in pressure, and in expiration a decrease. The pulsus paradoxus gives an increase in pressure in expiration. Of course, I cannot be sure of my interpretation without a respiratory tracing taken simultaneously, but because of the wavelike variation, I should say that this is a respiratory variation. In the third strip I should think that the same explanation might hold. The irregularity which is most marked between the dotted lines, as Dr. Wiel has said, is due to the coughing. At times I think interpolated premature contractions have been diagnosed by some people when, as a matter of fact, three were artefacts (such as hiccup). Following this coughing there is an accentuation of the same irregularity in force as seen in the second strip. I do not think that we can draw any conclusions from these tracings as to the condition of the myocardium. It is well known that a heart may be very irritable without being seriously diseased, and all we can say is that we have evidence of irritability or irritation of the myocardium without serious disease. If one looks over a great many tracings, whether normal or abnormal, one will find many similar to these.

DR. WILLIAM D. REID, Boston: In any study of heart failure one should not be satisfied with that as the diagnosis but should think of the type of the heart with which one is dealing. We hear a great deal about the lack of wisdom in diagnosing heart disease purely on the basis of the structural lesions present. Most men now agree to that. The same statement holds with regard to diagnosis of heart failure and being satisfied with this functional diagnosis and not trying to judge whether we are dealing with a rheumatic, a syphilitic or an arteriosclerotic heart.

DR. HARRY I. WIEL, San Francisco: I thought I had made it clear that the reproductions shown were not exhibited as conclusive but were given as an example of the sort of thing I mean. As regards the irregularity being respiratory in character, it was definitely not, because the patient from whom these tracings were taken did show other irregularities which were definitely in relation to respiration. Studies of these irregularities which were different were made, but were not touched on here as they have no relation to the subject.

Increase of Child Labor.—According to the statistics collected by the National Child Labor Committee, more children left school to go to work in 1920 in many industrial centers than in 1919. Fourteen states report an increase in child labor during the first six or eight months of 1920. In New York City 5,283 more children applied for work permits in the first six months of 1920 than in the corresponding period of 1919, but in the third quarter of the year there was a decrease in applications, so that the total net increase was only 2,353. In Baltimore County, Maryland, up to Oct. 31, 1920, there were 4,064 more applications for work permits than in the first ten months of 1919; during the summer months there was a reported increase of 13,000 in Chicago, and in Minnesota the increase was 193 per cent. over 1915.

A STUDY OF TROPICAL SPRUE, OR PSILOSIS *

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The papers of Dr. E. J. Wood,¹ and the discussion which followed his last report, before this section in 1919, leave no doubt that tropical sprue, or psilosis (as it would seem preferable to term the disease, both for brevity and avoidance of the inevitable confusion resulting from the use of the common title), occurs sporadically among our own people in persons who have never been out of the country or in the tropics. Nevertheless, the disease is known to most of us as it is brought back by those who have spent some years in foreign lands, especially in the tropics. The thirteen patients whom we have had opportunity to study in the Presbyterian Hospital during the last ten years have returned from various countries; seven from China, two from the Philippines, two from Porto Rico, one from Ceylon and one from Korea. From the literature of the disease, it is evidently frequent in Korea, and not uncommon in North China. The common title is therefore as faulty as that of the famous Holy Roman Empire, which is declared to have been neither holy nor Roman nor an empire. "Tropical sprue" may be found from Ceylon to Northern Korea, from Porto Rico to New Hampshire. It is surely not tropical; nor is it sprue.

Likewise, it had long been held that psilosis occurred only in Europeans or Americans resident in the tropics, not in the native races. The researches of Bahr in Ceylon prove beyond doubt that this is not true, but that the natives are frequently affected. Our cases, however, have followed the traditional rule in that the patients were all Americans who had spent some years in foreign lands. Three were women, ten men, their ages varying from 37 to 57 years. Their periods of stay in foreign parts before developing symptoms varied from two to thirty years. It is instructive to note that two of them returned to this country in good health and first noted symptoms of the disorder four months after their return. In another patient, not included in this series, the disease developed two years after return from Porto Rico, and while living under highly favorable conditions on Long Island. Bahr cites the case of an Englishman who first developed symptoms seven years after his repatriation, and of another in whose case seventeen years elapsed between the sojourn in the tropics and the onset of the disease.

Two of our patients were husband and wife, both developing the disease within a few months, after twenty-four years' residence in China.

Bahr cites a number of cases in which the disease developed, in persons closely associated, as though from a common cause, or from one to the other.

THEORIES AS TO ORIGIN OF DISEASE

Theories as to the causation of the disease are numerous. Effects of tropical climate, limitations of diet

* From the Medical Service of the Presbyterian Hospital, New York.

* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Wood, E. J.: The Occurrence of Sprue in the United States, *Am. J. M. Sc.* **110**: 692 (Nov.) 1915; *Tr. Am. A. Phys.* **30**: 505, 1915; The Recognition of Tropical Sprue in the United States, *J. A. M. A.* **75**: 165 (July 19) 1919.

resulting from residence in the tropics, intestinal parasites, bacterial infection, or infection by yeasts, have all been suggested. Only the last theory is supported by any scientific evidence.

As the result of his careful study of the disease, Bahr is inclined to the belief that it is produced by the general infection of the alimentary tract by yeasts, although he recognizes that the proposition is not yet proved and that there are objections to it.

So far as the classification of the yeast is concerned, Bahr says:

There is no evidence in favor of regarding the sprue yeast fungus as being otherwise than identical with the thrush fungus, *Monilia albicans*, an organism possessing a very low pathogenic power; but it is possible that under certain unknown conditions, more or less peculiar to the tropics, this power may become greatly augmented.

His predisposition to the monilia theory rests largely on his belief that psilosis is a tropical disease, tropical conditions being especially favorable to the growth of the fungi. The fact that it may be found in northern Korea, and even New Hampshire, takes all force from that argument.

Ashford in Porto Rico finds a yeast infection common in psilosis, but insists that it is not *Monilia albicans* but a hitherto unrecognized species which he terms *Monilia X*. Bahr's feeding experiments with the monilia proved harmless. Ashford in two experiments observed a stomatitis in animals fed *Monilia X*, and in several instances a protracted diarrhea.

Bahr's identification of the yeast found in psilosis with *Monilia albicans* adds to the confusion regarding the nature of the disease. If correct, that would mean that infantile sprue and psilosis are produced by the same organism, and should, therefore, be one and the same disease. This is, I think, quite impossible. There is no resemblance whatever between the mouth lesions (practically the only ones known), of the infantile sprue produced by *Monilia albicans* and those of psilosis. Thrush is characterized by the raised white dots produced by colonies of the infecting fungi, which may fuse into a wide-spreading pellicle, covering tongue and buccal mucous membranes in severe cases.

The mouth lesions in psilosis are of considerable variety, but none of them in any respect resemble the picture produced by *Monilia albicans*. The lesions that we have seen have been only of three types: (1) a patchy erythema, especially of the edge of the tongue; (2) minute ulcers indistinguishable from the lesions of aphthous stomatitis in childhood (canker sores), and (3) smooth, shiny atrophy, apparently a sequel of the previous lesions. None of them have the slightest resemblance to *Monilia albicans*, and from none of the ulcers have we ever been able to obtain monilia of any type.

RELATION OF MONILIA TO PSILOSIS

Assuming the correctness of the observations of both Bahr and Ashford, the probability is that the organisms obtained, not being identical, have nothing to do with the causation of the disease, but are chance invaders of tissue of lowered vitality.

I do not believe that the specific organism causing psilosis has yet been found. In none of the mouth lesions have we been able to find *Monilia albicans*. Only once in this series of thirteen patients, one of whom was in the hospital on two occasions, and another on three, has monilia been found in the stools, and

then only on a single occasion, though search was repeatedly made for the organism. In two of our patients (Cases 8 and 9), monilia identified as *Monilia albicans* was found in the Mayo Clinic, prior to the entrance of the patients in the Presbyterian Hospital. In neither could they be found when the patients came under our observation.

The stools in one patient were thoroughly studied by the bacteriologic staff of the Columbia University College of Physicians and Surgeons, under the direction of Dr. Hans Zinsser with negative results so far as monilia or any unusual bacteria were concerned. This patient finally succumbed, the clinical course and postmortem findings leaving no question of the nature of the disease. At my request Dr. Russell L. Cecil has recently made an exhaustive study of the organisms found in the stools in another patient, a typical case originating in Porto Rico. Monilia was not found and, still more remarkable, nothing whatever abnormal was noted in the bacterial flora of the intestine. Two weeks later the study was repeated with the same results.

So far as our observations go, the monilia is certainly not present in the cases of psilosis presenting themselves for study in New York City, nor has the most careful bacteriologic study of the stools shown any abnormalities worthy of note.

PATHOLOGIC ANATOMY

Although the studies of the postmortem conditions found in sprue are not many, yet there is sufficient evidence to indicate that the changes found are comparatively few. Thinning of the epithelium of the tongue and various parts of the gastro-intestinal tract, with areas of denudation in places, has been observed. Thinning especially of the wall of the small intestine has been thought by some to be characteristic, but Bahr does not so regard it. The latter finds evidences of chronic inflammatory changes of moderate grade throughout the small and large intestine, some fatty infiltration of the liver, and hyaline areas in the spleen, both small and large, the latter resembling the so-called Russell's bodies. He is inclined to regard these hyaline areas of the spleen as characteristic of psilosis, having failed to find them in other conditions. Granting this, the lesion fails to throw any light on the nature of the disease or the grave disturbances accompanying it.

One of our cases proved fatal. The necropsy revealed, apart from the wasting characteristic of the disease, a variety of lesions unrelated to the psilosis, including an aortitis of the syphilitic type (Wassermann reaction negative), chronic cardiac valvular disease and hypertrophy of the heart. There was a perforation of the appendix and diffuse peritonitis, which apparently developed in the last twenty-four hours, and was overlooked owing to the previous dilatation of the stomach, with symptoms of tetany, which will be dealt with later. The only lesion bearing on the clinical condition was a chronic enteritis of the mucous type. It was notable that the stomach, although enormously dilated, showed only hemorrhages into the mucous membrane, and no other microscopic changes. An acidity was found during life. The pancreas was normal both in appearance and in microscopic section.

SYMPTOMS

The clinical picture of psilosis is now well established. The combination of sore mouth; diarrhea, char-

acterized by the passage of from one to four bulky, light-colored, semifluid or grumous stools, containing much gas; emaciation, anemia and exhaustion, renders it easy to recognize the typical case on clinical grounds alone. Doubtless there are many poorly developed cases that pass entirely unrecognized. A few facts which have impressed us may be noted. The soreness of the mouth is striking in some cases, but may be absent, and the mouth may remain entirely normal, as occurred in four of our thirteen patients. Bahr observes that the mouth lesions are by no means constant.

Nausea and vomiting may be pronounced in severe cases, but as a rule there seems little gastric disturbance. The abdominal symptoms usually engross attention. The chief disturbance is described as a diarrhea; but the increase in the number of stools is slight, the total not exceeding three or four a day. One of our patients had periods of diarrhea in which from ten to fifteen discharges occurred during the twenty-four hours. In another case, the total reached eight, in a third six, but none of the ten remaining exceeded four, and in some cases there were but one or two stools a day.

The gaseous distention and the sensation of the "popping of gas" within the abdomen are much emphasized by the patients. Exquisite sensitiveness of the abdomen may be present through many months. Patterson of Seoul, Korea, reports operating on two patients under the mistaken diagnosis of appendicitis.

The anxiety with which the patients watch their stools, and the depression and exhaustion which often follow the passage of a characteristic stool, are very striking features of the disease.

Loss of weight is progressive and, when the disease has existed many months, becomes a matter of vital import. From 20 to 30 pounds loss was commonly reported, and in one instance a patient, weighing at his best 160 pounds, had lost 60 pounds. Debility is usually marked, and in severe cases profound exhaustion ensues.

RESULTS OF EXAMINATION

The emaciation and debility are, as a rule, evident at a glance. Anemia may be absent or very marked. The skin is often loose and wrinkled. The mouth shows the lesions already described, patches of erythema on the tip or edges of the tongue, and "canker" sores on either the tongue or the buccal mucous membrane; sometimes the whole tongue is smooth and fissured. The abdomen is usually protuberant and tympanitic; sometimes, as already noted, it is exquisitely tender. We have never noted the shrinkage in liver dulness on which stress is put by some writers. The liver shares the loss of all the viscera, but this is not great enough to obliterate the liver dulness. Hemorrhoids and relaxation of the rectal mucosa with prolapse may complicate the severer cases. Protoscopic examination was made in nine of our thirteen cases. There is no characteristic picture. In some of our cases the mucous membrane was found normal, in others pale; in several, it was the color of raw beef. In only two were granular areas suggesting ulceration (minute) seen, while an area of definite necrosis was observed in only one instance. As a matter of fact, one learns to attach more significance to the characters of the fecal contents than to the appearance of the bowel.

CLINICAL TESTS

The clinical investigation of our cases has been a matter of interest.

The saliva, we have not studied. Van der Scheer found the saliva alkaline to litmus in the early stages, but acid later. Bahr found a markedly acid reaction in all cases examined, particularly the advanced ones.

Gastric Contents.—We have records of twelve gastric analyses in eleven patients. Six of the twelve showed a total lack of free hydrochloric acid; another showed low values throughout a serial test, while five gave practically normal readings. One patient gave normal findings on the first test, in 1912, while in a second attack, in 1919, the free acid was absent in the initial reading of a serial test, but gradually mounted to 36 at the end of two hours. In other respects the gastric contents after an Ewald test appeared normal. There was no excess of mucus, and no blood.

The Stools.—The macroscopic appearance of the stools is often characteristic. The bulk is excessive; they are pale gray and grumous, with many large bubbles of gas intermingled; the odor is peculiar, rarely foul. It must be noted, however, that many variations occur, often in a puzzling manner. Not infrequently the stools become of normal consistency and appearance for a time, only to present the old, alarming characters a little later, without change in the patient's mode of life or diet to explain them. These variations, coupled with those that normally occur in consequence of variations in diet, drink or exercise, cause notable changes in the appearance and composition of the stools at different times, and render it difficult to establish accurate standards or interpret our attempts at exact chemical analysis. Thus, I find in our records notations of color reading through pale, tan, yellow, and green to brown. The lack of color in the psilotic stool has been supposed to be due to the absence of bile pigments, which in turn was ascribed to atrophy of the liver.

Blyth has, however, shown that the bile pigments are really present but in the form of a colorless compound, known as leuko-urobilin. Walker refers this reduction of the normal bile pigments to absence of the pancreatic juice, and says that it may appear in such conditions as carcinoma of the pancreas. Mayo Robson states that the stools in chronic pancreatitis may have the same characters as in psilosis.

A second factor in the light color of the stools is unquestionably the presence of an unusual amount of fat in the form of both neutral fat and fatty acids. The presence of an excess of free fat and crystals of the fatty acids may be demonstrated in many of the stools by microscopic examination. Chemical demonstration of the same facts is beset with practical difficulties. Variations in the amount of fat in the diet, in the absorptive power of the individual, and in exfoliation of intestinal epithelium from which part of the fat found in the feces is derived, all tend to modify the results of chemical analyses of the stools and render their interpretation uncertain. As Wood observes, dependable findings can be had only by exact chemical analyses of the foods taken, and of the excreta, over a period of three or four days. Thus far we have not found it practicable to carry out such investigations with our patients. Some suggestive results have, however, been obtained by occasional chemical studies of the stools in typical cases.

According to Adolf Schmidt, under normal conditions the total fat in the dried feces does not exceed 20 per cent. by weight. In four of our patients careful analyses, carried out by Miss Selma Granat, showed total fat varying from 25 to 48 per cent. of the dried feces, a decided excess. The differentiation of the total fat into neutral fat and fatty acids showed the neutral fat to constitute from 11 to 35 per cent. of the total, an average of 24 per cent., and the fatty acids from 65 to 89 per cent., an average of 75 per cent. So far as the fragmentary results go, they suggest that there is an excess of fat in the stools of these patients, not so much from the absence of a fat-splitting ferment, the percentages given being within normal limits, but from an impairment of the power to absorb the fat contained in the food. In another patient, however, analysis showed a neutral fat of 60 per cent. of the total, the fatty acids being but 40 per cent., a result suggesting a decided loss of power to split the fat. It is of interest to note at this point that in the post-mortem examinations thus far recorded, as indeed in the patient in whom this last result was obtained, the pancreas showed no notable changes. On the other hand, clinical experience indicates that the administration of pancreatic extract is in some patients highly beneficial, while in others it fails entirely of definite effect.

It has already been noted that in our thirteen patients the monilia was found but once, and that only in a single examination; while in two typical cases, the most thorough bacteriologic examinations failed to show any variation from normal standards.

Fermentation Tests.—Although excessive gaseous distention is a notable feature of the clinical picture, and in typical stools the big bubbles of gas are readily visible, fermentation tests have yielded but indifferent results. Doubtless the discrepancy is due in some way to imperfections in the method of examination.

The Blood.—Severe secondary anemia has been a striking feature of our cases. In eight of the sixteen studies (on thirteen patients) the hemoglobin was 70 per cent. or less, the lowest record being 21 per cent. The red cell counts were correspondingly low, but in none sufficient to give an index much above 1. In none were nucleated cells found, so that while in several pernicious anemia was suggested, it was easily excluded on the basis of the blood findings, and the other features of the condition. Wassermann reactions were negative in all cases, as already noted, even in the fatal case in which an aortitis of syphilitic type was found at necropsy. Blood urea was found normal in two instances, and slightly above normal in one. The carbon dioxid content was likewise normal in two cases. Observations of the calcium content of the blood with an accompanying increase in carbon dioxid will be reported in connection with the cases of tetany.

Pancreatic Ferments.—No little interest has attached to tests for the presence of pancreatic ferments in the stools. They have been made in the majority of our patients. Trypsin was absent in four cases, and diminished in the fifth, but was present in apparently normal quantity in three. Amylose was absent only once, diminished twice, and present in apparently normal amounts in four cases. There was no regularity about these findings, trypsin being found without amylose, and vice versa. One feels some hesitation in accepting the results of these tests or attaching significance to them.

The Urine.—Routine urinary examinations have shown no abnormalities of note.

COMPLICATIONS

In 1919, Bassett-Smith² reported a case of tetany in a sprue patient in the advanced stage of the disease. Reference has already been made to a similar development in one of our patients. The details of this case were published by two of our students.³ The condition was typical tetany existing for four days, without fever until the last twenty-four hours, and without abdominal distention or rigidity; yet at necropsy a gangrenous appendix with perforation and general peritonitis was found. The patient was regarded as moribund when the temperature first rose, and the fever was looked on as the result of protracted vomiting and exhaustion. The rupture of the appendix may have occurred from the thinning of its walls, and appears to have been only the final step in the progress of a fatal disease. Repeated analyses of the blood during the period of tetany showed a blood calcium ranging from 8 to 6.5 mg. per hundred cubic centimeters, the normal being from 9 to 11 mg. Two intravenous infusions of 0.2 per cent. calcium lactate solution were given with subsequent determinations of the blood calcium. To our surprise, no material increase in the blood calcium was found. Some relief of symptoms was experienced after each infusion. Later, transfusion of blood and the intravenous administration of 800 c.c. of 0.1 per cent. calcium lactate failed of definite effect. The plasma carbon dioxid on the second day of the tetany showed 57.6 per cent. by volume.

During the past winter another of our patients, now living at some distance from New York, developed tetany with recurrent typical spasms of hands and feet, so severe as to require morphin for the relief of pain. Observations of the blood calcium, in November, December and January, gave values ranging from 7 to 6.6 mg., despite the persistent administration of calcium lactate by mouth. In January, the plasma carbon dioxid was found to be 86 per cent. by volume. In the belief that there might be relation between the alkalosis and the inability to retain calcium, the acid phosphate of sodium was administered, and later the patient was induced to take a quart of milk a day, a food which he had previously declined to take. During the recent months there has been no recurrence of the tetany, but we have had no opportunity to repeat the blood examinations, and therefore do not know whether there has been any change in the chemistry.

DIAGNOSIS

As far as we can see, the diagnosis of sprue must rest on the clinical conditions. These, as has been said, are fairly characteristic. The study of the stools is of special interest; the results reported are highly suggestive, but cannot be regarded as diagnostic.

TREATMENT

There is general agreement that treatment is dietetic, but the diets on which patients have recovered present a bewildering variety and varying composition. The one recommendation which seems to have general acceptance is that the diet must consist largely of

2. Bassett-Smith, P. W.: *Lancet* 1:178 (Feb. 1) 1919.

3. Barach, A. L., and Murray, D. A., Jr.: *Tetany in a Case of Sprue*, *J. A. M. A.* 74:786 (March 20) 1920.

fruit. The fame of strawberries in this relation is well known. One suspects that their virtue may lie in the restriction on total caloric intake which must result, but this is by no means clear. Bahr attaches peculiar values to the bael fruit, which he could obtain in excellent condition and in abundance in Ceylon. We have no evidence on which to advocate a particular regimen in these cases. To us, the problem has always seemed much like that presented in many cases of difficult feeding in infants, i. e., to find any food which the patient can take with comfort, adding to this easily digested foods, until a reasonable intake is secured. Experience has proved that, in doing this, starches, especially in the form of potato and bread, must be restricted, and the intake of fat in any form kept low. In other words, the diet must consist largely of fruits and protein. Following these lines, we have, as a rule, been able to secure an intake on which the patient would cease to lose, become comfortable, and be able to carry on moderate activities. Our experience leads us to doubt whether any patients with well-developed psilosis ever completely recover. Bahr's experience in Ceylon appears to show that they do, and that they remain well indefinitely.

SUBSEQUENT HISTORY OF TWO CASES

Our first patient apparently recovered completely, returned to China, and did five years' service under the old conditions without return of symptoms. He then developed pulmonary tuberculosis and was invalided home again. While under treatment for this disease, the symptoms of psilosis recurred and have thus far proved intractable. This is the patient who, during the past winter, has had tetany added to his burdens. Although at present slightly improved, he is still in a critical condition.

A second patient, who had contracted his disease in the Philippines, apparently recovered and was allowed to return after a two years' stay at home. Within eighteen months the characteristic diarrhea and exhaustion recurred, in January, 1919, and he succumbed in November of the year, with a complication of tetany and gangrenous appendicitis, as already reported. In the light of these experiences, we shall be reluctant to authorize the return to the tropics of any one who has had convincing evidences of the disease.

SUMMARY

1. Tropical sprue is not confined to the tropics, nor is it sprue.
2. The monilia has been found but once in our thirteen patients.
3. Bacteriologic examination of the stools fails to show any significant departure from normal conditions.
4. The mouth lesions are not constant. They are of the type known as aphthae in children, and do not resemble infantile sprue, in which *Monilia albicans* is regularly found.
5. Severe anemia is frequently a feature of the disease.
6. Total absence of hydrochloric acid is found in many of the gastric analyses.
7. Chemical examination of the stools shows an excess of neutral fat.
8. The pancreatic ferments may or may not be present. The pancreas in postmortem examinations is apparently normal.

9. Bacteriologic examination of the stools shows only normal bacterial forms, with no important variation from the usual percentages.

10. For the present, the diagnosis of psilosis must rest on the clinical findings.

11. Tetany occurs as a grave complication of advanced cases. A marked reduction of the calcium content of the blood is found in these cases.

12. The treatment of psilosis is largely dietetic, the diet to be adapted to the digestive powers of the individual. In patients with anacidity, dilute hydrochloric acid is indicated. Pancreatic extracts are beneficial in some cases, but fail in others.

13. Despite the favorable reports of Bahr as to the possibility of complete recovery and the subsequent health of patients who have had psilosis, our experience indicates that there is grave danger of the recurrence of the evidences of psilosis in patients who have once suffered severely from the disease. It is, therefore, doubtful whether any of these patients should be permitted to return to the conditions under which the disease developed.

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ABSTRACT OF DISCUSSION

DR. JOSEPH H. PRATT, Boston: Although sprue is still a rare disease in the United States, persons affected with it are returning from the tropics every year, especially from Porto Rico and the Orient. It is highly important that the physicians who are consulted should have some knowledge of its diagnosis and the proper treatment. I well remember my consternation when my first patient with this disease presented herself and said, "I think I have sprue and I have come to you for your opinion." I knew it was some form of tropical disease, but that was all. I know of persons invalided home with the diagnosis of sprue who have been treated so improperly on their return to this country that it was perfectly evident that the physicians who were responsible for their care did not take the trouble to look up the proper management of these cases. During the past year I have seen two patients who have wandered far and wide seeking expert advice on this disease. One of them even traveled to Porto Rico. The physicians connected with the foreign mission boards in this country should formulate a plan for giving adequate instruction to missionaries and others invalided home with this diagnosis. Provisions should be made for treatment by physicians who are familiar with sprue. The value of Manson's milk treatment is not appreciated even by many who see much of this disease; I recently saw a patient who had tried the santolin treatment, pancreatic ferments, meat diet and a bland diet, in the hands of different physicians, without success. His wife, in despair at his failure to gain on these forms of treatment, went to the Boston Medical Library and read up the literature on sprue. She chanced on Manson's monograph and followed exactly his milk treatment in every detail. Without medical aid she supervised the treatment. Immediate improvement occurred. Six months later when I examined the patient he seemed to be perfectly well.

DR. THOMAS R. BROWN, Baltimore: My experience with sprue is limited to six very severe and chronic cases, three of the patients coming from Porto Rico and three from the Philippines. I have observed that in many cases there is absence of the pancreatic ferment in the stools and in the duodenal contents. I think that that, however, represents the late stage. Gastric achylia was present in five of every six cases; but under the improvement that came there was a return to normal in three of these five cases. The other case, a very severe one, showed no change in the normal acid readings, although the symptoms were as severe in this case as in any of the others. It is rather striking how few notes one finds in the literature in regard to the changes in the

pancreas. This may be because the pancreas degenerates so quickly postmortem, especially in the tropics, and a microscopic examination is not possible. I have talked to Dr. Castellani, and he felt that there was nothing characteristic about the pancreas, but he thought that some cases seem to show chronic inflammatory changes; but this is very doubtful without microscopic examinations. On the other hand, it is an interesting finding. I have had exactly the same experience as Dr. Bovaird with regard to *Monilia psilosis*. I have not found it, in spite of the fact that my cases were diagnosed by experts and showed all the characteristics of the disease. I was interested to note that many physicians in Manila are getting satisfactory results from the use of nearsphenamin. In one of my cases it seemed to do much good, temporarily. I feel, like Dr. Bovaird, that the last word has not been said on sprue; possibly it represents a group of diseases, and this may be the reason that there are so many suggested and in some cases successful modes of treatment. The only thing I want to suggest is that in the treatment of these very severe cases it is well to consider all the factors, the dietetic factor, etc., and my experience is that the pancreatic as well as the intestinal factor has to be considered. In fact, every factor has to be considered in order to bring about an improvement, even if a perfect cure is not to be expected.

DR. FREDERICK S. DELUE, Boston: It seems to me that we are getting needlessly alarmed over the admission of such cases into this country. If you look more carefully you will find that they are numerous at home. They are frequently overlooked because the individual with a cankerous mouth and digestive disturbances usually knows enough to take a very simple diet and so cures himself. The significant fact is that the type of diet that causes this disease in the North is essentially the tropical diet or the acidulous fruit and carbohydrate diet. I have had an interesting case in my own family. When my son married and took his wife out to my country home, my preserve cellar, which had not been used for a number of years, was opened and all sorts of preserved fruit partaken of, with the result that in a short time deep cankerous ulcers developed in the mouth with diarrhea, hemorrhoids and great prostration. A bland milk diet with sodium bicarbonate promptly cured the case. A small amount of such preserves suffices in a few days' time to bring back the trouble. I do not believe that this is a germ disease. It appears to me to be primarily an acidosis with a marked reflex factor from the continued irritation of the gastro-intestinal tract, and the early recognition of the cause prevents the catarrhal condition from developing to the point of ulceration. The harmful element seems to be acid, whether acids direct, acids from fermentation of the sugars, or from splitting up of the fats. If you will try a skim milk diet, combined with sodium bicarbonate I think you will have no more difficulty.

DR. DAVID BOVAIRD, New York: The observations that were made in 1919 apparently indicated that sprue occurs sporadically in this country. I think that Dr. Pratt recalls a case coming from New Hampshire; and various other men spoke of having seen cases of sprue that had developed in the United States. The disease undoubtedly presents an interesting field for study; its nature at present is unknown. Observations have been made in regard to the gastric analyses, and the presence and absence of the pancreatic ferments, such as Dr. Brown has reported, and they are interesting and possibly important. It is a very peculiar disease when one comes to study it. The pathologic condition apparently is an atrophy of the epithelium of the alimentary tube from the tongue straight through the gastro-intestinal tract. Physiologically, the disturbance is a complete disruption of the ordinary digestive processes. But what relationship lies between these two things, the pathologic anatomy and the physiologic results, is still a mystery. So far as treatment is concerned, it is quite evident from the natural history of the disease that the great majority of these patients are destined to recover no matter what treatment is given. I think that is the only way one can interpret the extraordinary number of diets and procedures by which recovery is obtained. I have been interested in the use of arsphenamin in the

Philippines. They also use emetin with reported success; and the same is true of santonin. Many drugs have been used, and most of the patients get well, but from the experience reported it is evident that some of the cases are fatal in spite of the best treatment. As to diet, it seems that the indicated diet in severe cases is skimmed milk as a starter, because it is the safest thing we can possibly use, as it puts the least burden on the digestive tract. That can be maintained for only a brief period and must be added to as conditions permit.

THE RÔLE OF FATIGUE IN THE MALNUTRITION OF CHILDREN *

BORDEN S. VEEDER, M.D.
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There has been no subject in the field of pediatrics which has attracted more attention in the last two or three years than that of malnutrition in children beyond the age of infancy. There is already a voluminous literature on the subject, and in following the literature I have been struck by the relatively slight amount of attention which has been given to the subject of fatigue, or, expressed in a different way, to the subject of rest. Usually one finds a statement that unhygienic conditions of living, poverty, overcrowding, etc., play a part in producing malnutrition and that the child must have proper hours of recreation, rest and sleep. These, however, are generally regarded as contributory factors to dietetic faults or physical defects.

For several years I have had considerable interest in a group of older children who are underweight and thin, but who, aside from this, do not present any striking pathologic picture. Physical examination fails to reveal such underlying causes as a masked juvenile type of tuberculosis, chronic gastro-intestinal indigestion, endocrine disease, postural defect, and the like. While the majority of the children come from classes in good economic circumstances, in which, theoretically at least, there has been careful supervision as to diet, clothing, etc., I have seen a number of this same type of child in the municipal welfare centers. Underlying economic factors leading to unhygienic living conditions, teeth decayed through neglect, inadequate or unbalanced diets, and the like, seemingly do not play a rôle. The simple outlining of diets and prescribing the ordinary amount of rest fail as a rule to improve the situation, although the directions are carefully carried out. At first I was inclined to regard the condition of these underweight children in the light of some hereditary trait or characteristic, but this explanation was frequently a stretch of imagination. As some of these cases came to me rather in my capacity as family physician than as consultant or clinic chief, I was able to observe carefully the daily life and habits of the children, and more and more came to the conclusion that fatigue was the basic difficulty, and treatment outlined from this viewpoint has given quick and satisfactory results as a rule.

DEFINITION OF FATIGUE

As a matter of fact, it is not easy to define just what we mean by the word fatigue. The word is

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used today chiefly in an industrial sense, implying the overuse of certain groups of muscles, resulting from the protracted stimulation of the motor mechanism or from strained attention. In the care of the child, we use the word in a rather different sense; for there is rarely any excessive use of groups of muscles from the constant repetition of the same act nor, as a rule, is attention in a child ever concentrated on certain objects or movements for hour after hour.

The normal child spends his day in hard physical play or exercise, changing constantly from one kind to another. Period after period of physical exercise almost to the point of overexertion is followed by brief intervals or periods of rest in which restitution is rapid and complete. It is almost impossible for a child to maintain a sustained period of effort as an adult does, but the sum total of these brief periods of activity in children is seemingly much greater than is the sum total of effort in the adult. The tiring out after these intervals of play is a normal process and we cannot speak of it as fatigue in the pathologic sense; but whenever the child fails to relax sufficiently between these periods of activity, or when the long period of night rest or sleep is insufficient or broken, there is a failure on the part of nature to make up for the losses of the periods of activity. The causes of fatigue, using the word in this sense, are many and usually multiple in the individual case. Physical exercise alone is rarely ever a cause, particularly the physical exercise or supervised play which is so common today as a part of our school curriculum. The same may be said of excessive study; but if we add to these two, in normal amounts, the complex social life of the modern American child, a combination results which, in my opinion, is as important and as dangerous to the normal development of the child as any of the common well recognized physical defects. Fatigue, as we all recognize, may act as an important contributing cause in the production of malnutrition, but it seems to me that it is a causative factor of so much importance that it ranks equal with the usual dietetic errors which are so common. This importance is clearly demonstrated in the group of cases which I have mentioned, in which there is no demonstrable physical or dietetic errors, but underweight and failure to develop are striking.

Let me quote two cases from my records:

REPORT OF CASES

J., a girl, aged 12 years, thin, and some 20 per cent. underweight, was bright in school and up in her classes, interested in basket ball, tennis and skating. Rising early to walk to school, she remained there until 2 o'clock. Then came supervised play and exercise of a hard nature, but not to the point of overexertion. In addition to this, however, there were at least two or three parties a week, and the first show at the movies two or three evenings. Friday and Saturday nights there were late parties and dances. Physically strong and wiry, the child was always on the go and quite naturally under a nervous tension. There was nothing fundamental the matter with her and she was rarely sick. She was simply living a life that prevents normal development and increase in weight. The entire fault was environmental, as the family traveled the same pace, and the growing child was simply a victim of the American craze of not dropping behind her crowd.

D., aged 9 years, height 51 inches, weight 46 pounds, when first seen had made no gain in weight for a period of thirteen or fourteen months. He was of a family of considerable

means, and from infancy had had most careful medical and physical supervision. He was extremely active, and interested not only in play but also in books, nature study, etc. His posture was good, his physical examination negative, except for the malnutrition. He was very sane and sensible, and considered that it was foolish to worry about him in any way; but his parents were very much worried because of his failure to gain. First overfeeding was tried without any particular success. His habits of life and bed hours were good, and he lived in the country outside of the city limits. Watching the boy over a period of time it was impressed on me that, although not at all of a nervous or neurotic temperament, he was always on a tension. Coming in from play to rest he would at once pitch into his books or studies and concentrate on them. The rest hour prescribed was not very successful. A mild exanthem forced a period of quarantine, and at once the lad began to improve. A potential "weak heart" from the scarlet fever enabled me to continue the rest cure, with exercises being added gradually until the lad was allowed all the forms of play of a normal child. The prolonged rest had put him in the habit of relaxation, and in less than a year he gained some 12 pounds, and he is continuing to gain. He is permitted to do anything that he wishes to do, with the understanding that he must continue to gain in weight, and he is held responsible for the rest which will enable him to do this.

COMMENT

These two cases illustrate how fatigue alone may be responsible for failure to gain weight and develop along normal lines. If, as in these cases, it is a basic factor, how much more important we must consider it as a contributory cause when associated with physical and dietetic causes. In these cases with multiple causes, I know of no way to allot exactly the part which each plays, except by the detailed study of the individual child.

THE QUESTION OF SLEEP

How much of a part the lack of rest plays, however, is shown in a gross way by some studies in one of our St. Louis nutrition clinics regarding sleep. The question of sleep is very closely bound up with the subject of fatigue and malnutrition. I have been asked so many times how much sleep a child of such and such an age should have, that I once looked the matter up to find whether the hours and amount advised by men who have written on the care of children agreed with my advice, and it was quite interesting to note the different views in the hours and amount of sleep advised.

Recently the London County Council issued a bulletin on this subject in response to the numerous inquiries which were made in regard to this question. Perhaps the most satisfactory advice occurs in one book which dodges the point at issue by stating that the amount of sleep required is an individual matter. While this is true, there is a minimum below which it is probably not safe to go with any child, and this sort of answer hardly satisfies the inquiring parent. It is, of course, absolutely impossible to lay down fixed hours for each age and, further, so many variables enter in, as the place of sleeping, sleeping equipment, general physical condition of the child, the amount of physical exercise or work the child performs, and the like, that latitude must be allowed and common sense used. But I believe there is a minimum, and so for my own work I have arbitrarily fixed a "minimum table," based largely on the amount of sleep of physically fit children, and in practice it has been fairly satisfactory.

In the accompanying table are given the minimum number of hours of sleep which I insist the child must take in the twenty-four hours. As a matter of fact, most children take more. But a normal, active child who takes less is on the danger line so far as normal development is concerned.

MINIMUM AMOUNT OF SLEEP

Age, Years	Hours
From 1 to 2	13
From 2 to 4	12
From 4 to 6	11
From 6 to 10	10
From 10 to 14	9

Interested in this question, we mapped out the hours of sleep of eighty malnourished children in one of our welfare centers. These children were between 6 and 12 years of age, and averaged about 9½ years. Taking the “minimum figures” quoted as a standard, we found that thirty-three of the eighty, or 40 per cent., actually spent an insufficient time in bed. When we take into consideration that, in many of these cases, sleep was more or less disturbed through overcrowding, insufficient air space, etc., lack of sleep as a contributing cause at least of malnutrition becomes apparent.

IMPRACTICABILITY OF THE FIXED SCHEDULE

There is a practical point in dealing with the undernourished child which I wish to discuss briefly, as it involves a fundamental error in treatment. A number of children have come under my observation whose day has been mapped out in hourly and semihourly divisions in the attempt to make the child take sufficient rest and limit his activities. The whole household revolves about Johnny’s doing a certain thing at a certain minute and his living on a fixed, inflexible schedule. The effort to maintain the schedule in itself keeps up or aggravates the condition it was intended to relieve. A life of “Don’t do this” or “Do this,” to relieve tension, will be given only by a person who fails to grasp the basic elements of child psychology. The best plan is to limit at first all violent play and insist on the minimum bed schedule. As soon as the child starts to gain, he is allowed any sort of play he desires in any amount, provided the weight continues to increase. He soon learns that rest and food are essential, and in my experience the child rapidly learns to limit his activities without a constant nagging by nurse or parent.

CONCLUSIONS

It may seem to you that I am putting undue emphasis on a very simple point. But I have found so many parents, teachers, physicians and nutrition workers who have failed to grasp the importance of fatigue and rest in the physical development of the growing child that it has made a strong impression on my mind and it has seemed to me that the subject needs emphasis from the medical standpoint. Every physician knows that rest forms the sheet anchor in the treatment of nearly every disease, but few seem to grasp its importance in preventive medicine.

Further, I believe there is a big broad question involved, and that is the life of the modern American child. This complex life, with its many-sided activities which leads to fatigue is but the reflection of the

environment in which the child of today is being reared. The “pace” of American life, which has created a type of nervous activity which characterizes the American wherever you find him, has been extending to the years of childhood, and we find the school child of today leading a life with his school athletics and social organizations which outdoes the life of the adult of a generation or so ago. It is a dangerous tendency from the physical standpoint. It is my belief that there is a necessity before the pediatrician of today of educating people in regard to the dangers of failing to limit the activities of the modern child. An educational movement in regard to the way the child’s life should be regulated from the physical standpoint is just as necessary as the widespread propaganda of recent years in regard to food values, bathing, care of the teeth, and like subjects. If in our work with undernourished children we are to obtain results, we must consider the type of living and environment in which the child is being reared, just as much as the question of his food, and if we are to avoid the development of malnutrition, we must actively take steps to prevent the growing child from living at a tension beyond his physical capabilities.

Humboldt Building.

THE EFFECT OF POSTURE ON THE HEALTH OF THE CHILD*

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Good health is necessary for the growth and proper development of the child both physically and mentally. The puny and physically unfit child is always backward or abnormal in its mental makeup. Healthy, and even rough, play, with its accompanying contact with other developing personalities, is essential for physical upbuilding and mental growth. Any factor then which limits or prevents a child from engaging in what has been termed “the normal activities of the growing child” must be considered a menace to its health and be taken into consideration. A child may fall well within the accepted limits as to weight, height, etc., and yet be so handicapped by physical limitations that its normal activities are seriously interfered with.

That posture, which so largely determines the manner in which we use our bodies, has a very decided influence on the activity and so on the health of the growing child, will not be gainsaid, we are sure, by any one who has given this aspect of child development any thoughtful consideration. Goldthwaite, in speaking of posture and activity, says:

To stand erect and walk and move easily, to have all parts of the body so adjusted that easy balance and graceful use may result, is to be desired for more important reasons than the esthetic. Such elements are necessary for perfect health and that we may use the body with least friction, the least expenditure of energy and with the greatest efficiency.

This was said long before the recent war brought out the fact that a considerable portion of the young men of America were unfit for military service because of postural defects.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

The correct posture for the child, as for the adult, is head up, chest up, shoulders up, abdomen in, legs straight and feet forward. With such a posture the height is so distributed that little muscular effort is nec-



Fig. 1.—Poor posture resulting in round shoulders, prominent abdomen and lordosis.

essary to maintain balance. The chest is full, the diaphragm is high, and there is plenty of room for the abdominal viscera, which are given effective support by the strong abdominal muscles. In brief, the child with such a posture is an efficient machine capable of the greatest activity with the least expenditure of energy.

Bad posture is the opposite. The head is down and forward, the shoulders stooped, the chest dropped down

and narrowed, and the abdomen prominent. Lordosis is present, the knees are hyperextended and the feet pronated and flat (Fig. 1). With such a posture the chest cavity is contracted, the vault of the diaphragm is lowered, and there is less room for the abdominal viscera, which are pressed downward. The upright position is maintained only by constant muscular effort because the body is out of balance. The result is muscle fatigue and circulatory congestion in the skeletal muscles and the viscera, and a machine in which friction is at a maximum. A child with such a posture will be active, but in its activity will waste precious energy which is needed for its growth and development.

What percentage of children have sufficiently bad posture to cause symptoms is difficult to estimate, as practically no dependable records are available. We know that in 1915, 20 per cent. of all children under 12 years of age seen in the orthopedic outpatient department of the University of Pennsylvania had some form of postural defect.¹ In one of the Boston hospitals, about the same time, it was stated that 44 per cent. of the children seen had static foot trouble; probably a large portion of these had other abnormalities of posture. An examination of 100 British school boys revealed that sixty-eight had deformities, such as knock-knees, bow-legs, or flat feet.² Brown³ and Talbot and Brown⁴ have written excellent articles on this subject. From this meager material we may at least conclude that postural defects in children are sufficiently common to demand attention. This presentation is based on forty-eight cases observed long enough to allow some conclusions to be drawn as to symptoms and results. The age of the patients was from 11½ to 14 years.

The causes of postural defects may be broadly divided into two groups, congenital and acquired. Under congenital causes are placed developmental defects in children born with lax muscles and loose joints associated with which we usually have a long mesentery and tendency to visceroptosis, the so-called long slender type. We are told that one out of five children born is of this anatomic type (Fig. 2). Under acquired causes come distortions of the lower extremities and pelvis. A difference in the length of the legs resulting in tilting of the pelvis, knock-knee, bow-legs and pronated or flat feet comprise in general these distortions (Fig. 3). Such deformities, for this is what they are, even when slight cause disturbances in balance which necessitate readjustments of the parts above and below to keep the center of gravity within the base of support. These readjustments result in lordosis, prominent abdomen, narrow chest, round shoulders, tilting of the pelvis, and at times scoliosis, that is, abnormal posture with a tendency to ptosis from lack of abdominal support and muscle strain with its symptoms. There are various underlying conditions which may be responsible for these acquired deformities. In our forty-eight cases, congenital conformation was considered as the cause in twelve, rickets was present in varying degrees in twenty-one cases, the glands of internal secretion were held to be at fault in five, congenital syphilis in three. There were seven cases in which no definite underlying cause was diagnosed.

The symptomatology, or perhaps better expressed, the effect of poor posture, is based on muscle strain and fatigue and early visceral ptosis with gastro-intestinal symptoms.

Muscle strain and fatigue manifest themselves in leg, knee, and foot ache, general tire and fatigue after ordinary activity, nervousness, irritability, and restlessness at night, lack of concentration and poor progress at school.

The low placed stomach and dropped and kinked intestines may cause a variety of symptoms. The failure of such a stomach properly to empty itself, and the drag on the duodenum with interference with the drainage of the bile ducts may cause gastric attacks with nausea, vomiting and fever. The lax abdominal walls with the lowered and kinked large intestine interfere with the proper evacuation of the bowels and cause chronic constipation, often associated with acute gastro-intestinal attacks. As pointed out by Talbot and Brown, this may explain many cases of cyclic vomiting. The



Fig. 2.—Congenital long, slender anatomic type.

1. Willard, D. B.: *Am. J. Orthop. Surg.* **13**: 241, 1915.

2. Smith, E. Noble: *Growing Children*, London, Smith, Elder & Co., 1899.

3. Brown, L. T.: *Boston M. & S. J.* **162**: 424, 1910.

4. Brown, L. T., and Talbot, F. B.: *Bodily Mechanics: Its Relation to Cyclic Vomiting and Other Obscure Intestinal Conditions*, *Am. J. Dis. Child.* **20**: 168 (Sept.) 1920; *Use of Supports in Obscure Abdominal Conditions*, *ibid.* **21**: 347 (April) 1921.

same authors have noticed an intolerance for fats in children with faulty bodily mechanics, a food element which is particularly important in these cases.

One of our cases, a child, aged 1½ years, with bow-legs and a pendulous abdomen, was a marked example of this. The child could stand, but could not walk and was generally

were used. We cannot say that any definite improvement resulted; probably in such cases, we may expect more from vitamins than from specific glandular therapy.

In correcting deformity, every effort was made to restrict as far as possible the use of apparatus, and at the same time, procure a plumbing up of the child from head to foot.

Mild cases of knock-knee or bow-legs with pronation of the feet were treated by wedging the inner margin of the shoe ¼ inch and by felt arch supports. In more severe degrees of knock-knee and bow-legs, braces were used, and continued until correction was satisfactory. In severe degrees of these deformities, osteotomy was advised, as the posture in such cases is always bad and correction difficult (Fig. 4).

Round shoulders, lordosis and prominent abdomen were treated with a light back and abdominal support consisting of two steel uprights extending from the lower end of the sacrum to the spine of the scapula. Added to these were shoulder straps and an apron in front. Such a support maintains good posture by lifting the abdomen, widening the chest, and holding the shoulders up and back. The children practically never complain (Fig. 5).

By exercises, we aim to tone up, and educate to proper action, the entire musculature of the body. At the same time special attention is given to those muscles which are most important in holding the erect position. These are the abdominal muscles, the muscles of the shoulder girdle and the gluteal muscles. Exercises are given daily in recumbency for the first week or two; then the correct standing position is taken up and the child is instructed in the way it is held. Exercises with carefully timed periods of rest are continued until the child stands correctly without support. Parents are

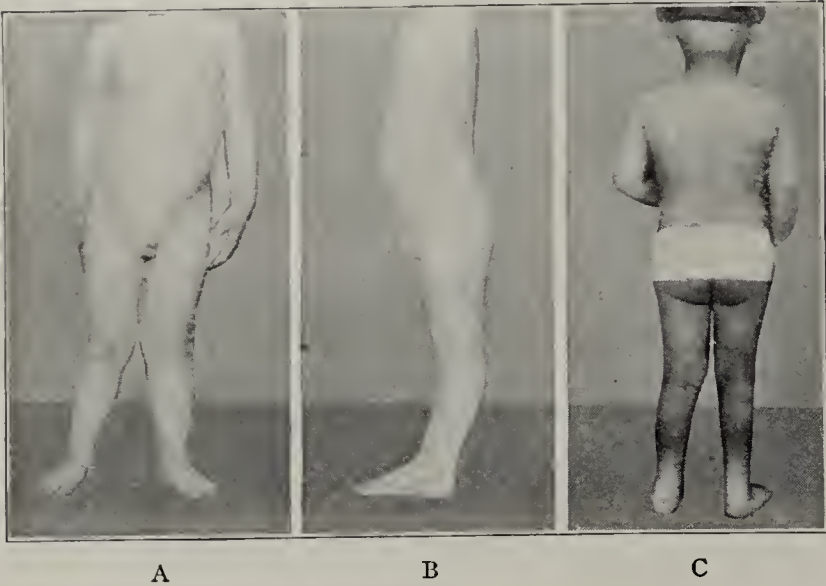


Fig. 3.—Acquired type of faulty posture, resulting from rickets: A, knock-knees, pronation of the feet and poor posture; B, position of back of knee; C, all symptoms of muscle fatigue. Constipation was present in this case.

weak and flabby. He suffered from severe constipation, and there were frequent gastro-intestinal attacks which were easily brought on by increasing the fats in the diet. Following the correction of faulty posture, the diet was rapidly controlled with a continuous increase in weight and a truly astonishing general improvement. Since mechanical treatment was begun there has been but one gastro-intestinal attack, and constipation has entirely disappeared.

Functional albuminuria has long been noted in children with lordosis and poor posture. Subacute arthritis in knee and hip is occasionally encountered in postural cases. This may be purely static, but there may be an element of intestinal intoxication as well.

The most common symptoms found in our cases are given in Table 1.

TABLE 1.—SYMPTOMS RESULTING FROM FAULTY POSTURE

Symptoms	Times Occurred	Per Cent.
Leg, knee and foot ache.....	24	50
General tire and fatigue.....	28	58
Nervousness and irritability.....	21	43
Failure to gain weight.....	10	22
Restlessness at night.....	12	25
Constipation	15	31
Periodic gastro-intestinal attacks.....	2	4.4

It is not asserted that any or all of these symptoms are ascribable to defective posture alone; but the presence of one or several of them makes the investigation of the posture and general mechanics of the child a rational procedure.

TREATMENT

The treatment of these cases falls under three heads: (1) diet and general care; (2) correction of deformity, and, (3) exercises.

The diet and general care have been left almost entirely in the hands of the pediatrician. In cases in which rickets was present, a diet with a high fat content and cod liver oil to promote the utilization of calcium has been insisted on. When the glands of internal secretion were considered at fault, glandular extracts



Fig. 4.—A, extreme bow-legs and poor posture, resulting in almost total inability to get about, much leg pain, nervousness and irritability; B, same patient after correction by osteotomy.

then instructed in giving the less complicated exercises, and the child reports at intervals for examination. Any tendency to relapse is counteracted by renewal of exercises and support. Supervision should be exercised until we are satisfied that the result is permanent. Exercises are not feasible with the very young; and up

to 4 years we must depend on correction of the deformity and the general activity of the child to accomplish our purpose for us.

The results in the forty-eight cases are given in Table 2.

TABLE 2.—RESULTS FOLLOWING TREATMENT TO CORRECT FAULTY POSTURE

Condition	No. Cases	Symptoms Disappeared	Patients Im-proved	Patients Unim-proved
Leg and knee pain.....	24	20	4	0
General fatigue and tire.....	28	28	..	0
Failure to gain weight.....	10	..	10	0
Nervousness and irritability.....	21	12	6	3
Restlessness at night.....	12	..	9	3
Constipation	15	8	4	3
Periodic gastro-intestinal attacks.	2	1	1	.

CONCLUSIONS

1. Poor bodily mechanics may often explain why a child is not enjoying the health and development it should, and may even explain acute conditions which may be affecting it. Therefore, a careful examination of posture should be a part of every medical examination, and the correction of postural faults, when found, should be insisted on.
2. Cooperation between the pediatrician and the orthopedist should be close in the care of these patients. In childhood the correction of faulty posture is comparatively easy, and if these two work together they should be able to prevent the bad effects which may follow its noncorrection.
3. The child is but the forerunner of the adult. Its conformation forecasts what manner of man will result when maturity is attained, and hence, for the future welfare of the individual, posture in childhood becomes important.

Waldheim Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. VEEDER AND DICKSON

DR. FRITZ B. TALBOT, Boston: The questions of fatigue and posture are interrelated in that they form a vicious circle. Fatigue results in poor posture, and poor posture results in fatigue. Consequently, when there is poor posture it cannot be cured without preventing fatigue. That is more important than exercises or mechanical devices used in correcting the improper posture. The reports (Talbot and Brown: *Am. J. Dis. Child.* 20:168 [Sept.] 1920) made on extreme cases of improper posture with extreme symptoms show how important posture can be in severe cases. Dr. Dickson emphasized the importance of the condition in milder cases, and it is a rather common experience for those who are taking posture into consideration to find that when posture and fatigue are corrected, such symptoms as lines under the eyes, lack of appetite and constipation disappear. The efficiency of the children also increases. I have been told many times that after the posture was corrected and the fatigue element eliminated, where the child had previously dragged around and had no interest in life when his posture was poor, he had rosy cheeks and played and ran around like other children. I want to emphasize one point, that in cases of cyclic vomiting we must always bear in mind that we have a potential appendix, and that the underlying basis of the cyclic vomiting may be not the posture but the chronic appendix. That has been the after-history of two of the cases Dr. Brown and I reported in which improvement resulted when the posture was corrected, but the child did not become entirely well. So always bear in mind that it may be a chronic appendicitis, and do not get carried away by enthusiasm in correcting posture and forget that there may be a surgical condition back of it.

DR. CHARLES F. WAHRER, Fort Madison, Iowa: I do not think there is very much the matter with these children except that they are the chronic chiropractor maladjustments. They are the descendants of old Micawber of Dickens, and of people who have very little orthoepy, less grammar, and no rhetoric. Otherwise, the causes are that these children have inherent malpositions, the results principally not so much due to heredity but to perpetual environments. It is only seldom that you find one that walks right and is balanced properly antero-posteriorly and from zenith to nadir. The fault lies with their parents, but how can you blame the parents for not teaching their children to walk straight and lie down straight when they have all their lives acted like the famous crooked stick that was so crooked that it could not lie still? These people either lean against something or they lie down until they are disturbed. But we have to bear on the vicious circle again and inform the public that they must not allow such things in their children. The poor overburdened school teacher, who is made responsible for everything, must not allow these children to walk badly. The paternalistic government must take hold of this.



Fig. 5.—A, poor posture, congenital type; B, correction by brace, and C, back view of brace.

DR. JOHN A. FOOTE, Washington, D. C.: I was interested in Dr. Dickson's statement that deformities are a mechanical factor in malnutrition, and I think it is equally important to emphasize the fact that malnutritive conditions in the child may, in turn, produce mechanical defects. While it is proper to say that postural defects are due to lack of muscle balance and to muscle strain and to maladjustments, at the same time, in the acquired types of these conditions, we do not know quite so much about their remote origins as we should. A very interesting series of observations was made recently by Dr. Louis Schroeder of New York, as a part of the work of the Association for Improving the Condition of the Poor. He made a study of about 2,000 children, all in a period of a few months, in that way averting the personal equation error which sometimes vitiates the accuracy of grouped clinical findings made by several men. Dr. Schroeder found between the ages of 2 and 6, a startling number of orthopedic defects. We have been taught that the incidence of orthopedic defects generally ranges between 2 and 3 per cent. in children of all ages, but Dr. Schroeder found that it was over 24 per cent. In the next group of children ranging in age from 6 to 12 years, he found that the orthopedic defects had dropped to less than 8 per cent. In analyzing the figures further it was

found that the types of deformities which had apparently automatically corrected themselves were deformities of the extremities, of the long bones, while the deformities which continued were those of the thorax, of the spine, etc., the more serious deformities. It seems to me that in studies of this kind we can find some reason for some of the acquired muscle fatigues and defective postures. Of course, habits are formed in childhood, and if the child during the first few years of life is training his muscles to correct deformities of his long bones, he acquires certain habits of posture, certain habits of overusing one muscle to correct balance, which he persists in after the original orthopedic defect which excited this imbalance has been corrected. That is why proper nutrition has a great influence in the prevention of postural defects. It is not surprising to learn that Dr. Schroeder found that practically all these defects were due to rickets. Here, then, we have not only a suggestion of the cause, but also a preventive agency and a remedy in the encouragement of the study of the child before he has acquired defective postural habits, the practice of what might be called preventive orthopedics, studying the child from the very time he begins to walk. Supervision of the diet as well as of the posture, the encouragement of breast feeding and prenatal care—all these are included in the term "child hygiene." Child hygiene is a specific for the prevention of rickets and all of its postural sequels.

DR. COLLINS H. JOHNSTON, Grand Rapids, Mich.: Poverty, malnutrition and tuberculosis are said to go hand in hand, yet in a survey of thousands of children in Grand Rapids, Chicago, Rochester and other cities, malnutrition has been found more common among the children of the rich than among those of the poor. In Grand Rapids, in our well-to-do districts, we found that 40 per cent. of the children had malnutrition; in the districts where the poor live, we found only from 20 to 25 per cent. Are we eventually going to find out that there is some other specific cause besides infection which is the important etiologic factor in tuberculosis, the same as we have found now that there is a specific cause for rickets? And are we to lay aside the assumption that the provisions we are making all over the country for tuberculosis preventorium and for the building up and getting rid of malnutrition in children are necessary?

DR. FLORENCE B. SHERBON, Topeka, Kan.: I agree with Dr. Johnston that nutrition was not sufficiently emphasized in the papers. I consider postural defects and fatigue among the many causes of malnutrition. At any rate, the nutrition of the child must be a fundamental consideration in the correction of either chronic fatigue or bad posture. You cannot educate a flabby, toneless muscle. You have to have normal nutrition before you do corrective work or before the child has anything with which to hoist himself upright and maintain a correct posture, which is, incidentally, an exceedingly difficult and delicate mechanical procedure requiring a constant play and interplay of many sets of muscles. Aside from the factor of feeding, which I consider is the fundamental factor in the consideration of both fatigue and posture, there are certainly mechanical factors involved which must be traced to the home, and the correction of which resides in the education of the mother. Another factor is the present general maladjustment of the American home to the needs of the growing child. One of these is the keeping of the infant from developing himself and exercising himself by everlastingly tying him in the cradle or in the go-cart instead of giving him a play-pen. Then there is the bad adjustment of the clothing, particularly stocking supporters. These distort the shoulder girdle, which is held on merely by skin and fascia during the early years before the child has had a chance to develop shoulder, back and chest muscles. Another element is the fact that there is nothing in the average home for the child to sit on between the floor and the adult chair, and he must crouch over his playthings while sitting on the floor. In general, he runs all day long with plenty of things to develop his legs, but we give him little or nothing to develop the muscles of his back, arms and chest and properly align his body.

DR. E. J. HUENEKENS, Minneapolis: I wish to emphasize what has been said about the importance of rest and correct posture in children. About a year ago I heard a paper by Drs. Talbot and Brown about improper posture, and I was so impressed that I went to the Goldthwait clinic and took his series of exercises myself. We are now using his methods in a preschool clinic and find that rest and proper posture are interrelated factors in malnutrition of children of preschool age. We insist on all of these children getting a rest twice a day, in the middle of the morning and afternoon. They are made to lie down in Goldthwait's position with a small pillow under the shoulders, but none under the head. It is not considered absolutely necessary that they sleep. Then they are put through his series of exercises. We find that while these two factors are important when the physical defects are remedied and the proper diet given, there are still a residue of cases which do not yield to any of these things. In the latter cases there is a faulty home environment. They live in an abnormal and neurotic atmosphere, something to which we do not pay enough attention. The treatment of these cases must be directed to the parents and not to the children.

DR. FRANK D. DICKSON, Kansas City, Mo.: Postural defects do not explain all the symptoms we find. Very often, there are other elements. In about 50 per cent. of these cases, rickets was present. I never consent to handling these posture cases without having a good pediatrician with me. I do not think that handling them from the purely mechanical point of view is the proper way at all. I said in my conclusions that it was only by the closest cooperation between the pediatrician and the orthopedist that we get the best results. I think that those of us who are engaged in orthopedic work are in a little better position to correct postural faults, and I am sure that when it comes to the question of diet and regulating the life of the child, the pediatrician has a great deal more information and more experience than I have had. But I think that both in the charity cases and in those of more affluent circumstances, we should in one way or the other get together and turn these children out at least with a fair chance at life, because that is what a great many of them do not get.

DR. BORDEN S. VEEDER, St. Louis: Every one recognizes that malnutrition is a very complicated subject and that there are many causes in its production. My object in bringing up this question of fatigue was simply that almost all our emphasis has been placed on diet and the correction of physical defects, such as carious teeth and bad tonsils. I am not at all minimizing the importance of these things, but it has been my experience that the correction of these alone will not give satisfactory results in a large percentage of cases, and I wish to emphasize the necessity of proper rest along with the other factors.

Accidents in Cement Industry.—According to the Bureau of Mines, accidents in the cement industry during the year resulted in the death of 39 men and the injury of 2,585, showing that for each thousand men employed during a standard year of 300 working days, 2.75 deaths and 182.49 injuries occurred. The corresponding rates for 1919 were 2.66 killed and 231.59 injured. Of the total number of accidents, 21 fatalities and 875 injuries occurred in and about the quarry pits, and 18 fatalities and 1,710 injuries occurred at the outside plants. Nonfatal injuries to men working inside the quarries were due principally to the following causes: 135 to haulage accidents, 121 to falls or slides of rock or overburden, 91 flying objects, 78 machinery, 61 handling rock at face of quarry, 50 falling objects, 36 falls of persons, 35 timber or hand tools, 28 explosives, and 23 to drilling or channeling. Of the injuries at the outside plants or mills, 207 were caused by machinery, 194 by hand tools, 179 by falling objects, 178 by flying objects, 145 by burns, 132 by falls of persons, and 125 by haulage accidents. Among the states having the largest number of accidents were Pennsylvania with 514, California, 412; Missouri, 260; Kansas, 258; Texas, 209; Illinois, 137; New York, 99, and Washington, 29.

OBSERVATIONS ON THE HEART IN DIPHTHERIA *

S. CALVIN SMITH, M.S., M.D.

PHILADELPHIA

From the standpoint of general practice, there are few if any acute diseases in which heart disturbances are more likely to arise than in diphtheria. Certainly there are no infections, either acute or chronic, in which circulatory failure and prompt fatalities ensue with such alarming suddenness. The treacherous action of diphtheria on the heart is notorious, and yet there are many instances of the disease in which the heart becomes markedly irregular at intervals and perhaps remains so throughout recovery without any symptoms or signs of circulatory failure. The studies here presented were undertaken for the purpose of establishing, if possible, criteria by which a clinically satisfactory differential diagnosis might be made between the simpler pulse disturbances which are of little consequence and the serious heart abnormalities which result fatally.

The cardioclinical and cardiographic observations which constitute this report are based on a study of 242 patients suffering from diphtheria of varying severity

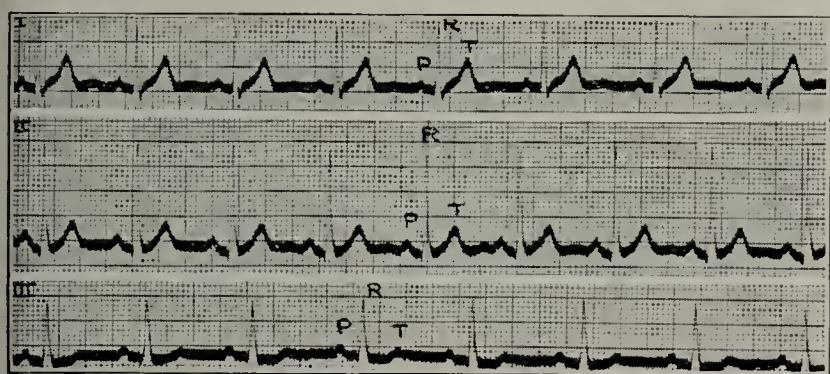


Fig. 1.—Normal electrocardiogram (for comparison with subsequent illustrations). An electrocardiogram depicts the course of the excitation wave as it travels along the conduction system of the heart. The representative of the auricular impulse is called the *P* wave. The *Q-R-S-T* complex denotes ventricular activity. *Q-R-S* indicate the spread of the contraction wave in the fibers of Purkinje. *T*, it is believed, represents the final activity of the ventricles. A cardiac cycle begins where *P* leaves the base line and terminates with the end of the *T* wave. From *T* to *P* is the diastolic period of the heart. Usually, each cycle is a rhythmic repetition of its predecessors. Abnormalities of the cardiac mechanism are present when any of the waves of one or more cycles are changed in sequence, in amplitude, in direction, duration or distance, as shown in the following electrocardiographic studies.

and extent, involving the respiratory tract, who were admitted to the Philadelphia Hospital for Contagious Diseases during the summer months of 1920. For the opportunity of making the studies I am under obligation to Dr. C. Lincoln Furbush, Director of Health of Philadelphia.

Of the 242 patients, the vast majority presented a rapid heart rate as the only evidence of cardiocirculatory disturbance on admission. Seventy-two per cent. of the number progressed through convalescence from diphtheria without any further evidence of cardiac disturbance. The other 28 per cent., after a lapse of several days in the hospital, showed vagaries of the pulse and some of them gave evidence of grave cardiocirculatory fault. It thus became evident that the heart abnormalities encountered in these studies of diphtheria could

be divided, for the purpose of discussion, into two groups in the order in which they appear, namely, a period of what may be called initial tachycardia, including the vast majority of admissions; secondly, those which later on presented manifestations which can be tentatively known as the irregularities of convalescence, embracing 28 per cent. of the total number.

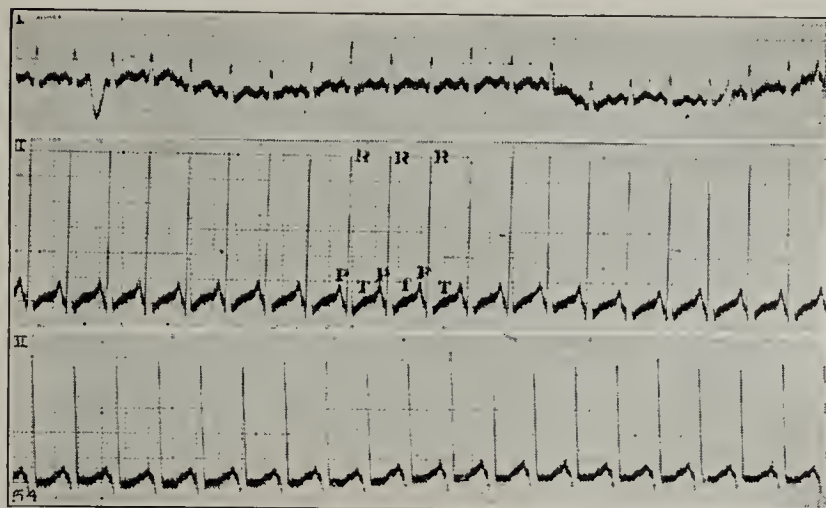


Fig. 2.—Initial tachycardia of diphtheria: Rate, 172.

INITIAL TACHYCARDIA

Tachycardia, as shown in Figure 2, was the only heart disturbance present at the time of admission to hospital, in those patients who were admitted in consequence of positive cultures from a suspicious throat or within a few hours after a diphtheritic membrane was observed. When diagnosis and antitoxin treatment had been neglected until the diagnosis finally became apparent, sufficient days had, of course, elapsed in the interval for the period of initial tachycardia to pass, and heart block was manifest by the time of the delayed admission. Such a circumstance is illustrated in Figure 3, in which the child was admitted to the hospital on the seventh day of the disease.

The initial tachycardia varied in rate from 135 to 172, the average for six records being 149.8 per minute. The average rate of 150 beats per minute is greater than that ordinarily encountered in febrile conditions and, if produced by sympathetic febrile acceleration of the pulse, could be expected to subside within thirty-six or forty-eight hours following the administration of antitoxin. However, if the tachycardia was the result

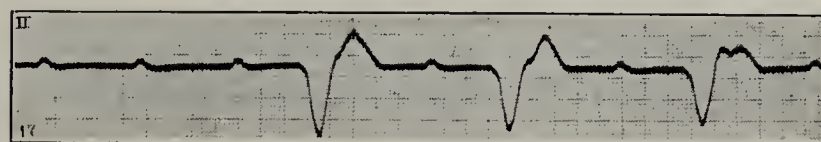


Fig. 3.—Heart block on delayed admission: This record was taken during the first hour following admission to the hospital of a patient in whom diagnosis and antitoxin treatment had been delayed until the seventh day of the disease.

of direct invasion of heart tissue by toxins, producing a moderate degree of myocarditis which was suggested by abnormality in the waves of the electrocardiogram (Fig. 4), then the initial tachycardia persisted for a period of several days following the disappearance of the diphtheritic membrane, and persisted despite general improvement in the clinical condition of the patient. Such continuance of the initial tachycardia was of ill portent, and in four cases of this series of studies eventuated in heart block similar to that shown in Figure 5.

* Read before the Section on Practice of Medicine at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

IRREGULARITIES OF CONVALESCENCE

It is logical to assume that convalescence from diphtheria has begun when the membrane begins to recede and when toxic manifestations decrease in severity. Such clinical circumstances are produced by the admin-

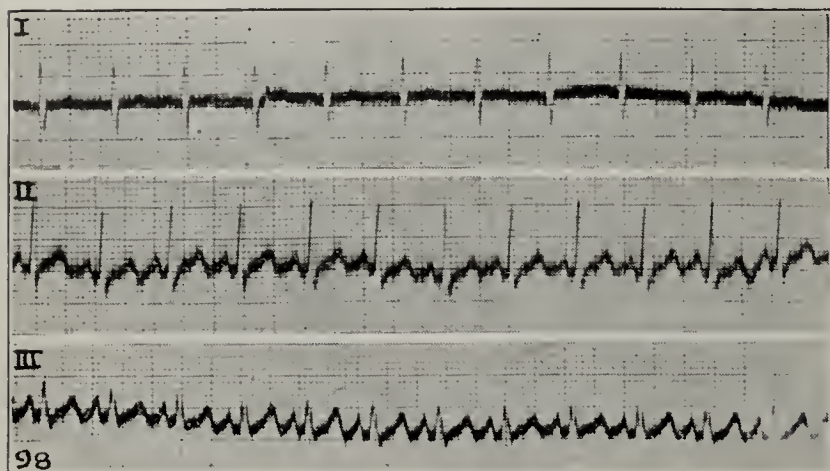


Fig. 4.—Tachycardia on admission: Ventricular rate, 135. Seven days later the curves of Figure 5 were taken.

istration of antitoxin. Therefore the convalescence from diphtheria has its beginning when antitoxin is administered in sufficient quantity to produce a therapeutic result. Granting this premise, the 28 per cent. of patients who developed heart abnormalities between the sixth and the eighth day following antitoxin may be said to have exhibited irregularities of convalescence.

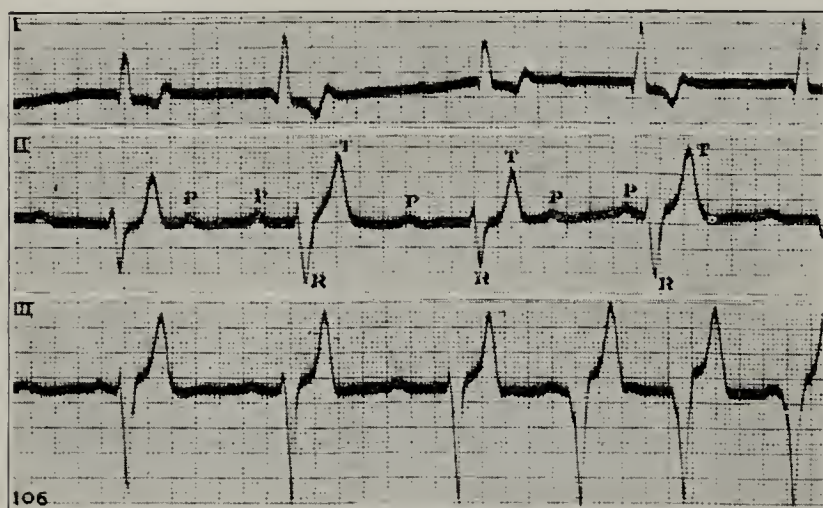


Fig. 5.—Sudden heart block: Seventh day; one hour after pulse suddenly fell to 37.

Approximately 65 per cent of the convalescent pulse irregularities consisted of nothing more than sinus arrhythmia (Fig. 6), which is generally believed to be physiologic in childhood and natural to some hearts; or else they took what I believe is equally as innocent a form of irregularity, namely, sino-auricular block (Fig. 7). Evidence to sustain this opinion will be offered farther on. Both conditions are capable of clinical recognition in the majority of cases. The irregularity of sinus arrhythmia, as is well known, is characterized by an increase in rate on inspiration, by a decrease on expiration and by the rate remaining unchanged when the breath is held. That due to sino-auricular block, I find, diminishes when the heart rate is accelerated by emotional disturbances, by sustained interest or as a result of physical effort; under such circumstances the pulse no longer seems to drop beats rapidly. Neither one of these minor irregularities is striking in onset, neither is progressive in nature,

neither eventuates in a more serious irregularity, nor is either sinus arrhythmia or sino-auricular block ever attended by symptoms of urgent cardiac embarrassment.

Premature contractions furnished 20 per cent. of the irregularities of convalescence, those of auricular origin occurring five times as often as ventricular premature beats. There is nothing in these studies to indicate that premature contractions herald the approach of graver cardiac involvement (Figs. 8 and 9).

As already stated, sinus arrhythmia and sino-auricular block constituted 65 per cent. of the heart irregularities, while premature contractions furnished an additional 20 per cent. of what may be called minor pulse disturbances. The remaining 15 per cent of pulse abnormalities were due to the sudden inception of high grade heart block about the seventh day, which rapidly progressed in deepening degree (Fig. 5). Three out of every four children thus affected could be expected to die before thirty-six or forty-eight hours had elapsed; an occasional one survived a few days longer. The earliest death of these studies occurred within five hours after heart block was announced by a sudden

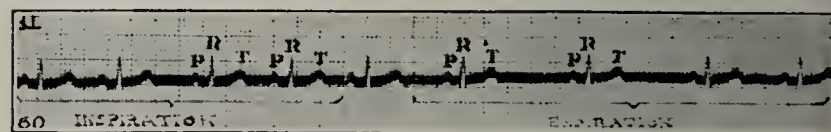


Fig. 6.—The sinus arrhythmia of childhood: This physiologic irregularity of the child heart is recognized by the gradually varying distances between the tall R spikes of the record, and by the gradually varying lengths of the flat base-line, which represent diastole. Note that each P (auricular) wave is followed in natural sequence by the R and T (ventricular) waves, despite the distances between cycles.

reduction of one half of the preexisting pulse rate (Figs. 4 and 5).

Before proceeding to a discussion of the various abnormalities mentioned above, it might be well at this point to consider a question which naturally arises: Could the administration of antitoxin have been in any way responsible for the development of the convalescent abnormalities? If the employment of antitoxin was going to affect the heart adversely, it would be logical to expect that the disturbance would occur during the first few hours which followed the use of the serum and not be delayed until the sixth or eighth day. The customary effect of antitoxin is illustrated in a

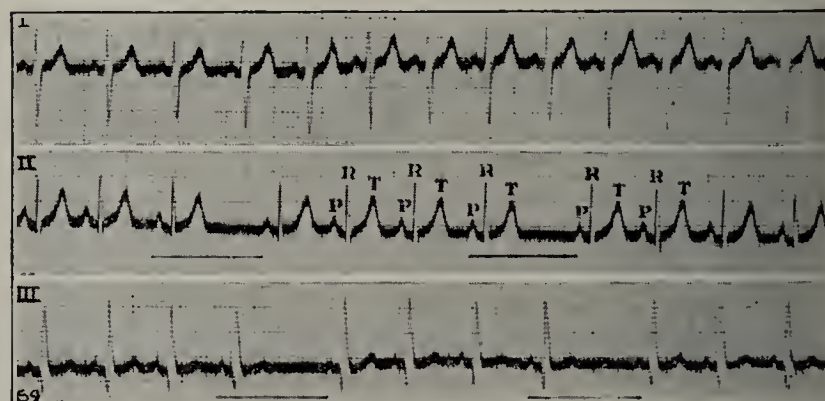


Fig. 7.—The "sino-auricular block" of convalescence: Leads II and III show long periods of diastole, due to a temporary abeyance of the impulse for contraction at the sino-auricular node. This condition is differentiated from sinus arrhythmia by the fact that there is a sudden lengthening of diastole, as though a beat were dropped out.

patient who was studied from the hour of admission to the fourth month after recovery in whom the heart rate was 142 before the injection, 160 the first minute after, 112 three minutes later and 112 on the first and second

days thereafter. Antitoxin promptly improves, rather than aggravates, the condition of the heart. There was one patient in whom the use of antitoxin could be credited with producing heart abnormalities, observed in a case of anaphylactic shock. The patient on admission yielded an electrocardiogram in which the waves were normal; three minutes after the intravenous injection of 15,000 units of diphtheria antitoxin there was evidence of marked auricular enlargement in the graphic record; thirty minutes after the injection the auricles were contracting asynchronously, the ventricles were contracting asynchronously, and right ventricular preponderance was present. A violent chill then ensued which lasted until the death of the patient two hours after admission. This prompt fatality was undoubtedly due to antitoxin; but there was no evidence whatever to indicate that antitoxin might be responsible for convalescent heart abnormalities.

"SINO-AURICULAR BLOCK"

It is generally believed that the irregularity called sino-auricular block, as illustrated in Figure 7, is a pathologic condition. Once established, the condition is said to persist or to progress; it is not supposed to abate or to disappear. It has been stated by some observers that sino-auricular block is the precursor of

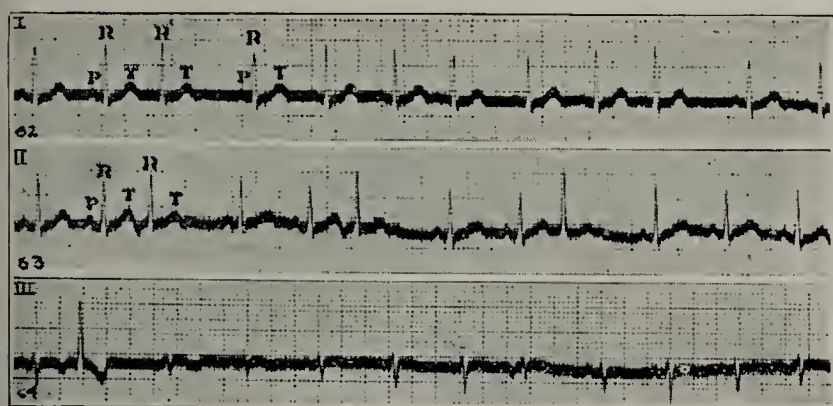


Fig. 8.—Multiple auricular premature contractions: The irregular distance between beats is caused by premature contractions originating in the auricles, as evidenced in the variations in form of the auricular wave P. In Lead I the P wave preceding the irregularity is isoelectric (flat); in Lead II, preceding the irregularity, it is buried in the T wave of the previous contraction, evidenced by the increased size of the T so situated; in Lead III the P wave is inverted preceding the irregularity.

higher grades of block and that its detection warrants heart care.

In diphtheria this irregularity was invariably observed in convalescent patients; it invariably occurred alone and was not associated with any other low-grade block, such as delayed conduction. Furthermore, sino-auricular block did not eventuate in block of higher grade. Experimental studies led to the belief that sino-auricular block is often physiologic; it can be either induced or made to disappear by manipulating the psychic processes or muscular system of the individual who exhibits the phenomenon.

Records sustaining these findings and indicating that mental stimulation or physical effort will cause sino-auricular block to disappear, and that opposite circumstances will cause it to reappear, will be reported elsewhere.¹ Sufficient has here been said to indicate the harmless nature of the phenomenon.

PREMATURE CONTRACTIONS

Twenty per cent. of the pulse irregularities occurring in patients convalescent from diphtheria were due to

premature contractions, as illustrated in Figure 8. Note that in the return study (Fig. 9), taken five months later, all auricular abnormality has disappeared and the electrocardiogram is normal. The child was also apparently normal at the time of return study.

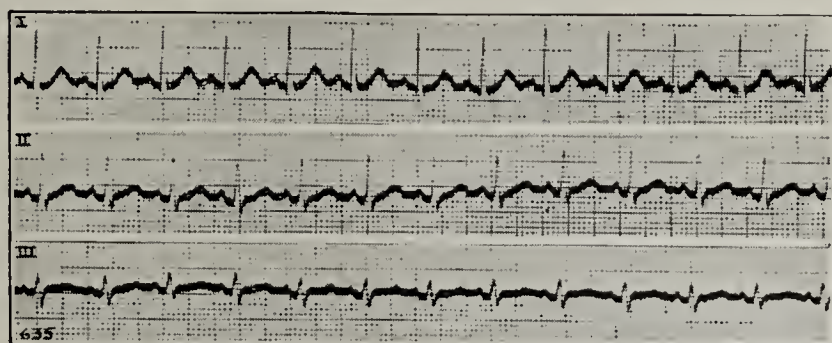


Fig. 9.—Disappearance of premature contractions: Five months after the hospital records in Figure 8 were taken, the 7-year-old child returned from school for further heart study and yielded the records of this Figure 9. Auricular premature contractions have completely disappeared.

These records demonstrate that even the multiple auricular premature contractions which may arise in diphtheria, and which produce a most disquieting irregularity at the time, do not impose a heritage of heart muscle weakness on a child whose parents insist on heart-care after the patient returns home.

In diphtheria, auricular premature contractions were found to reverse the usual clinical finding by occurring five times oftener than ventricular premature contractions. One might seek to explain this predominance on the grounds that an acute infection is more likely to cause irritable foci in the lightly constructed auricular musculature, rather than in the thicker, more vascular and hence more resistant ventricular muscle. Premature contractions of ventricular origin are clinically the more frequent, probably for the reason that they are often associated with structural change in the heart muscle of the middle-aged or elderly persons who are seen in hospital or private practice. Auricular premature contractions, on the other hand, are more a manifestation of a mildly acute toxic effect on heart tissue which has not as yet undergone actual alteration in structure.

Auricular Fibrillation.—Reasoning along the lines of degenerative changes in heart muscle, one might find a fairly satisfactory explanation for the total absence

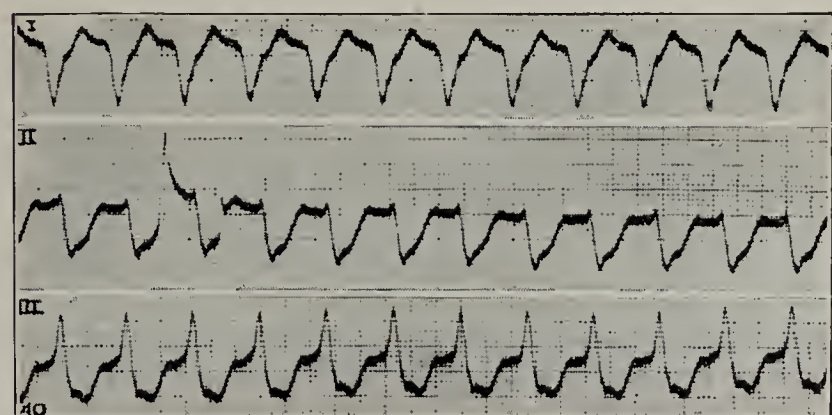


Fig. 10.—A bizarre record in toxic myocarditis.

of uncomplicated auricular fibrillation in a study of diphtheria. It will be conceded that auricular fibrillation is, for the most part, an evidence of structural change in the auricular musculature. In a disease so acute and fulminating as diphtheria, there is usually not a sufficient lapse of time between onset and termina-

1. In an early issue of the American Journal of the Medical Sciences.

tion to permit of actual structural alteration in heart tissue. Structural myocardial change, such as is so frequently found at necropsy in hearts which exhibited auricular fibrillation, can usually be attributed to either definite antecedent damage, chronic infections or perhaps to long continued and excessive physical strain; none of these factors exist in that fulminating disease of childhood, diphtheria; hence auricular fibrillation was not encountered.

ACUTE HEART BLOCK IN DIPHTHERIA

Fifteen per cent. of the pulse irregularities which occurred between the sixth and the eighth day of diphtheria convalescence were due to the sudden inception of high grade heart block, the *bête noire* of diphtheria.

It might be well at this point to sketch briefly certain fundamental features of the condition. Normally, the impulse which results in the contraction of the heart has its origin in the right auricle, and is transmitted to the ventricular muscle over a definite established neuromuscular pathway called the conduction system. The normal ventricle depends on auricular tissue to originate, and on the conduction system to transmit, the

pendently of each other and without any sequence whatever; the dissociation of the chambers is complete.

Predisposing Circumstances.—There are four circumstances which lead one to anticipate the occurrence of heart block in diphtheria convalescence. The first is constitutional inferiority of the patient; one whose physical reserve has been depleted by previous illnesses or by malnutrition, or who is for any reason constitutionally inferior, may be expected to have a stormy convalescence from diphtheria with the cardiovascular system as the center of the storm. The second predisposing circumstance is the amount of time, in hours, which has elapsed between the onset of disease and the administration of antitoxin in therapeutic dose. The third is the degree of toxicity at the time of membrane formation; if the patient is then profoundly toxic and reacts slowly to antitoxin, a cardiac emergency is likely to arise later. The fourth ominous circumstance is protraction of the initial tachycardia over a period of several days: in such instances it is probable that the increased rate is not due to the usual sympathetic irritation or vagal depression, but likely arises as a result of direct toxic invasion of heart muscle from the onset;



Fig. 11.—Toxic heart block: Note the long period of ventricular inactivity which in Lead I amounts to three seconds and in Lead II the period of pulse quickening which may be interspersed in toxic heart block, deceiving the person whose examination of the pulse is cursory

impulse which results in ventricular contraction. Heart block, then, is a term describing the blocking or stoppage of the impulse for the heart's contraction, and it may have its seat at any point along the neuromuscular pathway. Such blocking of the impulse interferes with the natural, sequential and orderly response of the ventricles to the auricular impulse. In the lower grades of block the ventricles still respond to the auricular impulse, but the response is sluggish or delayed. By high grade block is meant failure of ventricular response to auricular impulse. The failure may be partial or it may be complete. If the ventricles respond only to alternate auricular contractions, the condition is called "two-to-one" block; but if the impulse for contraction is so completely blocked that there is no transmission whatever of the excitation wave from auricle to ventricles, the condition is known as complete heart block.

Under such circumstances, the ventricles are capable of initiating a rhythm of their own, in the neighborhood of 28 or 30 beats a minute, and the auricles continue to contract at the individual's customary heart rate of 75 or more beats per minute. Auricles and ventricles are now contracting absolutely inde-

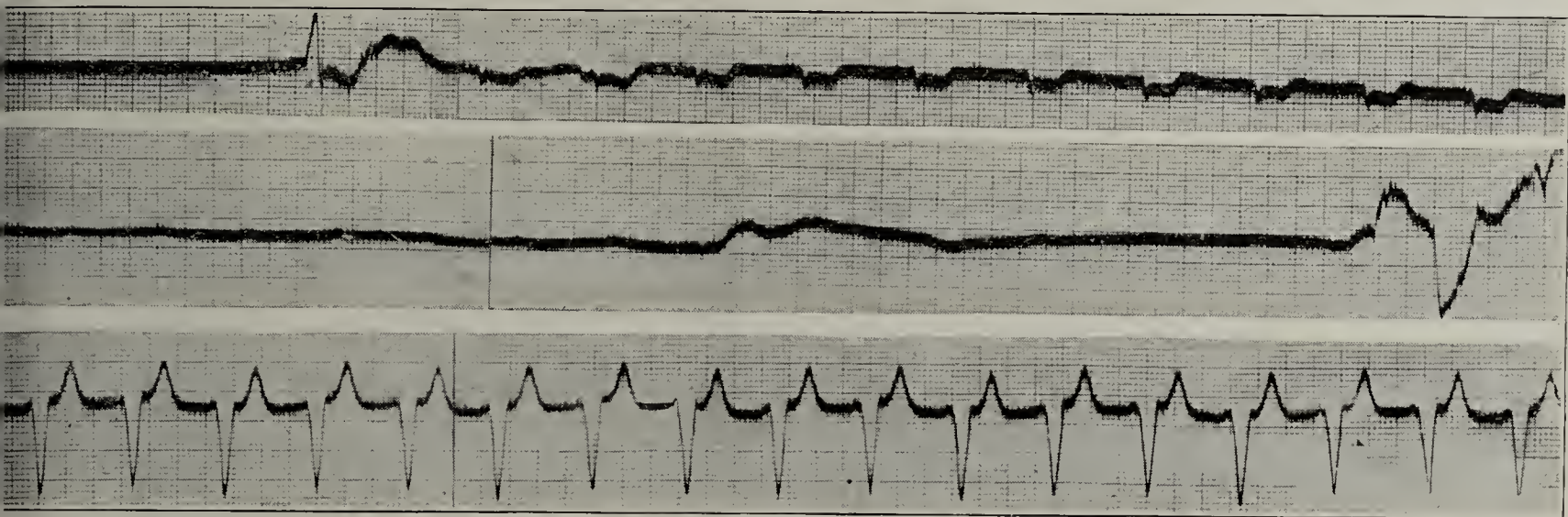
pendently of each other and without any sequence whatever; the dissociation of the chambers is complete. The rapid rate thus sustained, and the ever-deepening invasion of heart structure as the days go by, could readily result in a depletion of cardiac reserve force until the conduction node itself became impregnated with the toxins, giving rise to a condition which may be designated as toxic myocarditis, or toxic heart block (Fig. 10).

Clinical Course.—It is characteristic of the acute heart block of diphtheria that it is essentially high grade from its earliest recognition. It is strikingly sudden in onset and may result in the halving of the preexisting pulse rate within an hour. During the course of these studies, not one instance of low grade block was observed.

The malady rapidly advances, and the patient, while critically ill and to a degree apathetic, is conscious and may be aroused; an occasional patient is fretful and restless. The extremities are cold, the skin colorless, and the pallor of the patient is of that character which makes a physician instinctively apprehensive. Blanching around the mouth is a striking peculiarity. The beats of the radial pulse, which may at first be sixty a minute or thereabouts, soon are separated by longer intervals; there may be occasional intervals of pulse quickening

(Fig. 11). The pulse is of low volume and easily compressed; the precordial impulse, if discernible, is faint and circumscribed; there is considerable difficulty in detecting pulsations of the femoral and popliteal arteries. The respirations are slow, shallow and usually quite regular. Cheyne-Stokes respiration, characteristic of the terminal heart block of later life which is due to structural alteration in heart tissue, is more often absent than present in the acute heart block of diphtheria convalescence. In studying this acute affection I never succeeded in hearing the regularly recurring auricular contractions which one may ordinarily expect to hear, with ear laid to the chest, during the periods of ventricular silence of complete heart block. Nor was I ever able to discern four or five waves in a pulsating jugular to one wave in the carotid; the vessels of the neck did not pulsate in the toxic block of these children and young adults as they do in the cardio-sclerotic blocks of later life. The clinical diagnosis of heart block was based on the predisposing circumstances, the precipitous fall in pulse rate about the seventh day, the appearance of the patient and the profound cardiocirculatory urgency. Electrocar-

tural change in heart tissue, such an event as spontaneous resumption of normal rhythm could not occur (Figs. 14 and 15). If the toxic invasion is in that part of the myocardium through which the greater trunks of the conduction system course, prompt and rapidly progressive heart block would result, and death be due to toxic myocarditis. On the other hand, that area of the myocardium to be invaded might be remote from the bundle of His and its main branches; under such circumstances there would be no clinical evidence of cardiac involvement, and as time went on, fatty degeneration or interstitial myocarditis—the likely sequelae of toxic invasion—would ensue and at a later date would result in complete inhibition of cardiac contraction. This hypothesis will account for the instant and unexpected deaths in persons who have to all appearances fully recovered from diphtheria. The possibility of recognizing such myocardial degeneration when clinical recognition has so often failed lies in the hope that electrocardiography, perchance, may record an aberrant pathway of the excitation wave as it courses along those finer arborizations of the conduction system which are distributed in affected areas of heart muscle.



o twelve seconds. Four minutes later, when Lead II was taken, rhythmic regularity appears, the heart rate being 90. Lead III illustrates and inattentive.

diography confirmed the diagnoses thus predicated.

The symptoms and signs described above deepen in degree (compare Figs. 12 and 13) until life is extinct, death usually occurring within twenty-four or thirty-six hours of the onset of heart block. As previously stated, three out of every four children thus affected may be expected to die within this time limit; one patient survived the inception of block for only five hours, and two others of the series lived until the fourth day after. There was but one patient in whom spontaneous return of atrioventricular conduction was observed, on the fourth day following the inception of heart block (Figures 14 and 15); but the heart was evidently too exhausted to maintain the improvement, and before twenty-four hours had elapsed the patient quietly passed away. None of the children who were stricken down with acute heart block in convalescence got well.

Heart block is generally regarded as but localized evidence of a more widely spread involvement of heart tissue; the conduction system has simply shared in the general involvement of heart structure. In diphtheria, acute heart block in all likelihood arises as a result of toxic invasion of heart muscle; were it due to struc-

Certainly every person convalescent from diphtheria is entitled to such aid as electrocardiography might afford; and every contagious disease hospital is entitled to such a certificate of stewardship as repeatedly normal electrocardiograms would prove to be in the patient who is discharged as cured.

SUGGESTIONS IN TREATMENT

Certain clinical deductions which are applicable in the treatment of diphtheria can be set forth:

1. The earlier antitoxin is used intravenously, the less likelihood there is of eventual heart muscle poisoning. The hope of preventing serious and probably fatal heart complications lies in four procedures: the exhibition of antitoxin in sufficient dose, by the intravenous route within the first twenty-four hours of diphtheritic invasion, followed by absolute rest for at least a week after the disappearance of all clinical symptoms and signs.

2. That objection which parents or patients may have to the intravenous use of antitoxin—the fear that it may cause sudden death—can be met by protecting the patient against the ever-present possibility of lethal anaphylactic shock through the simple expedient of first

employing a desensitizing dose (0.5 c.c.) of antitoxin; an hour after this small subcutaneous dose the full therapeutic dose can be slowly administered intravenously. It would seem better to delay the therapeutic dose for an hour, awaiting the action of the desensitizing dose, rather than to run the risk of (a) fatal anaphylactic shock, on the one hand or, on the other hand, (b) to invite serious heart complications by waiting forty-eight hours for an intramuscular injection to be completely absorbed.

3. Heart care should extend far beyond the usual quarantine period prescribed by law. It is not possible to estimate the load which such an acute infection as diph-

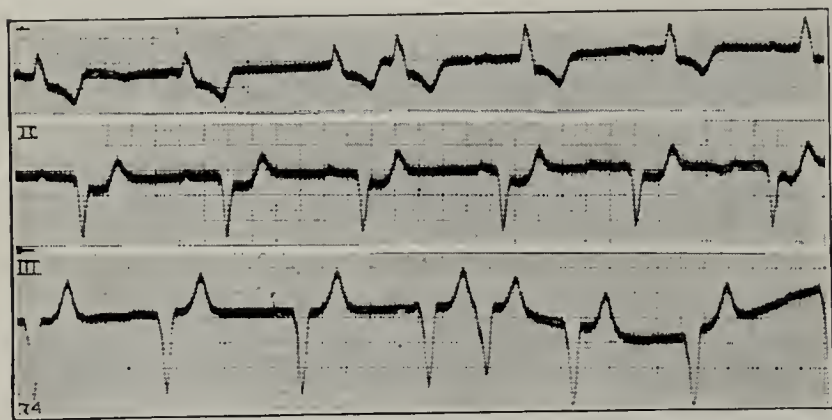


Fig. 12.—Toxic heart block: Circumstance, one hour after pulse rate fell from 128 on the sixth day of convalescence.

theria has thrown upon a heart; nor does the physician very often know the capabilities of the child heart prior to the battle with acute infection. It is therefore the part of wisdom to continue heart vigilance for several weeks following diphtheria and, even though the patient has to all appearances grown strong, to insist upon a gradual return to full physical activities, meanwhile studying the heart response under varying circumstances of rest and exercise until the full normal activities of the patient are resumed. The removal of infective tonsils and infective teeth when the patient is strong enough to undergo such operations will speed the days of complete recovery.

4. In protecting from overstrain the child heart which has passed through diphtheria or any other acute infection, regulation of school life is an important point to be considered. "Cardiac classes," where weaker children have comfortable furnishings, limited hours of study, stated and regulated periods of play, and where they are excused from routine gymnastics, fire drills, marches, etc., need not be limited to the large centers of population. The smaller communities can institute similar cardiac classes in their schools if the physicians of the community explain to the school boards the logic of saving the child heart to adult usefulness. Furthermore, such cardiac classes could with advantage include in their enrolment not only children with evidence of actual heart damage, but also children who have recently convalesced from any acute infection. The problem of cardiocirculatory efficiency in the adult can be met in the fullest sense only by conserving the heart of the child.

Drugs.—Atropin is of doubtful utility in the tachycardia of diphtheria. By its action on the periphery of the vagi, it may in some instances temporarily reduce the heart rate, but as a usual thing the rapid heart subsides as antitoxin reduces the amount of toxins which have been driving the heart.

Digitalis is distinctly contraindicated in diphtheria. In the minor pulse irregularities, such as sinus arrhythmia, sino-auricular block and premature contractions, the drug may, by stimulating the force of the ventricular contractions, reduce slender cardiac reserve to a degree at which there is a likelihood of the heart muscle's being damaged by toxins which may yet remain in the body. Again, in heart block it may further reduce the conductivity of the already invaded atrioventricular bundle to a point at which the slim hope of a spontaneous resumption of normal rhythm—which is the only hope—is destroyed (Figs. 11 and 12).²

Epinephrin, despite its fleeting action and the consequent necessity of repeated administration, will likely prove to be the stronger member of the usually inefficient group of drugs which are employed in the treatment of diphtheritic heart block. By sustaining the myocardium it may tide the heart over a critical period until such a fortunate incident as a spontaneous resumption of normal rhythm ensues in heart block.

Strychnin, by stimulating the suprarenals and causing an increase in suprarenal secretion, may have a similar beneficial cardiac effect, although the circulatory failure that is attendant on toxic heart block is likely to inhibit the response of the suprarenal glands to such stimulation.

Caffein, in the later days of convalescence from diphtheria, often proves to be a valuable aid in improving circulatory tone, as may also such systemic tonics as iron, quinin and strychnin.

Finally, it cannot be overemphasized that the time to treat the serious heart complications of diphtheria is long before they arise, on the first day of diphtheritic infection, by the proper employment of antitoxin. And the last obligation of the physician to the patient is to secure normal cardiographic records, taken before and after exercise, ere cardiac vigilance is relaxed in a person whose heart has been exposed to the storms of diphtheria.

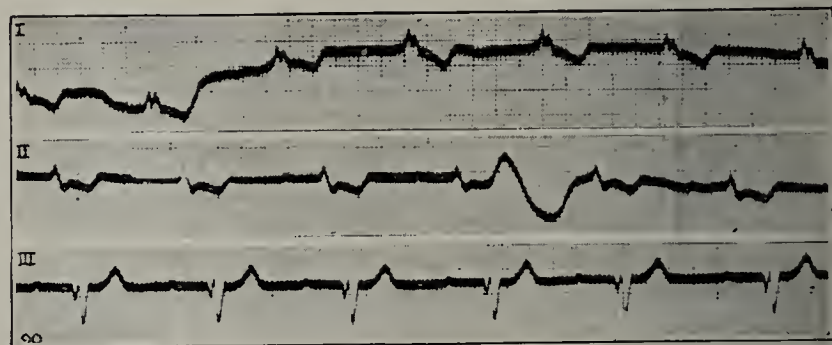


Fig. 13.—Same patient as shown in Figure 12. Note that what should be the slender, narrow R spikes are now notched, suggesting that the ventricles are not contracting synchronously.

CONCLUSIONS

1. The heart abnormalities which arise in diphtheria are manifest in disturbances of the conduction system, reflected in the pulse.

2. The pulse abnormalities can be divided into initial tachycardia and the irregularities of convalescence.

3. Initial tachycardia accompanies the appearance of the diphtheritic membrane and usually subsides within forty-eight hours following the exhibition of antitoxin; there may then be expected a period of cardiac tranquillity for six or eight days. Initial tachycardia is of

2. In this connection it may be stated that for several years at the Philadelphia Hospital for Contagious Diseases, Dr. S. S. Woody, the medical director, had a ruling prohibiting the employment of digitalis in diphtheria except on written permission.

serious import only when it persists during convalescence, and it may then be regarded as the probable precursor of heart block.

4. Pulse irregularities of convalescence may be expected to arise between the sixth and eighth day of convalescence in 28 per cent. of the children affected with diphtheria.

5. Of these convalescent abnormalities, 65 per cent. consist of sinus arrhythmia and of a condition called sino-auricular block; 20 per cent. consist of premature contractions; none of the three are accompanied by symptoms or signs of circulatory embarrassment, nor do they eventuate in serious circulatory disturbance.

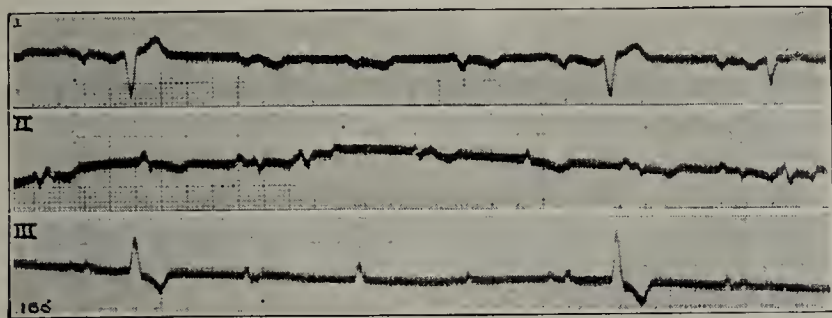


Fig. 14.—The heart block of convalescence: The irregularity was first noted on the sixth day of convalescence. The patient, contrary to rule, survived from day to day, probably in consequence of inherent heart muscle strength, and on the ninth day yielded the following electrocardiogram.

The remaining 15 per cent. of convalescent irregularities consist of high grade heart block, which is strikingly sudden in onset and accompanied by urgent cardiocirculatory symptoms; death therefrom may be expected within thirty-six hours. None of the patients survived.

6. Sinus arrhythmia is physiologic in childhood, and whether it arises spontaneously or is experimentally induced, its presence may be taken as evidence that the heart has in all probability returned to its customary rhythm.

7. Sino-auricular block, a term employed to define a pulse irregularity, is probably as physiologic as is sinus arrhythmia.

8. Premature contractions of auricular origin occur five times as often as ventricular premature contractions in diphtheria. In these studies they did not eventuate in serious cardiocirculatory disturbance.

9. Acute heart block is without exception the only pulse abnormality which resulted fatally during the periods covered by these observations. Its occurrence may be anticipated when the patient is constitutionally inferior; when toxicity is profound or persistent during the earlier stages of diphtheria, and when the initial tachycardia is protracted.

10. Acute heart block was not once observed early in the clinical course of patients in whom early diagnosis had been followed by early antitoxin treatment in therapeutic dose.

11. Auricular fibrillation, as a pathologic entity, does not seem to occur in diphtheria.

12. Diphtheria antitoxin temporarily stimulates the rate of the heart and decreases, rather than increases, certain pathologic waves of the electrocardiogram.

13. In a rare instance when anaphylactic shock followed the injection of antitoxin, there was evidence of auricular enlargement shown by the electrocardiogram; within thirty minutes the auricles were contracting asynchronously and the ventricles were contracting

asynchronously; right ventricular preponderance was present, a violent chill ensued and death occurred within two hours.

14. Digitalis is contraindicated in diphtheria.

323 South Eighteenth Street.

ABSTRACT OF DISCUSSION

DR. EDWIN H. PLACE, Boston: I disagree somewhat with Dr. Smith in regard to the increased susceptibility of the constitutionally inferior child. In my service the constitutionally superior child has been the one most likely to be injured by diphtheria poison. One of the striking peculiarities is not only the suddenness with which heart failure appears, usually on or after the sixth day of the disease, but also the completeness with which recovery occurs when the patient does not die. Deaths almost always occur within a few days. Patients who survive heart block for a week have a good chance for recovery; and death in this type never occurs after two weeks. Recovery undoubtedly occurs in marked cases of heart block. After recovery the heart is perfectly normal; after a few months no change can be shown to have occurred in cases which have shown marked disturbance. The electrocardiograph and all other instruments fail to detect any abnormality. The suddenness in this improvement is hard to explain if we appreciate that toxic injury has occurred to the neuromuscular tissues of the heart. My experience with digitalis is entirely in accord with Dr. Smith's. Digitalis has not been used for more than ten years. Digitalis has never yielded the slightest benefit, nor does any other heart stimulant. The only benefits accrued result from attempts to lower the work thrown on the heart rather than from attempts to raise the heart's capacity to do work. The treatment which seems to give the best results is the treatment which keeps the patient at the very minimum of metabolism. Persistent vomiting can be controlled only by giving nothing by mouth; by injection of fluids by rectum and under the skin to relieve thirst, a minimum amount of fluid, and the use of morphin in minimum doses to keep the patient in quiescence on account of the epigastric pain. The mortality in this type of involvement has been from 50 to 85 per cent., some series running lower than others. I should like particularly to emphasize the point Dr. Smith made, that treatment is of very little avail and prevention is absolutely sure, provided antitoxin is given early in the disease. This

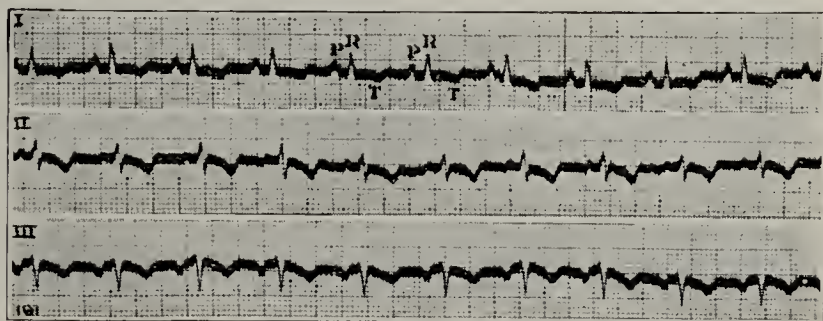


Fig. 15.—Heart block with spontaneous recovery: The heart shown in Figure 14 is resuming normal atrioventricular rhythm. The improvement, however, was only temporary, and sudden death occurred the following day.

cardiac injury occurs only in the neglected case. Neglect for only twenty-four hours will allow this type of heart disease to occur. The clinical manifestations are as reliable an indication of the toxic injury to the heart as the electrocardiograph.

DR. ALEXANDER LAMBERT, New York: A type of irregularity following diphtheria is a sudden tachycardia. The pulse is fairly normal in frequency when the patient is quiet, but the mere rising from the seat will make the pulse shoot up from 70 or 80 to 160 beats a minute. Is the vagus injured or is it an injury of the myocardium? I have never been able to obtain any electrocardiographic or other tracings of this phenomenon.

DR. M. H. FUSSELL, Philadelphia: I want to reemphasize what Dr. Smith and Dr. Place have said as to the time rela-

tion and the dose relation of antitoxin to these heart failures in diphtheria. All of us are too prone in private practice to put off the time of administration of antitoxin. Certainly, it is a great deal better to administer antitoxin when the diagnosis is uncertain than to wait. The administration of antitoxin is harmless, and the lack of administration may lead to fatal cardiac complications.

DR. PAUL D. WHITE, Boston: Because of the postmortem findings in the heart in cases of diphtheria, and because of such work as that reported by Drs. McCollum and Smith, we now rarely see patients with high grade heart block in these postdiphtheritic cases. We must make a place in heart diseases for the classification of the heart disease following diphtheria.

DR. JOHN H. BLODGETT, Bellows Falls, Vt.: What is the ordinary dose of antitoxin today and the interval of administration? What significance do you place on the symptom of bruit de gallop in diphtheria?

DR. WILLIAM H. BLOCK, New Orleans: It seems extremely important that the diagnosis should be made as early as possible in order to get the effect of the antitoxin as quickly as possible. Would that have any effect as to the outcome of cases of the sort under discussion?

DR. S. CALVIN SMITH, Philadelphia: Dr. Place has brought out the point that some cases of heart block end in recovery, although the presence of block in such cases has not been established definitely by graphic records. Of the cases of heart block which I studied and in which the written record proved block to be present, none ended in recovery. However, if my paper creates the impression that all cases of diphtheritic heart block end in death, it is well that Dr. Place has corrected the impression; for one can readily conceive of a toxic block of a degree not sufficient to overwhelm the heart, and it is also conceivable that a heart may have sufficient inherent strength to overcome the insult of toxins. I was unable to secure any records of patients who exhibited the pulse vagaries mentioned by Dr. Lambert, although I have always felt that such rate variations were a manifestation of myocardial involvement. The initial dose of antitoxin at the Municipal Hospital of Philadelphia varies in accordance with the degree of toxicity present on admission from 5,000 to 20,000 units intravenously. In mild cases, on rare occasions, an intramuscular injection of from 10,000 to 30,000 units may be administered. I do not have any records of patients in which a bruit de gallop was noted, hence I cannot state whether the auscultatory phenomena are due to delayed conduction or to a bundle branch block.

Federal Eugenist.—A federal eugenist, attached to the Public Health Service or to the Children's Bureau, aided by an ample corps of assistants, would constitute an effective administrative agency for sterilization under federal authority. Some of the assistants of the office of federal eugenist should be delegated to cooperate with the Immigration Service of the Department of Labor, and the Bureaus of Criminal Identifications, of Investigation, and of Prisons, of the Department of Justice, and possibly with the Bureau of Education of the Department of Interior.—H. H. Laughlin, *Social Hygiene* 6:530 (Oct.) 1920.

USE OF THE SIGMOID FLEXURE AND CECUM IN PELVIC PERITONIZATION *

CAREY CULBERTSON, M.D.

CHICAGO

Since the early days of abdominal surgery, one of the important problems confronting the operator has been that of covering or otherwise disposing of the raw areas remaining as a result of extensive peritoneal adhesions. Adhesions are either primary, due to inflammation or malignancy, or they are secondary, following operation. Roughly speaking, two varieties are commonly encountered: First, those which are cobweb or veil-like in their formation or which extend across the pelvis or abdomen in bands. These are light and readily broken up, leaving relatively little rawness, or they are dense and tough and when broken up leave numerous raw points. They are not highly

vascular, so that their separation is not attended by much oozing. Second, those which represent suppurative processes. They are short and dense, more or less extensive throughout the entire affected area, are infiltrated, organized and highly vascular. They constitute the development which brings the affected organs in close apposition and produces fixation of the structures involved, and their separation opens up extensive raw areas.

It is with adhesions of this variety involving the pelvis and lower abdomen that this paper has to do. The problem consists not only in providing for the care of the raw areas left after breaking up adhesions in the pelvis or

after the extirpation of the pelvic organs, but also in preventing the formation of fresh adhesions. It may be set down as an axiom that there is no set method of avoiding postoperative adhesions in every case, even when operative technic is all that can be desired. Various methods have been employed by virtually all operators to prevent adhesions from forming after operation on both clean and infected fields. The use of ether, of sterilized oil, of silver foil and other such means need only be mentioned as having been tried and proved in the long run unsatisfactory. Transplantation of peritoneal or omental grafts is perhaps the best method for a small area of raw surface that must necessarily remain exposed. While effective as a general proposition, this method, however, has the objection of being painstaking and tedious. The ideal in

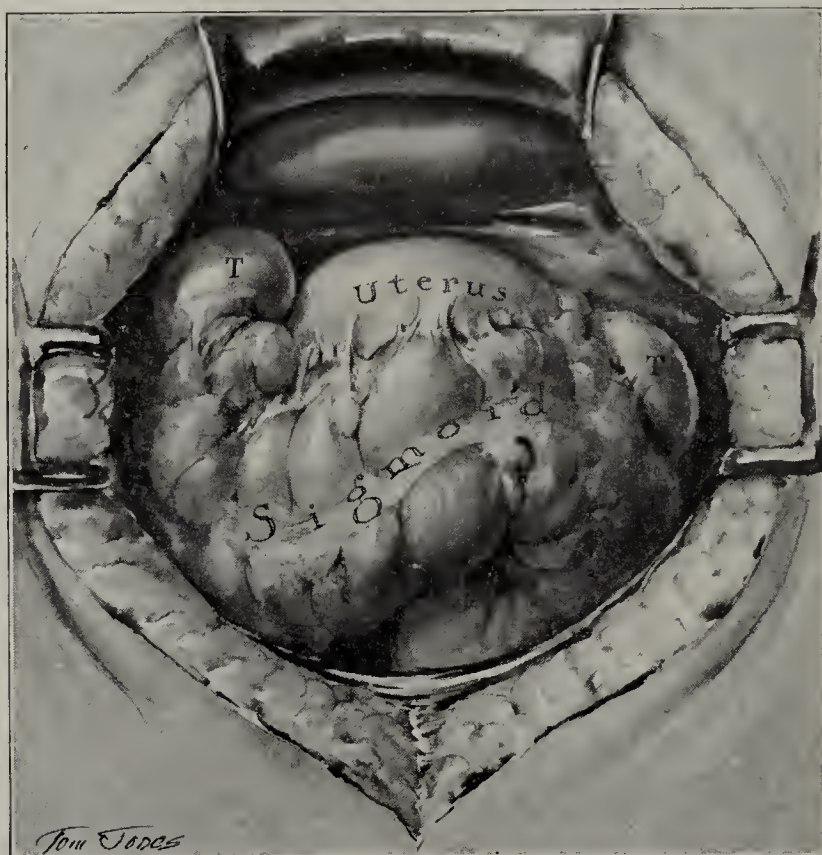


Fig. 1.—“Autoperitonization”: The sigmoid flexure has become adherent to the diseased uterus and appendages and, with the rectum, has closed over the posterior culdesac.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

operation on the pelvis when raw areas are produced is to leave none but smooth peritoneal surfaces throughout. Work on the pelvis and abdomen had not progressed very far before operators conceived this ideal situation, though it was some years before methods were perfected, and even today it is safe to say that few, if any, surgeons have attained this ideal.

The study of the literature reveals that before 1890 various clinicians had observed the frequency of spontaneous peritonization as a result of chronic pelvic peritonitis. This was noted by Quénu,¹ Amann² and Snegireff³ in 1899, although Bardenhauer and Bliesener⁴ had noted it as far back as 1891 and 1896. Amann put into practical application the idea of covering raw areas by the approximation of peritonized organs, using in 1900 the sigmoid flexure and the bladder and transplanting peritoneum by undermining and sliding wide layers from the anterior abdominal wall and from the bladder. Duret in 1899 and Judet⁵ in 1902 finally established as a principle the using of a peritonized organ to cover the raw surface of other organs or pelvic walls, though Snegireff in 1899 really devised what Buettner⁶ has called "high peritonization." From 1900 on, progress in this method of peritonization gained rapidly on the European continent, though it was not taken up so readily by surgeons in the British Empire or America. As far back as 1898, Kelly⁷ used the uterus to fill a defect in the torn rectum, and Dudley⁸ later described the shortening of the posterior culdesac by stitching the anterior surface of the sigmoid flexure to the posterior wall of the uterus. In all these early procedures, however, drainage was consistently employed through the abdominal wall or through the vagina, and usually by both routes at the same time. Rouffart-Hénault⁹ peritonized the pelvis after abdominal hysterectomy by drawing the peritoneum of the upper pelvis together by a sort of purse-string suture, the lower pelvis having been tamponed with gauze leading out through the vagina, while drainage above this plane of peritonization led out through the abdominal wall. This required

extensive mobilization of peritoneum on all sides of the pelvic walls except the posterior, and took in such structures as the rectum, sigmoid flexure, the cecum or the bladder as might prove to be necessary in order to approximate peritoneal edges. In the modern application of this idea not only is drainage not necessary, but we know, on the contrary, that it makes for post-operative adhesions. Yet as recently as 1916, Chaput¹⁰ maintained drainage in his *cloisonnement* procedures, which partitions the pelvis in four ways: first, *cloisonnement transversal*; second, *cloisonnement sus-vaginal*; third, *cloisonnement vertical postérieur*; fourth, *cloisonnement vertical antérieur*. According to Buettner, Frank performed the first so-called high peritonization in 1881 after a case of cesarean section by the Porro method, and later applied the same principle to operations for pelvic inflammation.

In 1898, Kelly described four positions which may be regarded as the normal attitude of the sigmoid flexure, and he later suggested that if laid over the raw pelvis in one of these positions it might become spontaneously adherent, thus blocking off the lower raw pelvis from organs high up and preventing adhesions. In 1911 Summers¹¹ described an operation whereby the pelvis is peritonized after hysterectomy, by the sigmoid flexure, a procedure which he had used for twelve or fourteen years previously with or without drainage, and which is based on the ideas already set forth. Webster¹² removed the diseased swelling and entire uterus with the exception of its anterior peritoneal layer, which was left continuous with the broad ligaments. This flap extending across the

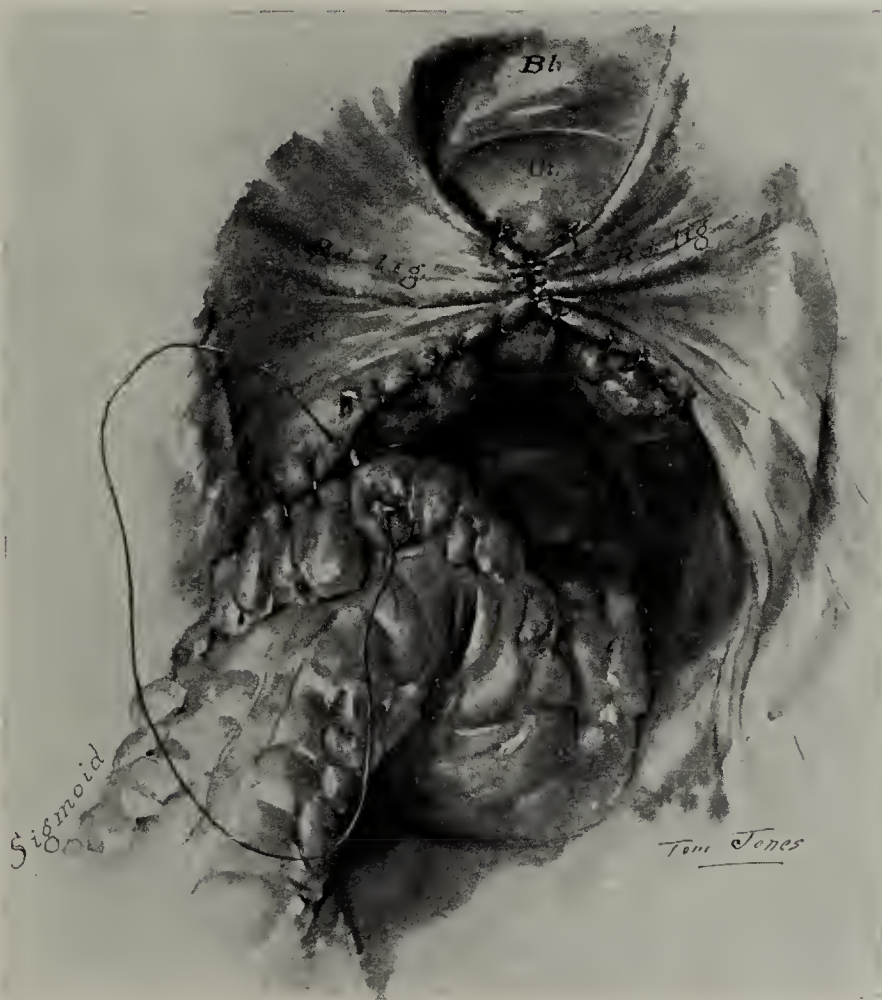


Fig. 2.—The uterus has been partially extirpated with the fallopian tubes. The ovaries have been suspended to their respective ligaments. Closure of the raw pouch of Douglas is being effected by stitching the appendices epiploicae of the sigmoid flexure along the free edges of the approximated ligaments. (Reproduced by courtesy of the W. B. Saunders Company.)

pelvis was turned backward and stitched to the rectum and posterior pelvic wall. Soon after describing this method, however, he abandoned it for the simpler sigmoid-rectal peritonization which has remained his routine procedure.

In my opinion it is freedom of the ileum in post-operative involvement that is most desired, since it is involvement of the ileum that is the cause of the most distress on the part of the patient. It is true that intestinal obstruction may take place as a result of sigmoid flexure involvement, though this is more commonly the case where malignancy exists than in inflammation. When the ileum is already involved in the

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2. Amann, J. A.: Congrès. internat. de Paris, 1900, Comp. rend., Sect. de gynéc., p. 435.
3. Snegireff: Rev. de Chir., 1899, p. 249.
4. Bliesener: Monatsschr. f. Geburtsh. u. Gynäk. 4: 28, 1896.
5. Judet, H.: Thèse de Paris, 1902.
6. Buettner, O.: Bull. Soc. d'obst. et de gynéc. de la Suisse Rom. (Gynécol. Helvet. 16: 13).
7. Kelly, H.: Operative Gynecology 2: 20, 1898.
8. Dudley, A. P.: Am. J. Obst. 24: 952.
9. Rouffart-Hénault, L.: Thèse de Bruxelles, 1910.

10. Chaput, H.: Ann. de gynéc. et d'obst., November-December, 1916; Bull. Soc. anat. de Paris, October-November, 1894, No. 23.
11. Summers, J. E.: Surg., Gynec. & Obst. 13: 125, 1911.
12. Webster, J. C.: Diseases of Women, 1907, p. 234.

inflammatory process it must, of course, be freed, and peritonization of its raw surfaces is best effected by omental or peritoneal transplants, since the ileum must be capable of perfect freedom. The same, however, is not true of the sigmoid flexure, which appears to function quite as well when there is at least relative immobilization; hence the surest way to keep the ileum out of the pelvis is to block off entirely the true pelvis. This blocking off is best brought about by the use of the lower portions of the large intestine, the sigmoid colon and rectum being used alone, or with the cecum on the right side after the appendix has been removed. The infiltrated and raw areas so often present on the sigmoid, rectum and cecum are rolled under by the same procedure. In 518 cases of pelvic peritonitis in which careful notation was made of the findings at operation, the sigmoid was involved in greater or less extent 274 times; its walls were infiltrated 124 times, and in three cases showed necrotic areas. The rectum was involved 387 times; its walls were infiltrated 199 times and perforated three times. The cecum was adherent sixty-seven times, and its walls were infiltrated twenty-one times. The bladder was adherent, usually to the uterus, in 149 cases, with infiltrated wall in twenty-four cases; but in ten cases the adhesions were to the sigmoid flexure and in three to the cecum.

Instead of trusting to the sigmoid flexure to become adherent, as Kelly suggested, its adhesion is brought about directly, and the place where it is to become adherent is definitely determined. The technic is best described if we suppose a case of generalized peritonitis due to a bilateral salpingitis in which the tubes and the uterus have been removed, the ovaries remaining in situ. If the sigmoid flexure has been adherent over the uterus and appendages, it is freed except for its attachment to the left pelvic wall. After the removal of the affected organs and the ligation of all bleeding points, the sigmoid is allowed to fall back over the true pelvis so that all raw areas are covered. The round ligaments have been stitched previously into the cervical stump or over the vaginal vault as the case may be, a procedure which in itself brings the clean peritoneal surfaces of the upper pelvis lower down and closer together. Beginning at that point where the peritoneal coat of the sigmoid is reflected from that of the pelvic wall, a light continuous catgut suture is started and is carried along just above the line of the raw tissue on the pelvic wall and just above

the corresponding line on the sigmoid flexure as far as the left round ligament. Here the reflected flap of peritoneum belonging to the bladder is picked up and united with the sigmoid flexure across the center of the pelvis until the right round ligament is reached. From this point on the right pelvic wall and the sigmoid colon are brought into peritoneal approximation as was done on the left side until the shelf of the pelvis is reached, by which time the suture passes from the sigmoid to the rectum and is continued, uniting the rectum with the posterior peritoneum as far as the point where the rectal peritoneum is reflected, approximately just to the right of the promontory of the sacrum. It is extremely important that these posterior peritoneal surfaces be approximated, otherwise a hole would be left through which a coil of the ileum might prolapse into the lower pelvis. In following this method it is

seldom necessary to put very many stitches into the intestinal wall itself since the appendices epiploicae are usually abundant, and these fat tabs are ideally placed for this method of peritonization. Only when they are absent as a result of extensive inflammatory involvement of the colon itself does it become necessary to stitch directly into the intestinal wall. Further, in order to come out on the right side of the rectum at a point where this suture ends, it will be necessary to rotate the sigmoid flexure one-half or less on its axis.

This rotation is best accomplished in the mid-pelvis, where the vesical peritoneum is brought into use, since here flexibility of the peritoneal structures is the greatest, and hence there will be less tension.

In the great majority of cases the sigmoid flexure is large enough to accomplish this purpose. Only rarely and exceptionally is it so short that it cannot be used in this manner. In 518 abdominal operations for pelvic peritonitis, I found the sigmoid flexure absent but once. Only rarely is it not sufficiently long to cover unusually extensive raw areas, such as are formed when the anterior culdesac is involved together with the posterior in the inflammatory process. Here the cecum may be used to close over the right side of the pelvis while the sigmoid covers its left and center. While typically employed after hysterectomy, this type of peritonization is quite as effective in covering raw areas when the uterus remains in toto or when it has been decreased in size by fundal amputation. In a series of 543 cases that have been carefully tabulated from May, 1913, to May, 1921, sigmoid—rectal peri-

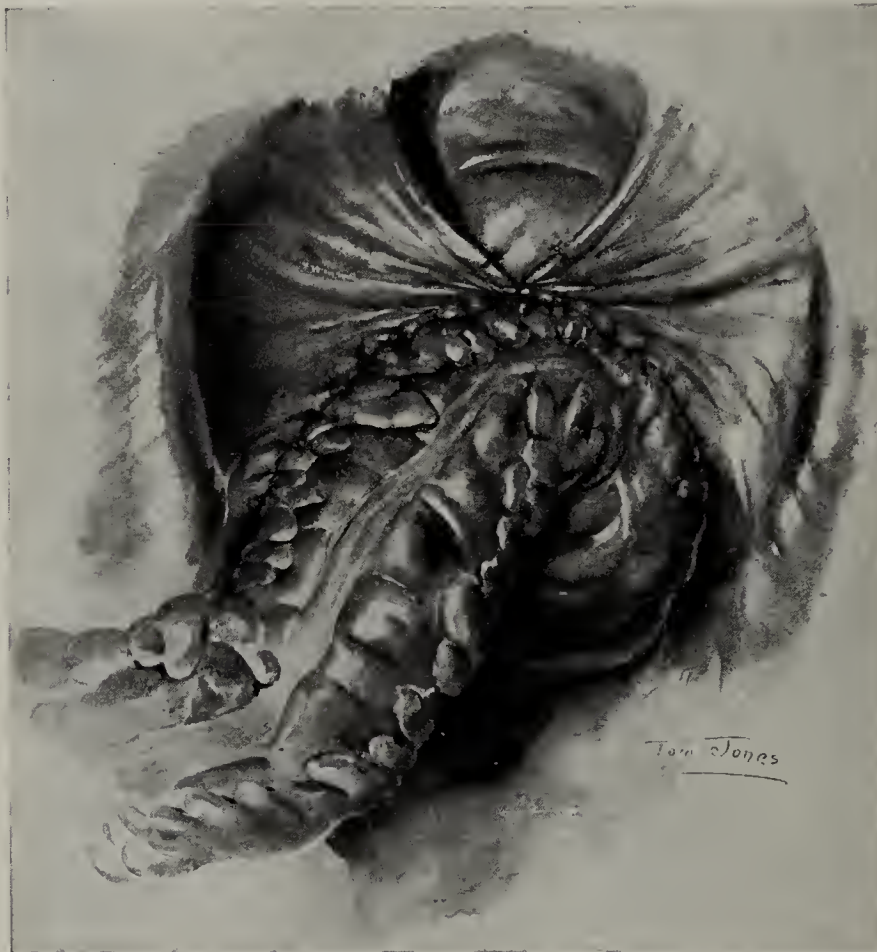


Fig. 3.—Closure of the pouch of Douglas is completed, the suture being carried around to the right until the rectum and posterior pelvic peritoneum have been approximated. (Reproduced by courtesy of the W. B. Saunders Company.)

tonization has been done 359 times. In addition to this, the rectum has been used for partial peritonization sixteen times. The method has been used after total hysterectomy thirty-two times; after subtotal hysterectomy, 122 times; after fundal amputation of the uterus, 180 times; with round ligament shortening, three times; and without hysterectomy, five times. The sigmoid was brought up over the bladder twenty-four times, and the cecum was brought in to cover the right pelvic wall twenty-eight times.

In connection with this, omental graft to cover infiltrated areas on the ileum was employed twenty-eight times. In the great majority of these operations, indication lay in pelvic peritonitis; but in twenty-five cases, sigmoid flexure peritonization was found useful after operation for uterine fibroma, uterine carcinoma, tubal gestation and ovarian cystoma.

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ABSTRACT OF DISCUSSION

DR. CARL B. DAVIS, Chicago: Every one who opens the abdomen should be thoroughly familiar with this technic. The procedure is more valuable in women than in men. It is occasionally useful in end-to-end anastomosis of the large intestine. But its chief value is following infections of the female genitalia. Adhesions of the uterus to the anterior or posterior culdesac leave raw spaces, and many patients require secondary operation for postoperative obstruction. The mortality is terrific. A procedure of this sort will obviate many of those cases. Dr. Culbertson spoke of the ease with which the sigmoid can be moved in most cases. I have seen cases in which the sigmoid was so firmly attached that it was with great difficulty that it could be mobilized enough to obtain this result. Many times the mesosigmoid is so short that it is difficult to put it up even for a colostomy. In these cases mobilization of the ascending and descending sigmoid is helpful. I recall the case of a woman whose tubes had been removed. The sigmoid was brought back over the right broad ligament and the culdesac was closed. Several years later the patient returned with a tumor of the ovary the size of a grapefruit. The sigmoid had gradually dropped down over the fundus and covered the inflammatory area, but still retained enough motility not to cause pain. If the

sigmoid will move and we can cover over the raw surface, if these things will act as a temporary check while scarring is taking place, and adhesions of the ileum are prevented, it is very much superior to the stitching of the omentum. Following in these cases there is often distress each time the stomach is filled. As the stomach fills and starts to pull there is the tug coming from those adhesions.

DR. CAREY CULBERTSON, Chicago: I want only to emphasize the fact that drainage is not necessary. In these cases abdominal drainage was employed but three times. In forty-eight cases vaginal drainage preceded the abdominal operation. One of these was twenty years prior, one six months prior, and the rest only a few weeks or days prior. In but forty-six cases, therefore, was it deemed necessary to drain pelvically in preparing the patient for the abdominal operation.

As regards the question of mobilizing the sigmoid, I never free the sigmoid from the left pelvic wall, except sufficiently to get at the diseased tube, leaving the sigmoid adherent to the left pelvic wall. In but one case of this entire series was the sigmoid flexure absent. As regards the function of the sigmoid after this procedure, I have been asked many times by men who have seen me do this operation whether there was postoperative distress or constipation. I have not found this to follow, nor do I see why such results should follow. As regards the omental adhesions, the omentum, of course, is very frequently adherent when the abdomen is opened. Unless the adhesions are extremely light I never tear the omentum free. If fixed densely, I always resect it, peritonizing the raw edge of the omentum and leaving its densely adherent portion wherever it may be attached, since we want no better peritonization than that gives.

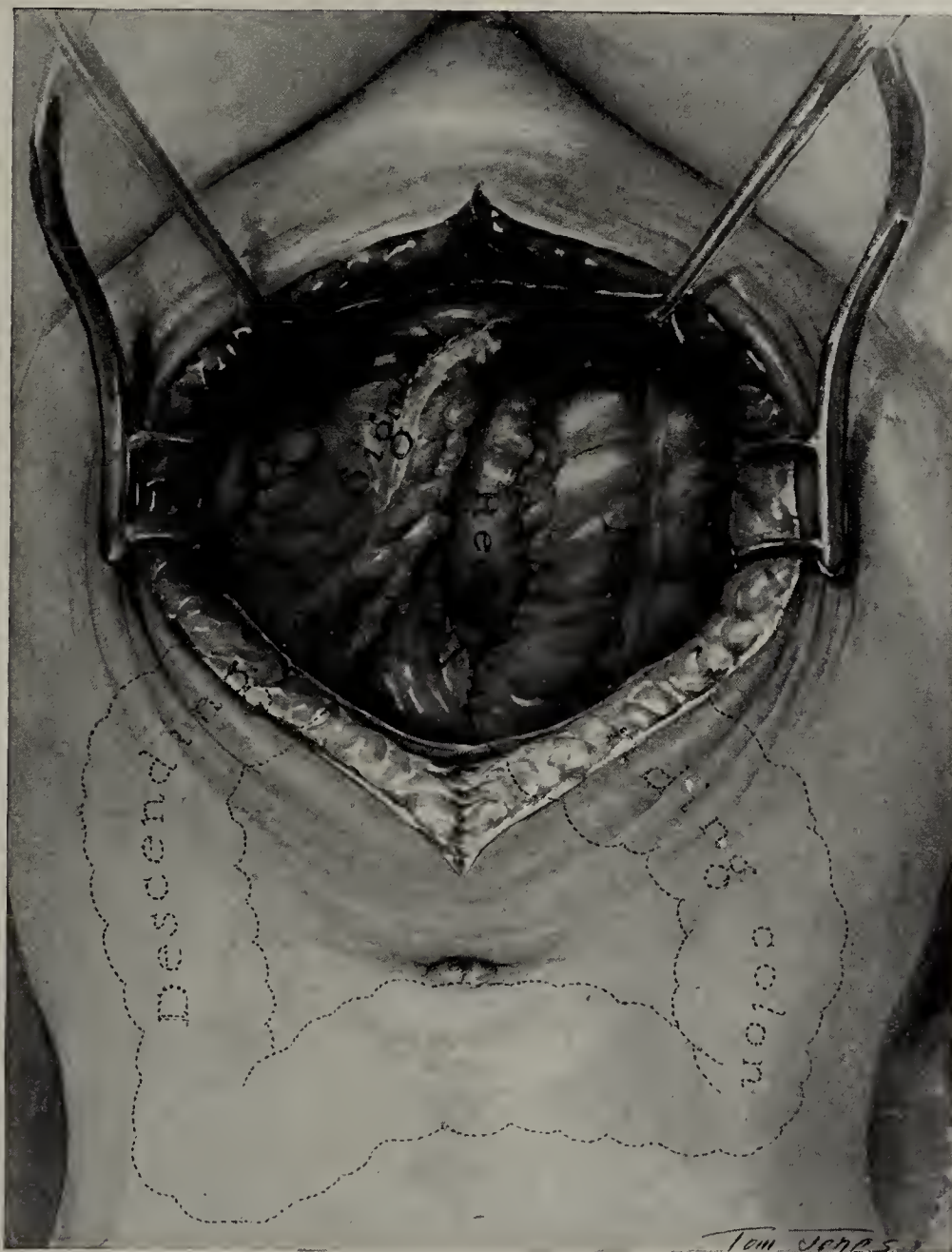


Fig. 4.—The uterus and diseased appendages have been removed. The anterior and posterior culdesacs were raw after the freeing of the adhesions and have been entirely closed over. The sigmoid flexure has been approximated with the right pelvic and lower anterior abdominal wall; the cecum, after removal of the appendix, has been approximated with the left pelvic and lower abdominal wall, the line of suture being carried down and posteriorly between the cecum and rectum and posterior pelvic peritoneal surface. Thus the entire pelvis is blocked off from the abdominal cavity. (Reproduced by courtesy of the W. B. Saunders Company.)

Duties of Health Officer.—It is not to be expected that the members of appropriating or law making bodies,

such as boards of estimate and city councils, will be conversant with modern health practice; it is to be expected that many persons holding such offices will have inherited many health traditions which are false or misleading. It is, therefore, not only a duty but a matter of self-protection for the health officer thoroughly to inform the members of his health board and of the local authorities not only what health work should be undertaken and at what cost but also what kinds of work already imposed or which threaten to be imposed are ineffectual from a health standpoint or not properly a part of health work.—*Health News* 15:303 (Dec.) 1920.

STANDARDIZATION OF THE WASSERMANN REACTION *

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PHILADELPHIA

The demand for standardization of the Wassermann reaction has come largely from clinicians who have observed marked discrepancies in the results reported by different laboratories testing portions of the same serum. Why should confidence be placed in the reaction under these conditions, which are sufficient for destroying all faith in its practical value? Is not a Wassermann test a Wassermann test irrespective of whom it is done by? For the majority of clinicians these appear to be logical questions, but they are very illogical to those who understand the test and know the many opportunities for error due to variation in the qualities of the biologic reagents employed, not to mention the element of the personal equation in relation to exactness in the technic.

In other words, there is no one way for conducting the Wassermann test. The original method is lacking in sensitiveness and has demanded improvement. To meet this requirement numerous modifications have been adopted, so that not a few experienced serologists have made changes here and there in the technic which, the clinician should realize and understand, may greatly modify the sensitiveness and practical specificity of the reaction. As I pointed out in a former communication,¹ the majority of these modifications are still known by most clinicians as the "Wassermann reaction," but the phrase has really come to be only a synonym for complement fixation in syphilis, frequently signifying something very different from its original meaning.

Such being the case, it is apparent that the mass of data accumulating on the value of the complement fixation test in different stages of syphilis can be only approximately correct, and that much of it is worthless and misleading. Furthermore, it is apparent that accurate and acceptable data, bearing on the influence of specific treatment on the reaction and the relative merits of different systems of treatment, are not possible under existing conditions. Dr. A, using the method of treatment advocated by Dr. B, is liable to observe serologic results different from Dr. B's, owing largely to the fact that he or his serologist is employing a different method for conducting the Wassermann reactions and especially a different antigen in differing amounts. All experienced serologists know the tremendous influence exerted on the Wassermann reaction by this one reagent, not to mention numerous other sources of variation; for these reasons identical reactions with portions of the same serums tested in different laboratories could not be expected, and if reported would probably be received by experienced serologists with much skepticism.

THE ADVANTAGES AND DISADVANTAGES OF
STANDARDIZATION

If serologists could reach an agreement on a standardized technic of superlative merit, this would solve the present difficulties and gradually strengthen or regain the confidence of the profession in a reaction that is basically sound and of proved merit. At least four distinct advantages would be gained: (1) a wider use of the test for the diagnosis of syphilis, which could not be otherwise than helpful for the diagnosis, control and treatment of this disease; (2) the accumulation of data of greater scientific value bearing on the practical value of the test in the different stages of syphilis; (3) a general improvement in the value of the reaction as a serologic guide to therapy, and (4) a means for comparing different methods of treatment according to their influence on the reaction, which would tend to aid in the crystallization of our knowledge in this field.

A possible disadvantage of adoption of a standardized test would be the stifling of further investigation; however, so much is as yet unknown regarding the mechanism of the reaction, and there are so many different ways of doing the same thing, that this is scarcely to be expected as a result, so far at least, as concerns those serologists who are capable of conducting meritorious investigations in this field. I doubt whether any serologist or group of serologists would have the temerity to advocate a certain technic as a "cure all" or as constituting the final word in the subject. The advantages mentioned above could probably be gained, and still leave and demand continued investigation and further improvements. In my opinion, the adoption of a standardized technic would probably actually stimulate investigation and, by focusing attention on a certain technic, bring out its merits and demerits to the general improvement of the complement fixation test, not only for syphilis but also for other infections.

THE AUTHOR'S INTERPRETATION OF
STANDARDIZATION

Possibly the easiest way of standardizing the Wassermann test would be to adopt the original technic with a change in the antigen. But such a proposal would receive little recognition, not only because the original technic is defective in sensitiveness but also because the antigen is the greatest single source of contention and disagreement.

In my opinion "standardization" does not mean the adoption of any of the present methods, but a real, earnest and unbiased study of different methods and of each and every phase of the complement fixation test, for the purpose of determining by actual trial what is best and incorporating the facts into a test which will have for its purposes the establishment of a technic (1) of superlative sensitiveness; (2) of practical specificity; (3) of technical accuracy and uniformity of results; (4) yielding a true quantitative reaction; (5) as simple, and (6) as economical as possible.

THE CHANCES OF SUCCESS IN STANDARDIZATION

If these are acceptable as the requirements of a standardized test, what are the chances of its general adoption? Bearing in mind the difficulties besetting

* From the Dermatological Research Institute of Philadelphia, Dr. Jay F. Schamberg, Director.

* Read before the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Kolmer, J. A.: The Use of the Phrase "Wassermann Reaction," *Am. J. Syph.* 4: 166 (Jan.) 1920.

the work of Dreyer and his associates in the standardization of the typhoid-paratyphoid agglutination test, which has been a far simpler task than standardization of the more complex complement fixation technic, I believe that general acceptance will be both tardy and well contested. In the laboratories of the Army, the Navy and the Public Health Service, there is little or no difficulty. As a matter of fact, Colonel Craig's method is used in all army laboratories.

The majority of experienced serologists learn to place confidence in the test which they have used and naturally give it up for another technic with great reluctance. Furthermore, a new test is not likely to yield its best results until experience has been gained with it. On the other hand, it may be said that practically all serologists agree that the general adoption of a uniform technic for routine work has distinct advantages, and they are at least willing to give a new test a fair and unbiased trial. More cannot be expected, and the success of a new test proposed as a standardized technic must depend on how it fares in the crucible of experience. If the published experiences of serologists in general with the new test are favorable, it is to be hoped that ultimate success in the adoption of a standardized test may be realized.

THE AUTHOR'S INVESTIGATIONS

With a full realization of the difficulties of the task and the slight chances of success, with a corps of assistants I began a series of studies on complement fixation, 1916, for the purpose of investigating every phase and step of the test and the more important complement fixation methods, in order to bring out by actual trial what was best in principle and practice for incorporation in a new test.² Aside from interruptions caused by war activities, the work has progressed up to the present time and has enabled me to build up a new complement fixation test for syphilis.³ I have not called this a "standardized test" because only future experience can determine whether or not it deserves that designation; but the test is based on studies in the standardization of the Wassermann test which have been conducted as thoroughly and honestly as we knew how to conduct them, and without bias or preconceived ideas. Doubtless the work would have been better done by a commission, as the stamp of approval of a group is always better than that of a single individual, and justly so; but the difficulties of getting something done or at least started were so great that this idea was abandoned. I hope that our work and my new test will merit some degree of attention, and that the latter at least will receive a fair and unbiased trial by serologists; if the test has the merits which our work indicates, it is to be hoped that it will constitute a fair start toward standardization of the complement fixation test for syphilis.

QUALITIES OF THE NEW TEST

The new test has aimed to fulfil the requirements of a standardized test, mentioned above. I may state that our primary aim was to evolve a more sensitive test for syphilis than any of the present methods and at

the same time one possessing practical specificity and freedom from nonspecific reactions. Raw or unheated serum tests are generally acknowledged more sensitive than tests employing heated serum, but they suffer from the drawback of being more liable to yield nonspecific reactions. My new test is intended to yield reactions just as sensitive as these in raw serum tests, but free of this objection.

I believe the majority of serologists will agree with me that the kind and the dosage of extract employed as antigen have a tremendous influence on the Wassermann reaction. For this reason, we have given the subject of antigens particular attention, which has led to the building up and adoption of a new extract of superior properties. Under ideal conditions, a central laboratory should titrate all antigens in addition to the titrations made by the maker, or the central laboratory could send out a standard serum or antigen for purposes of titration. I have worked out a technic which is proving satisfactory for these purposes.⁴

Briefly, the new test is intended to meet the requirements of a standardized technic, mentioned above, all of which are discussed in more detail elsewhere:³

A. *Meeting the Requirement of Sensitiveness.*—By: (1) using a highly sensitive antigen; (2) using relatively large amounts of antigen; (3) using relatively large amounts of serum and spinal fluid; (4) heating serums for only fifteen minutes at 55 C.; (5) using a mixture of guinea-pig serum complements prepared in a manner tending to increase sensitiveness to fixation; (6) mixing serum and antigen for a brief period before the addition of complement; (7) using a primary incubation of from fifteen to eighteen hours at from 6 to 8 C.; (8) by close adjustment of the hemolytic system adjusted to cold primary incubation; (9) by using an antishoop or antiox hemolytic system; the test may be conducted with an antihuman system, but is not as delicate as with an antishoop system; (10) by reading the reactions within three hours after the conclusion of the secondary incubation.

B. *Meeting the Requirement of Practical Specificity.*—By: (1) adjustment of the hemolytic system to cold primary incubation; (2) adjustment of the dose of antigen to cold primary incubation, and (3) using numerous controls.

C. *Meeting the Requirements of Technical Accuracy and Uniformity in Results.*—By: (1) adoption of the principle that pipetting relatively large amounts of fluid (from 0.2 to 1.0 c.c.) tends to greater accuracy than measuring smaller amounts (less than 0.2 c.c.); (2) using a total volume of 3 c.c., with sufficient corpuscles and test tubes of suitable size to yield clear, sharp and easily read reactions; (3) using a reading scale furnishing hemoglobin in solution and nonhemolyzed corpuscles in proper portions.

In regard to uniformity in results, it must be emphasized that the anticomplementary activity of serum or spinal fluid is very important in relation to reactions. For this reason, tests conducted with portions of the same blood in different cities or even in the same city, cannot be expected to yield absolutely similar results if serologists vary in their methods of preserving blood until the tests are conducted. Serologists working in the same or different laboratories with portions of the same blood should agree on the ques-

2. Series of thirty-two papers being published in the American Journal of Syphilis, beginning 3:1 (Jan.) 1919.

3. Kolmer, J. A.: A New Complement Fixation Test for Syphilis Based Upon the Results of Studies in the Standardization of Technic, Am. J. Syph., to be published.

4. Kolmer, J. A.: Methods of Establishing a Uniform and Standardized Unit of Antigen, Am. J. Syph., to be published.

tion of positive or negative reactions. Slight variations in the degree of positiveness may occur when serologists are working in different laboratories, but these do no harm as long as the primary question of whether a serum does or does not yield a positive or negative result is solved, and particularly with serums yielding borderline weakly positive or doubtfully negative reactions.

D. Meeting the Requirement of a Quantitative Reaction.—This has been accomplished by employing a series of dilutions or doses of serum or spinal fluid. Extensive trials have shown that five doses (six tubes, including the serum control) are sufficient and a method has been worked out whereby these may be prepared rapidly and accurately.

By using only the first (largest) amount of serum or spinal fluid, the test becomes a qualitative one, like other methods in present use, should any one wish to shorten the technic.

E. Meeting the Requirement of Economy.—This refers to both time and materials. From the standpoint of time required the new test cannot claim to be more economical than present methods because it is not a short cut method, but from the standpoint of economy in materials it easily qualifies.

F. Meeting the Requirement of Simplicity.—Simplicity is only a relative term, as the simplest technic is a complicated problem for the inexperienced and insufficiently trained worker, whereas a more complicated technic is perfectly simple for the experienced serologist.

CONCLUSIONS

I feel quite sure that my new test will be simple for those who have had some experience in conducting complement fixation tests. It will be difficult for the untrained; but this is probably true of all methods, and the attempts of the untrained to do the work is largely responsible for the unfavorable impression created by the Wassermann test in numerous localities and on numerous occasions.

I can only bespeak the cooperation of serologists and ask them to give the new test a fair and unbiased trial for the purpose of gradually adopting a technic which the majority of serologists can subscribe to as being worthy of adoption as a standardized complement fixation test for syphilis. At the present time we are engaged in extending the investigations into the field of complement fixation in bacterial and other protozoan infections and for the differentiation of proteins along the lines developed for complement fixation in syphilis.

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ABSTRACT OF DISCUSSION

DR. JOHN M. BLACKFORD, Seattle, Wash.: About three or four months ago, on account of marked variations in technic of different laboratories, we instituted another of these numerous investigations of the results on the same blood in different laboratories. Seven laboratories cooperated, and the variation was remarkable. We selected twenty-five cases with a positive history or questionable Wassermann reaction. The low laboratory had five strong positives, the high laboratory twelve; there were several cases in the series which were doubtfully syphilitic and several definitely nonsyphilitic. This paper from the standpoint of the clinician is really epoch-making, and if this new technic will work out as well as it sounds it will be a tremendous advance over what we

now have. Our men have agreed to get together and try to standardize and run a standardized technic, and we look forward with a great deal of interest to the results.

DR. A. I. RUBENSTONE, Philadelphia: I am very much interested in Dr. Kolmer's work in an attempt to standardize the reaction, because we have long felt the need for some standard method of performing the Wassermann test, especially those of us who have the trouble of checking up the work from other laboratories. There is one point we ought to take into consideration in reference to standardizing a test like the Wassermann, and that is to caution against following an outlined, cut and dried technic, as it would then bring about a condition among inexperienced workers in the field whereby the test would become an automatic one. The Wassermann test cannot be done on a cut and dried basis. The personal element is a very important one. We can adopt a standard technic after it is carefully worked out, and use it as a control to the method already familiar in the laboratory. I cannot lay too much stress on the personal element concerned in the various details of the technic as a more sensitive reaction, for example, may be obtained by gaging the units of the Wassermann test more closely. I have been able to change the sensitiveness of the test by simply varying my units of complement. I am quite sure that the Wassermann test can be made as closely sensitive by varying this element alone as by the modifications that have crept in during the last few years, complicating the technic and making for greater confusion in standardizing the test.

DR. M. G. WOHL, Omaha: We are in the same position in the West as Dr. Kolmer and other serologists are in the East, the clinician blaming the pathologist either for getting too many negative reactions in cases which he considers specific, or for obtaining false positives. This is to be attributed partly to the nature of the test, and partly to the clinician's interpretation of the case on hand. It is true that negative laboratory findings are encountered in a certain percentage of clinically known syphilitic cases. To obviate this error many a serologist has endeavored so to modify his technic as to increase the percentage of positive reactions; hence the well known Hecht-Weinberg modification, the cholesterinized antigen, etc. Each of these modifications has its disadvantages. There are comparatively few conditions in which a false positive may be obtained, as tuberculosis, giving a cross-fixation, or in an extremely toxic state. We find in these cases that it is unusual to obtain a four plus, and the latter reaction at least in this part of the country in our experience has spelled nothing but syphilis. To diminish the number of negatives in known syphilitics, my associate, Dr. Isaacson, and I have been using the icebox method simultaneously with the conventional water-bath method. The technic of our water-bath method has closely followed that of Dr. Kolmer, using three antigens: cholesterinized, alcoholic and acetone insoluble. In the icebox method we have found it best to use the plain alcoholic antigen, and also a pooled complement. Too much emphasis cannot be laid on the use of the proper dosage of reagents as found in a careful titration at the time the test is being set up. We have made a parallel study of more than 1,700 tests. When the serum resulted in a four plus, both methods closely agreed. The discrepancies were noticed between the one and two plus. In cases of neurosyphilis, cerebrospinal syphilis or tabes dorsalis, when the blood resulted in a negative with the water-bath method, the icebox method gave a one or two plus in a large majority of the cases. In treatment cases we likewise found a stronger reaction, that is, a four plus with the icebox, where the incubation was one or two plus, or a one plus strong with the icebox where the incubation was negative. In the chancre stage the icebox method is distinctly advantageous, as we are more apt to get positive reactions, while the water-bath method may prove absolutely negative. We have found the icebox method satisfactory as it helped us to do away with the so-called plus minus, the reaction being more clear-cut, either negative or positive. By using both methods simultaneously one has an additional check on his own technic. It is to be regretted that very few clinicians know how to evaluate laboratory tests. The Wassermann cannot possibly make the diagnosis for the clinician, particu-

larly when the reaction is not a clear-cut one. By closer cooperation between clinician and serologist, the test will assume a greater significance.

DR. A. J. CASSELMAN, Camden, N. J.: I do not feel that standardization of the method of performing the reaction is feasible because of the lack of the necessary equipment in many laboratories. Suppose my preference, icebox fixation, were the standard. Many laboratories are without efficient iceboxes; therefore that important detail would be missing and the method would not be standard. In most laboratories the workers must adapt themselves and their methods to the circumstances of equipment. Most laboratories are poorly equipped and therefore cannot follow rigidly the best method. What is needed is a careful comparison of the results obtained by the different methods. The work should be viewed from the standpoint of what the clinician sees, merely the report. The clinician wants a report which he can evaluate. This could best be attained if all laboratories were equipped with the apparatus and personnel to adopt some proper standard method. Standardization of the method was not successful even in army laboratories in France. The best point in their system was the general use of one standardized antigen. Excellent results were obtained in most army laboratories until about November, 1918, when the standard of the antigen was lowered by a change in personnel in the laboratory which supplied the antigen. This weak antigen would not give positive results even with some cases of untreated secondary syphilis. All such cases gave strongly positive results with the ordinary reliable antigens. If all workers had accepted the system blindly, a much greater number of serious mistakes in diagnosis would have been made. I am very much in favor of having a central laboratory send out a standard antigen for civil laboratories, but caution is necessary to prevent repetition of the mistakes made in France. The purity and relative amounts of cholesterol and heart extract must not vary, as with small amounts of added cholesterol the antigens work best when diluted slowly, while with the cholesterol in excess the ratio of antigenic to anticomplementary value is higher with rapid dilution. The antigen is the most important element, and is capable of being standardized to a relatively high degree. The results can be standardized by comparing quantitatively the results obtained by various methods instead of requiring all laboratories to adhere to the same method.

DR. JOHN A. KOLMER, Philadelphia: The question of influence of dilution of complement on complement fixation reactions is one of fundamental importance and has commanded a great deal of study in our investigations. In my new test, complement is used diluted 1:30 with antishoop and antiox systems, but with an antihuman system it is diluted 1:10 because of the impossibility of producing as highly potent antihuman hemolysin. Best results have been observed with the antishoop and antiox systems, and I believe this is partly owing to the use of higher dilutions of complement. We are convinced of the superlative merits of the icebox method of primary incubation, but have arrived at this conclusion with some reluctance because it means extending the time required for conducting the tests. This subject has demanded a great deal of study from the standpoints of influence on complement destruction, nonspecific fixation by antigen and serum alone and specific fixation. It is absolutely essential to use a hemolytic system adjusted to cold incubation, but under these conditions experiments have proved that specific fixation is greatly increased by incubation for eighteen hours at 8 C. This is even more striking in bacterial complement fixation reactions. In all of our work we have used the serum of syphilitic persons in dilutions for the purpose of studying the sensitiveness of reactions rather than depending on the serum of persons of whom there may be differences of opinion among clinicians regarding the presence or absence of syphilis. Probably the most important single subject in this investigation has been that of the antigen. Our studies have evolved a new extract which has proved very satisfactory. We have also worked out a technic for establishing and maintaining a unit and dose for complement fixation tests analogous to the methods for establishing units of diphtheria and tetanus antitoxins.

PUBLIC HEALTH AND PRIVATE PRACTICE *

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Health service is essentially for the prevention of disease. Medical service is essentially for the cure of disease. Either may be conducted as a public or as a private enterprise.

In some instances, the cure of a case of infectious disease in one person is the most practicable means of preventing such disease in other persons. The cure of a slight ailment in a person may be the most practicable means of preventing a serious ailment in that person later on. As a sharp line of demarcation cannot be drawn invariably between measures for prevention and those for cure, it is natural, at times, for some confusion or even conflict of opinion to occur as to the respective duties, rights, prerogatives and perquisites of the health service and of the medical service of a community. In some instances of controversy between private practitioners and public health departments, either side, owing to factors of personal equation, may be at fault; but, in practically every instance in which such controversy is based on principles of procedure, no difficulty would be encountered in reaching a conclusion about the right course if consideration were given only to the public interests, as paramount.

PRIVATE INTERESTS VERSUS PUBLIC INTERESTS

If, in a community with actual or potential intelligence, an open conflict develops between the special interests of the private practitioners of medicine and the general interests of the public, the eventual result of such conflict readily may be foreseen. In the United States, the licensed private practitioners of medicine constitute less than one eighth of 1 per cent. of the population.¹ As the practicing physicians are a part of the public, the public interests are to a certain extent their interests. Though the physicians, through organization and adroit maneuvering, might obtain temporary advancement of their interests over those of the unorganized majority of citizens, whom they are supposed to serve, it would be hardly intelligently selfish for them to do so, even if their code of ethics permitted.

From the point of view of the public interests, these are momentous times in our country. The lessons of the war and the stress of the present period of reconstruction appear to have created a national consciousness that scrutinizes carefully many affairs which, a few years ago, received little or no attention from any considerable proportion of our people. Because of this community vigilance, it is likely that, from now on, any enterprise, private or public, not conducted according to the motto "The Public Be Served" will be exposed to increasing risk of being put out of business.

PAST AND FUTURE OF MEDICAL AND HEALTH SERVICES

Practice of the healing art is as old as recorded history. Public health work is, according to our present conception of it, a development of recent times—largely of the last twenty-five years.

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Billings, Frank: The Future of Private Medical Practice, J. A. M. A. 76: 349 (Feb. 5) 1921.

The fact that the private practice of medicine as an institution has survived for ages indicates that it has adjusted itself to changing conditions so as consistently to furnish a service desired by the public. Had it not so made itself fit to survive, it would have gone ere now the way of witchcraft and autocracy. What its progress or its retrogression in the future is to be depends on the degree and kind of adjustments it may make to furnish the service needed and demanded by the public.

In the program of general welfare for which the popular demand is becoming more and more acute, there is developing throughout the country, at an increasing rate, an intelligent conception of the relative and absolute importance of service for the conservation and the promotion of the public health. Thus public health service, a development of recent times, appears in line with present and coming conditions, looming large with wonderful possibilities.

The increasing popular demand for service both to prevent and to cure disease furnishes an unprecedented opportunity to the medical profession. Will the medical profession measure up to this opportunity? Its history, rich with noble deeds nobly done to lighten the burden of grief and suffering of humankind, warrants the belief that it can and will.

NEED FOR ENLARGED MEDICAL AND HEALTH SERVICES

There is now in the United States a shortage of medical service. Such a shortage is critical in many of our most important food-producing rural districts. Though real progress is now being made in the establishment of local health service, there is, in the United States—and especially in our rural districts—a woful shortage of trained and qualified public health workers. Thus, with the large field available for health service and medical service, and with the workers in it too few, no business excuse exists for rivalry or wrangling between our private practitioner of medicine and our public health worker. The public interests demand team work from them, and whatever can be done should be done in order to have effective economical service delivered in this vitally important field of activity for the welfare of the people.

OPPOSITION OF PRIVATE PRACTITIONERS TO PUBLIC HEALTH WORK

The majority of private practitioners of medicine, both individually and collectively (through their local, state and national organizations), endorse and promise to support public health work; but, in some instances, private practitioners, either as individuals or in groups, become the main objectors and obstructors to what appears, from the standpoint of the public interests, an entirely reasonable program of public health service in a community. As a rule, the reasons for the objections and obstructions are not far to seek. The difference between the private practitioner and the public health officer may be due to personal dislike of one another. Some private practitioner may want the position held by the public health officer. The health department may have had to proceed somewhat vigorously to bring about correction of insanitary conditions on properties occupied or owned by a private practitioner. Sad to relate—and this is a considered statement—grossly insanitary conditions, constituting a menace to the health and comfort of the community, are not nearly

so infrequent as they should be at the homes of practicing physicians who are members "in good standing" of local, state and national medical associations.

More serious than the individual objections, based on personal grounds, are the organized objections, in some cases voiced by a majority of the local medical society, against some activity which the local health department, under the law, in the interest of the public, and perhaps originally with the unanimous endorsement of the local medical society, is required to perform. Usually the most vexatious difficulty with which the health department has to contend is the securing, from private practicing physicians, of reports of cases of communicable disease coming under their professional care. The prompt and complete reporting of known cases of communicable disease appears the very minimum of cooperation which the health department reasonably may expect from the attending physician. On the hypothesis that everything pertaining to the care of the private case comes strictly within the prerogatives of the attending private physician, some physicians object to proper activities of the health department to prevent spread of infection in cases of communicable disease in and from the homes to which they have been called to give medical care. Is such an hypothesis well founded? Is not the care exercised to prevent spread of infection from a case of communicable disease of importance to the whole community? If the health department is given, as one of its most important public responsibilities, the task of preventing the spread of infection, is it unreasonable for the public to expect the health department to prescribe and regulate the conditions under which the private practitioner—within his own professional judgment (of course)—may render private medical care to a case of communicable disease in the community? These are old questions, and the answers to them are quite readily apparent to any one with an intelligent point of view on public health; but we have with us now a problem of recent origin which in a number of localities already has become acute.

"HEALTH CENTERS"

This new problem relates to the management and operation of establishments called by various names, such as "public health clinics," "health centers," "community centers" and "community hospitals." Some, who for one reason or another are opposed to these establishments, ruthlessly refer to them as manifestation of the old bugaboo "state medicine." The conclusion is inescapable that the treatment of diseased teeth, the removal of diseased tonsils and adenoids, the rendering of prenatal care, the treatment of venereal disease to remove dangerous foci of infection, the diagnosis and treatment of tuberculosis, and the correction of certain eye, ear and other physical defects, are, whether given in the private office or the public clinic, for the prevention of disease and the promotion of health, and, therefore, may properly be regarded as service of a public health nature. The shortage in the rural districts of private practitioners, especially of skilled specialists in surgery and dentistry, has been an important factor in the development of the popular demand for "health centers." Many of our public health agencies have incorporated, in their public health programs, community clinics of one kind or another. If such clinics meet advantageously a public need, and are in line with the increasing popular demand for public health service, we might as well

recognize the fact that they have come to stay and that their number will increase; and, furthermore, that their establishment should be encouraged and aided by governmental agencies—local, state and national—concerned properly with the promotion of the general welfare. No insurmountable difficulties appear in the way of effecting a satisfactory basis of coöperation between practicing physicians and health agencies in rendering service through health centers and by other public health means for the promotion of the public interests.

THE OPPORTUNITY OF THE MEDICAL PROFESSION

The private practitioner of medicine, in having skilled service to offer to the public, has filled and may continue to fill a vitally important place in our body politic; but if, because of erroneous ideas about his special rights and privileges, he gets in the way of progress for the general welfare, he will be run over by the procession—and that would be an unthinkable sorry place for him, with his glorious heritage, to take in these moving times. Our doctors of medicine deservedly have a high place in the regard of our people. They are the counselors appealed to in the most critical periods of human life. It is within the power of the members of our medical profession to do more than any other group of persons of like number toward the establishment and maintenance of reasonably adequate health service in every part of the United States. The American Medical Association, with its approximately 80,000 members, has a tremendous opportunity to head up right the physicians of this country in this important part of the program for the national welfare. In many cases, the members of the association, it seems, may do more, individually, than they have been doing to teach by precept and example the facts of sanitation and of communicable disease control. The Section on Preventive Medicine and Public Health appears the logical section of the association to convey to the House of Delegates recommendations on principles affecting relations between medical service and health service.

Cosmos Club.

ABSTRACT OF DISCUSSION

DR. FRANK BILLINGS, Chicago: The chief function of a public health officer is the institution of measures of prevention of disease. The chief function of a practitioner of medicine is to attempt to cure disease. Medical practitioners deal with individuals in practice. They are, therefore, more or less individualistic in ideas. Public health officials deal with the mass of the population. If they deal otherwise, it is with the result that some individual or group of individuals may be a source of communicable disease which must be controlled. The dispute, which sometimes amounts to animosity between the members of the profession, those who practice medicine and those who engage in public health work, is due in part, I think, to the confusion growing out of the war. All of our people are confused as to what shall be done in the measures of reconstruction. Different bodies engaged in different sorts of work are opposed in opinion to what shall be done by other groups. We of the medical profession have a function to perform, an obligation to the public which should not afford difficulties in getting together and settling our differences. Public health work, of course, is one of the most important functions of welfare work. We have not enough public health officers. There are about 1,000 qualified public health officers, or one to 150 physicians. We are, of course, closely associated in health work. No public health officer can well do his work unless he has the cooperation of the private physician, nor can the private practitioner

carry out the work for which he is responsible to every patient, unless he has the aid and assistance and cooperation of all public health officials. No public health work can be well done and efficiently done without this cooperation. We must preserve the full power of the public health official to deal with all measures of disease prevention. On the other hand, we must preserve the integrity of the medical practitioner—of the family physician. The domiciliary visitation is one of the most fundamental things in the practice of medicine; and without domiciliary visitation, public health work will fail.

DR. JULIUS LEVY, Newark, N. J.: There are groups of medical men who are scared about public health work, and while in their organization they favor the public health idea, those who are endeavoring to carry on definite pieces of work find there is a strong medical opinion which makes the work difficult. I think that is, however, partly the result of uncertainty on the part of medical men as to the nature of public health work; and to no small degree is it due to a failure fully to understand the work which is discussed under the name of health centers. The medical profession has never failed to give its full support to public health activities which have dealt with prevention of disease, and have left to the medical profession the treatment of disease. I feel that the distinction Dr. Lumsden made should be carried out very carefully, and then we would get rid of much of the difficulty with the profession. The trouble is that it is much easier for public health officials to deal with concrete diseases than to work out a program which will prevent disease. In New Jersey, in the management of our Baby Keep-Well stations, we do not permit the physicians to prescribe or treat diseases. We insist on their referring every diseased child to the family physicians. I think that is logical for many reasons. In the first place, the U. S. Public Health Service, the state health service, the local health service, can use all the money, time and energy that they can get in the prevention of disease. The day has not come when they have finished that problem, and when they need to go into the establishment of clinics and hospitals and dispensaries. While we admit that these things need to be done, they should be left to the medical profession or philanthropists or municipalities. And I feel very strongly that if we will keep that distinction very clear and prevent some unofficial bodies from confusing the public mind as to what is public health work, we shall get a lot better cooperation from the medical profession.

DR. OTTO P. GEIER, Cincinnati: I am not so certain that it is for the betterment of preventive work to make so fine a line of distinction between the curative work of the general profession and the work of prevention by the health officer. The moment you do that you automatically bring on antagonism between these groups on economic lines. If disease is to be prevented, it has to be prevented by the profession at large and not by the relatively few health officers. There are only a thousand health officers. There are 80,000 physicians in the country who must be called on to do this work with their own patients. Prevention of disease is economically important. It is essential and must be carried on intensively and personally by the profession at large. The public health officer overestimates his ability to do preventive work. He needs the aid and full cooperation of the medical profession. The public health official will popularize his work among the Profession if he will teach the public to use the private physician more frequently. He must sell the idea of the use of the practitioner for physical examination and medical supervision as a means of preventing disease. If this is done, the antagonism Dr. Lumsden speaks of between the health officer and the profession will quickly disappear. The health officer must recognize that, after all, the success of the whole program of prevention of disease depends on the attitude of the public and the profession at large, and that it is finally the practitioner who must energize the problem of prevention. Lastly, it behooves the American Medical Association to have the largest concept of its responsibility to the public and the physician at large in the matter of prevention. The science of medicine is today perhaps from five to ten years in advance of its general application. The American Medi-

cal Association is giving the widest recognition to scientific advancement, but it is not, I believe, pressing as energetically as it might for the wider application and popularization of the knowledge already at hand.

DR. JOHN P. DAVIN, New York: Public health in medicine is a growth of twenty-five years. The founder of public health service in this country, Dr. Stephen Smith, of New York, laid down the first public health law, and that law stated that the rule of the sanitary physician should prevail over everything not provided in the statute nor laid down in the law. He gave unto a body of three men the power to abolish the civil law of habeas corpus, and he did this because at that time a man's house was his castle even though it was a center of pestilence. Dr. Smith did this to meet the inroads from other countries of typhus fever, cholera and other pestilential diseases. Who is it that has solved this question of public health? Who has made the American Medical Association of ultimate importance to the country? It is the private practitioner of medicine. We have handed over all these things to public health officials, and they are administering our estate. I ask you to be merciful. Be as just as you can, but be merciful. Do not ostracize us if we fail to report malaria sometimes, and do not condemn us in some other instances for not breaking the old and splendid rule of the inviolability of the patient's confidence. Do not put under the head of "communicable disease" such a thing as pregnancy, a classification which it is fast nearing in this country today. I do not think there is a private practitioner here in this body but me, and there were none here last year. Of course, I am always in the minority; but if I live long enough I shall find as I do at the present time, that the majority are coming along fast to the place where I am at. There is no difference between a public health official and a private practitioner. There is no essential difference, as a matter of fact, between the honest practitioner and the honest public health officer. The aim of every medical man is to prevent disease rather than to cure it. We talk about the public health official preventing it, and about the private practitioner curing it. But you are forgetting all about nature. You forget the tendency of the man to get well himself. If he has an infirmity, should you put him under a stigma today which ten years from now may not be regarded as such at all? Nature has a field of operation all her own, in which the private practitioner is as able to stimulate therapeutic action among individual patients as the public health official is among the masses of the people.

DR. LESLIE L. LUMSDEN, Washington, D. C.: The discussion is, on the whole, encouraging. Whatever objection has been offered I think was due to a misunderstanding. Any one who reads my paper and the resolution will see that it is very conservative, and I do not believe that many of us with the public health point of view can escape the realization that the passage of such a resolution may do much good.

Health Protection for Young Workers.—According to a report made by eleven physicians, and recently issued by the Children's Bureau, entitled "Physical Standards for Working Children," eighteen states have a law requiring children to be examined before going to work. However, unless examining physicians have definite standards by which to test development and sound health, underdeveloped and physically defective children are likely to go to work early to their own serious disadvantage, in spite of excellent laws intended for their protection. The committee, therefore, has undertaken to define what constitutes normal development and sound health for children applying for working papers. It also lists defects for which children should be refused certificates, remediable defects for which they should be refused certificates pending correction, and conditions requiring supervision under which provisional certificates for periods of three months may be issued. Periodic examinations for children after they have gone to work are recommended by the committee as a still further protection. As yet no state has taken this step, though good opportunities for putting into effect an adequate program of health supervision is furnished by the compulsory continuation-school laws now in force in twenty-two states.

EXPERIMENTAL INOCULATIONS IN SCARLET FEVER *

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AND

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In a comparative study of the bacteriology of the throat, blood and urine in uncomplicated scarlet fever, we have shown¹ that a variety of organisms found in the throat may enter the blood stream in small numbers, and may be excreted in the urine. The number of bacteria in the urine compared with the number found in the blood suggests that the bacteria sometimes multiply in the urinary tract.

Blood cultures from uncomplicated cases failed to reveal any organisms in large numbers, and no organism was found constantly enough to indicate a causal relation to scarlet fever.

Comparative complement fixation tests were made of the blood serums of convalescent patients in order to determine if possible where in the body of the scarlet fever patient the specific organism is present in greatest abundance. Complement fixation tests and cutaneous tests² failed to demonstrate any specific virus or antigen in the blood serum in early cases of scarlatina, or in extracts of the spleen or lymph glands in fatal cases. In one instance, the serum of a convalescent scarlet fever patient gave a weak complement fixation with an antigen prepared from scarlatinal throat mucus.

It was then found that cultures of the throat mucus in whey and in broth used as antigens gave positive results with 54.6 per cent. of the convalescent serums tested.³

From these results it seemed that the bacteriologic study of the throat promised more than that of the blood or tissues after death. Before going further with the complicated bacteriology of the throat, it was important to verify by inoculation experiments some of the conclusions drawn from the complement fixation tests. In all of the experiments reported here, we first inoculated ourselves with whatever variety of material was to be used in inoculating the volunteers. Both have had scarlatina, and the preliminary inoculations of ourselves were done to determine whether or not the material to be used had any pathogenic action other than the production of scarlet fever. The volunteers selected were healthy men and women between the ages of 18 and 35 years, who said that they had not had scarlet fever, and whose living conditions were such that it was possible for them, by following instructions, to avoid danger to others. Unless otherwise stated, each volunteer was observed fourteen days after inoculation.

INOCULATION EXPERIMENTS WITH BLOOD SERUM OF EARLY SCARLATINA PATIENTS

Following preliminary negative Wassermann tests, blood was withdrawn from the veins of four patients suffering uncomplicated scarlet fever shortly after the

* From the John McCormick Institute for Infectious Diseases.

1. Dick, G. F., and Dick, Gladys H.: J. Infect. Dis. **15**: 85-99, 1914.

2. Dick, G. F., and Dick, Gladys H.: J. Infect. Dis. **19**: 175-182 (Aug.) 1916.

3. Dick, G. F., and Dick, Gladys H.: **19**: 638-646 (Oct.) 1916.

onset of the disease, in one case just as the rash was appearing. The blood was allowed to clot and immediately centrifuged just enough to separate the serum. Within fifteen minutes after withdrawal from the patients, the supernatant blood serums were swabbed on the tonsils of four volunteers, one volunteer being used for each serum. Daily observations were made as to sore throat, fever, and rash on the skin or palate. No positive results were obtained.

Serums obtained in the same way from six patients with scarlatina were then inoculated subcutaneously into a series of six volunteers, one volunteer being used for each serum. The first of this series received 0.2 c.c. of serum; the second, 0.5 c.c.; the third, 1 c.c.; the fourth, 2 c.c.; the fifth and sixth, 5 c.c. each. Daily observations were made for local reaction, fever, sore throat, and rash on the skin or the palate. In each case, on the day following the inoculation, the site of the injection could be located only by the needle wound. There was in no instance a local or a general reaction.

INOCULATION EXPERIMENTS WITH WHOLE BLOOD OF EARLY SCARLATINA PATIENTS

Five cubic centimeters of citrated whole blood was withdrawn from each of five patients with scarlet fever and immediately inoculated subcutaneously into a series of five volunteers, each volunteer receiving the blood from one scarlet fever patient. Care was taken to prevent chilling of the blood. The results of these experiments were also entirely negative as to local and general reaction.

INOCULATION EXPERIMENTS WITH FILTERED THROAT MUCUS

A further study of the throat secretions in scarlatina was then undertaken. An attempt was first made to learn whether or not the disease is caused by a filtrable virus present in the throat in early cases.

Mucus swabbed from the throats of patients having early cases of scarlatina was shaken in a small amount of broth and filtered through Maasen or Berkefeld N filters. In order to prepare larger amounts of the material, other patients were given about 2 ounces each of sterile broth to gargle, and the gargled broth was filtered. In five cases the smaller amounts of filtrate obtained from the swabbed mucus were swabbed over the tonsils and pharynx of five volunteers, each volunteer receiving material from one scarlet fever patient. The larger amounts of filtrate obtained from the gargled broth of ten patients with scarlet fever were given to a series of ten volunteers to gargle immediately after filtering. No positive results were obtained in this series of fifteen inoculations with filtered throat mucus.

Following these negative results, six patients with scarlet fever were given bouillon to gargle and, after filtering, this bouillon was inoculated subcutaneously into a corresponding number of volunteers. Each volunteer received material from one scarlet fever patient. The first of the six was inoculated with 0.2 c.c. of filtered broth; the second, with 0.5 c.c.; the third, with 1 c.c.; the fourth, fifth and sixth, with 2 c.c. each. Daily observations were made for local reaction, fever, sore throat, and rash on the skin or palate. The three persons who received the largest amount of material showed a slight local redness and

slight induration at the site of inoculation at the end of twenty-four hours. In two cases this had disappeared at the end of forty-eight hours. In one case the localized induration lasted four days. No positive results were obtained in this series.

COMPLEMENT FIXATION TESTS WITH BACTERIAL ANTIGENS

Forty-four strains of a variety of organisms were isolated from the throats of scarlet fever patients during the early stage of the disease. These organisms were grown in plain broth, or suspensions were made from the growth on solid mediums, according to the way in which the best growth of the individual organisms could be obtained. The broth cultures and the suspensions were heated at 60 C. during one hour; 0.5 per cent. phenol was added, and these preparations were kept in the refrigerator. Some antigens were discarded because they hemolyzed or turned brown the sheep's cells used in the tests. Others were discarded because of their anticomplementary action. No antigen was used in the tests in larger amount than one-fourth the highest amount which had no anticomplementary action. In this way, it was possible to use twenty-six of the forty-four bacterial antigens. These twenty-six were prepared from eight strains of hemolytic

TABLE 1.—RESULTS OF COMPLEMENT FIXATION TESTS
WITH BACTERIAL ANTIGENS

No serums gave any degree complement fixation with scarlatinal skin scales antigen.
No serums gave any degree complement fixation with Wassermann test antigen.
37 serums gave some degree complement fixation with one or more streptococcus antigen.
33 serums gave some degree complement fixation with one anaerobic coccus antigen.
29 serums gave some degree complement fixation with one or more staphylococcus antigen.
19 serums gave some degree complement fixation with one gram-positive leptothrix antigen.
14 serums gave some degree complement fixation with one or more diphtheroid bacillus antigen.
12 serums gave some degree complement fixation with one gram-positive streptothrix antigen.

streptococci; three strains of streptococci which produced green before hemolysis; two strains of *Streptococcus viridans*; three strains of streptococci which did not alter blood; four strains of staphylococci; three strains of diphtheroid bacilli; one gram-positive leptothrix; one gram-negative, anaerobic coccus, and one strain of gram-positive streptothrix. The twenty-seventh antigen used was an alcoholic extract of scarlatinal skin scales. The twenty-eighth antigen was the acetone insoluble portion of an alcoholic extract of beef heart as used in the Wassermann test.

Blood serum was obtained from forty-three scarlet fever patients from the second to the forty-third day of the disease, the most during the third and fourth weeks. From a series of preliminary tests, it was learned that the active serum gives a higher percentage of positive results than the inactivated serum. In the later tests the active serums were used on the same day they were taken from the patients. Each serum was tested with all of the antigens. The results are given in the accompanying tables.

Two serums gave some degree of complement fixation with all of the antigens.

Two serums gave some degree of complement fixation with all of the streptococcus antigens.

The results of the complement fixation tests with bacterial antigens were not conclusive. Comparison of

the action of the same scarlatinal serums with the different antigens showed that the streptococcus antigen which gave the most positive results fixed complement with one more serum than did the antigen prepared from the gram-negative, anaerobic coccus. And the best hemolytic streptococcus antigen fixed complement with four more serums than did the best *Streptococcus viridans* antigen. The results indicated either a nonspecific immunity of varying degree, or specific immunity to a number of organisms; not always the same organisms in the different cases.

TABLE 2.—COMPARISON OF THE RESULTS WITH THE DIFFERENT STREPTOCOCCUS ANTIGENS

Hemolytic streptococcus antigen 22 gave some degree complement fixation with 34 serums.
Hemolytic streptococcus antigen 29 gave some degree complement fixation with 30 serums.
Hemolytic streptococcus antigen 2 gave some degree complement fixation with 24 serums.
Hemolytic streptococcus antigen 4 gave some degree complement fixation with 22 serums.
<i>Streptococcus viridans</i> antigen 17 gave some degree complement fixation with 30 serums.
<i>Streptococcus viridans</i> antigen 28 gave some degree complement fixation with 25 serums.
<i>Streptococcus</i> which produced green before hemolysis antigen 5 gave some degree complement fixation with 30 serums.
<i>Streptococcus</i> which produced green before hemolysis antigen 19 gave some degree complement fixation with 28 serums.
<i>Streptococcus</i> which did not affect blood antigen 23 gave some degree complement fixation with 29 serums.
<i>Streptococcus</i> which did not affect blood antigen 10 gave some degree complement fixation with 24 serums.

INOCULATION EXPERIMENTS WITH PURE CULTURES OF HEMOLYTIC STREPTOCOCCI ISOLATED FROM THE THROATS OF EARLY SCARLATINA PATIENTS

As hemolytic streptococcus antigens gave the highest percentage of positive results with scarlatinal serums, and because they are of frequent occurrence in the throats of scarlet fever patients, they were used in inoculation experiments made with pure cultures of living organisms.

Blood agar plates were made of the mucus swabbed from the throats of patients with uncomplicated scarlet fever within seventy-two hours, and in most cases within forty-eight hours, after the onset of the first symptoms of illness. From these plates the predominant type of hemolytic streptococcus was transferred to blood agar slants which were incubated from twenty to forty-eight hours before swabbing on the throats of volunteers. In a few instances inoculations were made from a second transfer; but in most cases, the volunteer received the hemolytic streptococcus within forty-eight hours after the material was obtained from the patient. Smears of the blood agar slants were relied on to determine the purity of the cultures.

In all, thirty volunteers were thus inoculated with eighteen strains of hemolytic streptococci, and then observed for sore throat, fever, and rash on the skin or palate. Of these thirty experiments, twenty-three were entirely negative. All were negative as to rash on the skin or palate. Seven of these thirty volunteers developed sore throat associated with fever and leukocytosis without rash. A brief description of these seven cases follows:

A woman, aged 21, was inoculated with a hemolytic streptococcus. On the second day following inoculation she complained of sore throat and general malaise without nausea. Her temperature by mouth was 100.2 F. The tonsils were swollen and the throat was hyperemic and a thin layer of grayish mucoid exudate was seen in the pharynx. The sub-

maxillary lymph glands were enlarged and tender. On the third day, the temperature was 101.2 F. and the leukocyte count, 11,000. The throat condition was about the same. There was no rash on the skin or palate. The fourth day after inoculation the volunteer felt well; temperature was normal; the exudate had disappeared from the throat; the submaxillary lymph glands had subsided; and the tonsils were less swollen. There was no rash on the skin or palate.

A woman, aged 21, was inoculated with hemolytic streptococcus. Forty-eight hours after the inoculation she had a sore throat and general malaise. The tonsils were swollen and partially covered by a white exudate. The temperature by mouth was 99 F. The following day a typical follicular tonsillitis had developed with a temperature of 101 F. and a leukocyte count of 10,600. There was no rash on the skin or palate. On the fourth day the symptoms and throat were improved; the temperature was normal, and the patient made a prompt recovery.

A man, aged 34, was inoculated with a hemolytic streptococcus. The next day he had a normal temperature and a leukocyte count of 7,600. The second day he still felt well and his temperature was normal, but his tonsils were slightly reddened. On the third day, he had a slight sore throat with a temperature of 100 F. and a leukocyte count of 10,000. There was no rash on his skin or palate. On the fourth day he felt well, though his temperature was still 99.3 F. On the fifth day he was fully recovered.

A woman, aged 22, was inoculated with hemolytic streptococcus. On the second day following inoculation her temperature rose to 100.2 F.; her throat was injected and her tonsils were swollen. There was no rash on the skin or palate. The leukocyte count was 9,400. The next day there was marked improvement with a normal temperature. Nothing further developed.

A woman, aged 20, was inoculated with a hemolytic streptococcus. This organism had been isolated from a scarlet fever patient just as the rash was appearing. On the second day following inoculation, the temperature rose to 100 F. in the afternoon. On the third day the temperature was 100.6 F., the throat was hyperemic and the tonsils were somewhat enlarged. The leukocyte count at this time was 10,000. There was no rash on the skin or palate. On the fourth day the throat condition was improved and the temperature was lower. On the fifth day the volunteer had fully recovered.

A man, aged 22, was inoculated with a hemolytic streptococcus. Three days later he felt well, but his temperature was 99.2 F. The only change that could be seen in the throat was a white exudate in one tonsillar crypt. There was no rash on the skin or palate. The next day the exudate had disappeared from the crypt and the temperature was normal.

A woman, aged 25, was inoculated with a hemolytic streptococcus. This organism was obtained from a scarlet fever patient with an intense rash. On the fourth day following inoculation, the volunteer complained of sore throat; the temperature was 101 F.; the throat was hyperemic, and the tonsils were swollen and red with some exudate in the crypts; the leukocyte count was 10,000. There was no rash on the skin or palate. On the fifth day there was marked improvement.

INOCULATION EXPERIMENTS WITH A PLEOMORPHIC ORGANISM ISOLATED FROM THE THROAT OF AN EARLY SCARLATINA PATIENT

Nine inoculation experiments were done with a living pure culture of a pleomorphic organism similar to those previously found in cultures of throat, blood and urine in early cases of uncomplicated scarlet fever. Attempts to prepare a satisfactory antigen of this organism for complement fixation tests had not been successful. The strain used in these experiments was isolated from the throat mucus obtained from a patient with scarlet fever before the rash appeared. It showed such extreme pleomorphism that it was kept under daily observation three months before it was accepted

as a pure culture. During these three months, the organism was repeatedly subjected to plating out followed by plating out of single colonies from the first plates; followed again by plating out of single colonies from the second set of plates, etc., until six generations of single colonies had been plated out, after which single colonies were transferred from the last set of plates and all of the old cultures were discarded. The same variability of morphology, staining properties and character of growth would ultimately appear in the new cultures. The whole process would then be repeated. This strain grew aerobically and anaerobically on blood agar and to some extent on plain agar. The growth when a pure culture was plated appeared in from twenty-four to forty-eight hours as minute, transparent, convex colonies which did not affect blood. The morphology of the organism varied from very minute pleomorphic bacilli to longer bacillary and thread forms which were sometimes branched. The gram stain was inconstant; sometimes positive; sometimes negative; frequently gram-negative individuals contained gram-positive granules. Unstained areas were common. A further report concerning this organism is reserved until a later time.

Of the nine volunteers receiving inoculations with this organism by means of throat swabs, seven showed no reaction whatever. Two developed sore throat with fever, leukocytosis and a rash on the palate. They did not show a skin rash. A description of these cases follows:

A woman, aged 28, following inoculation had no symptoms or rise of temperature for two days. On the morning of the third day, she complained of sore throat; the temperature at this time was 99.4 F. There was a hyperemia of the pharynx and swelling of the tonsils. The leukocyte count was 18,400, with 93 per cent. polymorphonuclear leukocytes. There was no rash on the palate or on the skin. On the fourth day the temperature was 100 F.; the submaxillary lymph glands were swollen and the throat showed a generalized reddening with a rash on the soft palate and on the posterior portion of the hard palate. On the fifth day the rash on the palate was more marked; the temperature was 101 F., and the edema of the throat and enlargement of the cervical glands had increased. On the sixth day the inflammation of the throat and the fever began to subside and the volunteer made a rapid recovery. There was at no time a rash on the skin.

A woman, aged 20, showed nothing noteworthy until the beginning of the fifth day following inoculation, when a small, petechial hemorrhage appeared on the right side near the junction of the hard and soft palates. The throat as a whole was reddened, especially the anterior pillars of the fauces. At this time the volunteer noticed no sore throat, and the temperature was normal, but the leukocyte count was 12,000. The following day the petechial hemorrhage noted was larger, and there was a rash of bright red points over the whole of the soft palate and the posterior part of the hard palate. The temperature on this day was 99.2 F., and the volunteer said that her throat felt a little sore. The leukocyte count was 16,000. On the seventh day the temperature was normal, and the rash on the palate was less red. Two days later there was practically nothing abnormal to be seen in the throat, and the volunteer was entirely well. There was no rash on the skin at any time. On the sixth day after inoculation, a few small cutaneous hemorrhages occurred in the cubital fossae on constriction of the upper arm.

COMMENT

In this series of experimental inoculations, no instance of typical scarlet fever was produced.

It would seem that the negative results reported here following subcutaneous inoculation of blood

serum, whole blood and filtered throat mucus are more conclusive than are the negative results following throat inoculations.

The thirty streptococcus throat inoculation experiments constitute a series large enough to discourage further experiments of the same kind with hemolytic streptococci.

If the pleomorphic organism used in nine of the throat inoculation experiments bears an etiologic relation to scarlet fever, it should be possible by inoculation of a larger series of volunteers to produce a rash on the skin as well as on the palate.

INTERMITTENT HYDRARTHROSIS*

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DES MOINES, IOWA

In the first contribution on this subject, published by Dr. C. H. Moore, in 1864, occurs this statement: "The subject of periodicity, or the tendency manifested by certain phenomena of life to recur after equal or nearly equal intervals of time, is still one of the curiosities of medical science. It has been often observed, yet not explained."

How well this applies now will be evident from the discussion to be submitted in connection with the subject of this paper.

Periodicity in disease is observed under different phases, but there is no more striking example than that presented by the condition referred to as intermittent hydrarthrosis, or hydrops intermittens articulorum, which is characterized by recurrent effusions into joints with little or no febrile disturbance or local signs of inflammation.

It is due to the publication of Moore in 1864 that attention was first directed to this interesting clinical syndrome, although two cases presenting the phenomena of this disorder were reported by Perin in 1845, but were not recognized as such at the time, and were republished in 1878 under the proper title.

In the seventy-six years since the first observation, seventy-six cases have been recorded, and while a certain number are somewhat incomplete, there are seventy cases on record that have conformed to a definite type, and it is interesting to note how clearly the characteristic periodicity is maintained in all of the observations.

As a rule, the number of cases reported by each author has varied from one to three examples; the largest number reported by one observer is by Garrod in 1910, who published the records of seven cases.

The greater number of the contributions have appeared in the French, German and English literature.

The first case observed in Australia was reported by Springthorpe in 1912.

The first case published in American literature is that by Fridenberg in 1888; since then one case was reported by Kennedy in 1894, two cases by Brackett and Cotton in 1901, three cases by Healy in 1908, and with the one case included in this paper there have been eight cases recorded in this country.

Those who have written on the subject have a tendency to associate intermittent hydrarthrosis with

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those diseases in which periodicity is a prominent symptom. It is only natural that malaria should be accorded etiologic significance by the earlier writers, particularly since quinin therapy at times seemed to benefit the condition.

Others have been inclined to establish a kinship with articular processes, maintaining that it is a phase or symptom of various articular lesions; and there is a strong tendency among recent contributors to group this with the vasomotor disorders.

In view of the rarity of the disease, I will add the report of one case to those previously reported:

REPORT OF CASE

History.—Mr. L., who is now 36 years of age, manager of a local food market company, whose wife is living but has no children, first came under observation five years ago in 1916. Born in Iowa, he passed through a measles, scarlet fever and mumps infection during childhood, and while in Arkansas in 1904 he had a short attack of malaria which was promptly relieved by quinin, and there has been no recurrence. He soon after returned to Iowa, and then went to Colorado in 1908, where in the fall of 1909 he had an attack of acute rheumatic arthritis involving many joints, of three weeks' duration, which was followed the next year, 1910, by a severe recurrence, continuing through the greater part of that winter. Soon after his recovery in the summer of 1911 he had an illness of five weeks with typhoid fever. Since that time there has been no recurrence of acute arthritis. It is noted though that as early as the spring of 1909 an occasional painful swelling of the left knee had occurred, lasting one or two days, and then passing away. With the onset of the first attack of acute rheumatism in the fall of 1909, the left knee was the first joint to become involved. He returned to Des Moines in 1911, and soon became impressed with a certain regularity in the recurrence of swellings of the left knee. Although conscious of a tendency to periodicity because he marked the periods in his mind as "about time for the knee to swell," he did not consider that feature as sufficiently important to keep a record of it.

After appearing for examination in July, 1916, his attention was called to the periodicity of the attacks, and the patient was advised to keep a more careful record of them. This procedure was most faithfully carried out for a period of five months, and afterward for shorter periods up to the present time. He was also at various times admitted to our hospital service, which permitted accurate observation of the condition.

In the chart made by the patient, a record was made of the day of onset, the height of the swelling, when it began to subside, and the apparent return of the knee to its normal state. The swelling reached its acme on the third day, at which time the pain and discomfort was most marked. The entire cycle had a uniform period of six days, which was followed by a constant and definite interval of twelve days.

This intermittent type or cycle was maintained without a break until the present time. During the interval the knee appears normal in every respect, and in no way interferes with the patient's work, which requires being on his feet all day. A greater degree of rest, as when confined to the hospital, tends to modify the swelling and the resulting discomfort, but no form of therapy has particularly influenced the intermittent attacks of hydrops of the left knee.

Since November, 1920, the right knee has become involved in a similar manner; the swelling is not so marked as the left and covers a cycle of five days, with an intermittent interval of eleven days. At first the hydrops of the right knee followed that of the left, but it has gradually changed so that at present it just precedes the swelling in the left knee.

As to the development of the hydrarthrosis as observed in this case, it occurs with clocklike regularity on the twelfth day of the interval, when the knee begins to swell by a fullness on each side of the patella, a ballottement of the patella developing on the second and third day. On the second day a painful stiffness is noted in the joint which causes a limp in walking; at the height of the swelling on the third day the

circumference of the knee measures 5 to 6 cm. more than after the swelling subsides. On the fourth and fifth days the swelling, with the stiffness and pain incident thereto, begins gradually to disappear, and on the sixth day the knee has returned to the normal state. At no time in the cycle is there any redness or increase in temperature about the affected joint.

During the last five years there has been one exploratory aspiration made, and the fluid removed contained no demonstrable micro-organisms.

Roentgenograms were prepared by Dr. T. A. Burcham in 1916 and again in January, 1921, with a negative result in both instances.

After a ten years' history of the affected joint, it is remarkable that no changes are demonstrable in the tissues of the joint.

General Examination.—The patient at the present time is of medium muscular stature, well nourished, average weight 155 pounds, height 68 inches, mentally alert. There are no signs of abnormal changes in the cranial nerves, and the gait and reflexes are normal. Vasomotor disturbances are not manifest. Vision and hearing are normal. The teeth, with the exception of three that are missing, are normal. The tongue and throat are normal. The lungs and heart are normal. The arteries are soft; the systolic pressure is 135, diastolic, 80. The abdomen is rounded and, well muscled, with no painful areas on palpation. The liver and spleen are not palpable. Fluoroscopic examination of the gastro-intestinal tract is negative. The rectum is negative; the prostate gland is not enlarged.

Aside from the changes described in the left and right knee joints, there are no demonstrable abnormal changes in any of the other joints.

Special laboratory examinations are recorded as an average of a large number of examinations: Blood: hemoglobin, 80 per cent. (Sahli); erythrocytes, 4,567,000; leukocytes, 7,600; differential polymorphonuclears (neutrophils), 62 per cent.; eosinophils, 2 per cent.; small lymphocytes, 35 per cent.; large lymphocytes, 2 per cent. Wassermann reaction, negative. Coagulation time, normal. Urine: acid, specific gravity 1.026, albumin and sugar not present. No diacetic acid. No abnormal microscopic sediment. Sugar tolerance normal. Renal function: first appearance of phenolsulphonephthalein nine minutes. First hour, 90 c.c. = 45 per cent.; second hour, 70 c.c. = 20 per cent., with a total of 65 per cent. Basal metabolic rate, 4.5 per cent. plus.

Treatment.—While the patient has been under observation, the treatment has had two purposes: to remove any demonstrable infective foci, and local therapy to the affected joints of various kinds. The tonsils were removed in 1917, after which the frequent attacks of suppurative tonsillitis, which had been an annual occurrence, did not recur. Three devitalized teeth with definite foci of infection were extracted in November, 1920. In March, 1921, several large, bleeding hemorrhoids were removed by cautery; these had been regarded as a possible causative factor in provoking the moderate anemia.

Under local therapy to the knee joints, a variety of measures have been given a good trial, including injections into the synovial sacs of iodine solutions, external applications of heat, cold, tincture of iodine, electricity and elastic supports. At present, elastic supporters are worn on both knees and give the patient a great deal of comfort.

In the way of internal medication, arsenic, quinin, iodids and different bacterial vaccines (hypodermically) have been given without appreciable benefit.

Summary of Essential Features.—It is evident that a definite periodicity has been maintained for the last five years and probably longer, the entire course extending over ten years, with a fixed period as to cycle and interval that has remained constant in the left knee, with a similar tendency recently in the right knee.

A causative influence can be attributed to two attacks of multiple acute arthritis in the early part of the course of intermittent hydrarthrosis, but since then there have been no associated phenomena of a rheumatic nature to be determined.

The general health has not been affected, and the local affection has evidently not been modified or relieved by the various measures that have been applied.

HISTORICAL SUMMARY

A unity of clinical symptoms has been noted by all observers, which has tended to establish the affection as a definite disease complex; but the opinions and discussions as to the pathogenesis and nature of the process have not been marked by the same uniformity.

In seventy-four cases in which the joint involvement is recorded, the left knee was affected alone in twenty instances, the right knee in twenty-seven cases, and both knees were affected in twenty-seven cases. Associated with six cases, the following joints were also involved: left elbow (twice), right elbow, right ankle, left hip and right wrist joints. The distinctive feature noted is that one or both knee joints is involved in every case reported as intermittent hydrarthrosis.

The longest cycle or attack recorded is given as eighteen days, the shortest two days, with an average of from four to five days as the most common period. The longest interval recorded is thirty days, while the shortest is four days, but a periodicity of twelve days prevails in the majority of the cases.

Concurrent complications have been noted, as arthritis, tuberculosis, anemia, eczema and syphilis; but in the cases that were true to form, the general health was apparently normal and there were no systemic disturbances. Of all concurrent conditions, pregnancy exercises a most conspicuous influence in that it seems to bring about a remission or disappearance of symptoms. In eight of nine cases recorded, there was a complete cessation for a period of six months postpartum.

There seems to be no connection with the menstrual function, although in a few instances the attacks occurred at the same time.

It is interesting to note that in the seventy-six cases recorded men and women were affected alike—thirty-eight of each.

All ages seem to be liable to this disorder, although the decades of life subjected more to exposure and physical strain furnish the larger number of victims. In the seventy-six cases in which the age is given, five were in the first decade, twenty-two in the third, twenty-four in the fourth, nineteen in the fifth, and four in the sixth, and two cases occurred after 60 years of age.

The occupation is noted in about one half of the cases, and it appears that the working class predominates, although a number of professional men have been affected by this disorder.

Heredity has been noted to be a factor in one instance, in the observation made by Blanc, in which both the mother and daughter were affected.

PATHOGENESIS

There has been a tendency to regard the periodicity of the crises as being in accord with the vital phenomena of micro-organisms, and in consequence in the more recently recorded cases efforts have been made to isolate micro-organisms in the fluid of affected joints, but without result. Dr. F. J. Poynton,¹ in a discussion on Dr. Marsh's paper, makes the statement that micro-organisms in affections of the joints are commonly confined to the subendothelial layer and are rarely found in the fluid, which may explain why bacteriologic investigations have been generally unsuccessful.

The earlier writers were inclined to regard the periodicity feature as significant of a malarial origin; but the connection was not demonstrable, and such emi-

nent authorities on the subject of malaria as Sir Patrick Manson and Major Donald Ross have stated that they did not know of any joint affection due to malaria.²

Trauma has been noted in a number of instances as the exciting cause. The part that trauma plays is not easy to decide, but it has a strong negative side, when it is considered that most of the cases recorded present no history of injury causing the first attack. The swelling often comes on when the patient is purposely resting.

A number of recorded cases, including the one here reported, evidently followed an attack of acute rheumatism, although the subsequent symptoms of intermittent hydrarthrosis in no sense resembled those of acute arthritis. Schlesinger makes the argument against its rheumatic nature, in that during a long course of the affection the endocardium remains spared.

While there is much about this disorder that suggests its infectious origin, the connection is still too remote to be explanatory.

NATURE OF THE PROCESS

Aside from the mystery of its pathologic significance, the most interesting feature of this condition is the periodicity. In the state of present knowledge, any attempt to offer a physiologic interpretation of periodicity would be unsatisfactory.

As a syndrome there are few, and these quite incomplete, analogies in the entire field of medicine; but a large number of the authors see a kinship with certain vasomotor disorders, particularly with the acute circumscribed edema of Quincke. This is further suggested by the association of certain articular affections with cutaneous lesions of the erythema group, as Henoch's purpura and erythema nodosum.

The manifestations of angioneurotic disorders are frequently intermittent and periodic. In order to establish this affinity it would seem that localized edema, rashes or other vasomotor disturbances should accompany the hydrarthrosis; and while these have been observed in a small number of cases, in the large majority of the recorded cases vasomotor phenomena were not present.

The injection of diphtheria toxin as well as various antitoxic serums has been followed by temporary swellings of joints suggesting a selective irritative action, probably affecting the vasomotor control of the blood vessels.

The fact that the knee has a most complicated, and by far the largest synovial surface, may explain its peculiar liability to any secretory disorder. It is significant that the knee joint is involved in every recorded case of this disease. In this connection an instructive study of the origin of effusion into joints has been presented by Hildebrand.³ He describes the tremendous network of blood vessels supplying the capsule and synovial membrane, particularly of the knee-joint, and emphasizes the fact which several anatomists have corroborated, namely, that the blood vessels, even the smallest arterial branches, are extraordinarily well supplied with medullated nerve fibers which enter the muscularis, and that all the smallest transitional vessels and capillaries are supplied with nonmedullated fibers. Thus there exists, under the influence of the nervous system, a thoroughly distributed and delicate mechanism capable of readily altering or restoring the normal secretory conditions. Hildebrand also tells of the

1. Poynton, F. J.: *Lancet*, April 22, 1905.

2. Cited by Marsh.

3. Hildebrand: *Arch. f. klin. Chir.* 81: 412, 1906.

peculiarly rich nerve supply to the serous surface itself. The nerve endings are there largely composed of special sense-bulbs. He suggests that through this mechanism irritations which might neither be felt as such nor cause gross anatomic alteration could readily by reflex action produce a transudate. Bennett⁴ cor-

robates this from the clinical standpoint in telling of his fifty-six cases of nontraumatic effusions following old injuries. Pollard⁵ has expressed the belief that many cases of circumscribed cutaneous edema, reported as occurring with tachycardia, prove an abnormal exci-

tability of the vasomotor center in the medulla. Perhaps the occasional occurrence of tachycardia with hydrops of joints may give his hypothesis some value in this affection.

One can logically correlate certain facts, as the tendency in all instances to involve one or both knees, the contribution of Hildebrand explaining the intimate anatomic relationship of the extensive circulation of the knee-joint and the nervous system, and the character of the swelling and alteration in the affected part, permitting the assumption that transitory influences acting either through the circulation or the nervous system, psychic or reflex, mildly toxic or infective, can produce the unique syndrome of this disease condition. It is difficult to account for the periodicity, mainly because in the whole list of biologic and pathologic periodic phenomena, as periodic psychosis, periodic epilepsy, periodic vomiting, for menstruation and periodic migraine, no satisfactory explanation has yet been offered.

PROGNOSIS AND THERAPY

The fact that no recorded case has come to necropsy indicates either that the case passed out from under observation or that the symptoms gradually subsided. In one of Blanc's cases the condition existed for twenty-two years, and then improved with a gradual disappearance of symptoms.

While the disease often continues without interruption for a long period of years, there is a distinct tendency to remission or prolongations of the interval between attacks, and is further obvious from a statistical study of the recorded cases that the ultimate result is favorable. In some instances these so-called cures have been attributed to a medicinal agent like arsenic or quinin or some special external application, yet others have been equally likely to spontaneous betterment. Those who regard this affection as closely related to the functional nervous disorders will find in these spontaneous cures a support for their hypothesis.

As long as the pathogenesis and nature of this curious disease complex remains obscure, it will be difficult to place a definite estimate on the different remedial measures that have been proposed.

ABSTRACT OF DISCUSSION

DR. RALPH PEMBERTON, Philadelphia: The more I see of arthritis, the more I feel that the phenomena of the disease seem to be referable to a single basis rather than to many bases; and this seems to be true of the various types of the disease. However, this cannot be stated in an iron-clad manner. Classifications hitherto have been rather too much from the clinical and not enough from the pathologic standpoint. You must all have been impressed with the frequency with which a diffuse rheumatic process occurred in the case cited. It seems to me that the condition described is part of the arthritic syndrome at large, and that such a conception offers what is necessary to explain it. The periodicity is hard to account for, but we know that fluctuations are frequent in arthritis, and, perhaps, the periodicity may have been more apparent than real. It is interesting to note that the knees are the sites most frequently involved in nearly all classifications of arthritis. In the studies of Lillie and Lyon at the Mayo Clinic in relation to arthritis and tonsillar infection it was found that the knees were most involved, and in our studies in 400 cases we reached the same conclusion. I have sometimes suspected that the effusion in joint disease is a compensatory matter, and I can hardly refrain from mentioning some work that Dr. Hendrix, Miss Grouter and I are doing in Philadelphia now. We have been interested

PREVIOUS CASES REPORTED

Numerical Order	Author	Publication	Number of Cases
1, 2	Moore	Lancet, April 30, 1864	2
3	Canonne	Thèse de Paris, 1867	1
4	Locwenthal	Berl. klin. Wehnschr., 1871	1
5, 6	Grandidier	Bad Neundorf, 1851; cfr., Berl. klin. Wehnschr., 1872	2
7	Bruns	Berl. klin. Wehnschr., 1872	1
8	Bylicki	Przegląd lekarski, 1874; cfr., Centrbl. f. Chir., 1874	1
9	Roser	Centrbl. f. Chir., 1874	1
10, 11	Joussct	Art. médical de Paris, 1877	2
12	Rejou	Thèse de Paris, 1877	1
13	Verneuil	Thèse de Paris, 1877	1
14	Schmidt	Ber. d. Wiss. Vortr. med. Ges. z. Leipzig, 1877	1
15	LeDentu	Société de chirurgie, 1878	1
16	Panas	Soc. de chir., 1878; cfr., l'Union méd., 1878	1
17	Perrin	J. de méd. de Trousseau, 1845; l'Union méd., 1878	1
18	Veillard	l'Union méd., 1857, 1878	1
19	Seeligmuller	Deutsch. med. Wehnschr., 1880	1
20	Pletzer	Deutsch. med. Wehnschr., 6, 1880	1
21	Fiedler	Deutsch. med. Wehnschr., 1881	1
22	Kolbe	Deutsch. med. Wehnschr., 1881	1
23	Pierson	Deutsch. med. Wehnschr., 1881	1
24	Vogt	Deutsch. Chir., 1881, p. 64	1
25	Kapper	Allg. Wien. med. Ztg., 1885	1
26	Goix	Jour. d. Sc. méd. de Lille, 1886	1
27	Rosenbach	Centrbl. f. Nervenh., 1886	1
28	Nicolaisen	Norsk. Mag. f. Lægevidensk., 1887; cfr., Centrbl. f. Chir., 1887	1
29	{ Eschricht	{ Inaug. Diss., Kiel, 1888	{ 1
	{ Von Brinken	{ Berl. klin. Wehnschr., 1889	{ 1
30	Fridenberg	Med. Rec. 33:657 (June 16) 1888	1
31	Hartmann	Inaug. Diss., Königsberg, 1889	1
32	Breslau	Inaug. Diss., Würzburg, 1889	1
33	Schuchardt	Die Gelenkswassersucht, Jena, 1892	1
34	Köster	Deutsch. Ztschr. f. Nervenh., 1892	1
35-38	Féré	Rev. neurol., 1893	4
39	Colonna	Gaz. med. di Torino, 1894	1
40	Kennedy	J. A. M. A. 23:900 (Dec. 15) 1894	1
41	Grube	München. med. Wehnschr., 1894, p. 824	1
42	Chauvet	Lyon méd., 1895	1
43	LeMeme	Gaz. hebdom., 1896; thèse de Paris, 1896	1
44, 45	Senator	Arch. f. Nervenh., 1896	2
46, 47	Blanc	Lyon méd., 1897, cited in Sem. méd., 1899	2
48	Weisz	Berl. Klin. 119, 1896	1
49	Bum	Wien. med. Club, 1899; München. med. Wehnschr., 1899	1
50	Schlesinger	München. med. Wehnschr., 1899; Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1900, p. 441	1
51, 52	Benda	Allg. Centrbl. med. Ztschr., 1900, No. 41	2
53, 54	Brackett and Cotton	Boston M. & S. J., Oct. 31, 1901	2
55	Linberger	Beitr. z. klin. Chir., 1901, p. 299	1
56, 57	Marsh	Lancet, June 4, 1904; April 22, 1905	2
58	Kamp	Deutsch. med. Wehnschr., 1902, No. 12	1
59-61	Healy	Surg., Gynec. & Obst., 1908, p. 466	3
62	Schuller	Ueber die Entstehung der Gelenkentzündung, 1909	1
63	Ribierre	Bull. Soc. méd. d. hôp. de Paris, 1910	1
64	Gandy	Bull. Soc. méd. d. hôp. de Paris, 1910	1
66-72	Garrod	Quart. J. Med. 3:207, 1910	7
73	Springthorpe	Australian M. J., 1912, p. 725	1
74	Chiray and Michelowsky	Paris méd. (thèse), 1913, p. 152	1
75	Dalche	Bull. Soc. méd. d. hôp. de Paris, 1913, p. 441	1
76	Pulawski	Wien. klin. Wehnschr., 1914, p. 421	1

4. Bennett: Lancet, Jan. 7, 1905.

5. Pollard, R.: Ztschr. f. inn. Med., 1907, No. 2.

in the respiratory function of the blood and have made the interesting observation that in the chronic types there may be a distinct departure from normal in the percentage saturation of the blood with oxygen. We have not been able to relate this to a disturbance of the dissociation curve of hemoglobin, and it is suggested that this high percentage of oxygen found in the blood is referable to some circulatory mechanism. It is, perhaps, easier to explain it by some change in the circulation by which the blood flow is altered than to explain it by subnormal metabolism. I mention this fact because Dr. Bierring brought out the view that the circulation may be involved in the condition he describes, and it may be that there is in this observation some substantiation of that. There is also some evidence that with improvement there is a drop in the high percentage saturation toward the normal level of health. Dr. Bierring spoke of the influence of quinin, which is one of the drugs which I think has some value in arthritis, though just how it acts I am not prepared to say.

DR. E. C. ROSENOW, Rochester, Minn.: In regard to the type of arthritis, experiments indicate strongly that among the most important factors is the infecting quality of the micro-organisms introduced. In the study of arthritis of many types we note in the animal different types of localization. In some there is an exostosis, and destruction of the joint. There is usually a suppurative lesion in the joint itself; in others, where this does not occur and the synovial membrane inflammation does not occur, and the trouble is periarticular, on intravenous injection of organisms from that type or arthritis. A very interesting point has been observed in chronic deforming types of arthritis and it brings up the manner that these circulatory disturbances may occur. In chronic cases the organism has not the power to localize in the joint, but it produces lesions around the joint, in the tendons and muscles, and the location of the organism is not marked with a suppurative lesion of the tissues but is associated with endothelial cell proliferation and cutting off the blood supply to the periarticular structures.

DR. JOSEPH ROSENTHAL, Brooklyn: Was there any leukocytosis? What was the incidence of tuberculosis, and of heart involvement in cases recorded in the literature?

DR. WALTER L. BIERRING, Des Moines, Iowa: In the series of examinations made a definite leukocytosis was not observed, and a disproportionate increase in the lymphocytes was not present at any time. There was no incidence of tuberculosis in the family history or the patient's environment. The fact that he was living in Colorado when his affection first developed did not indicate that he had originally gone to Colorado because of a suspected tuberculous infection. The discussion by Dr. Pemberton and his desire to establish a kinship of this affection with some phase of arthritis is in keeping with other observers, because the affection is frequently antedated by an attack of acute arthritis; yet there is also a strong tendency to associate the phenomena with vasomotor disorders, which is further borne out by the absence in many instances of any arthritic history. The thought expressed by Dr. Rosenow that infective agents of low virulence may find for their initial requirements for development an adaptable soil in the knee joint is suggestive, and the resulting reaction may not correspond entirely to the usual response to the entrance of infective organisms, in that a transudate may be the only result. Just how to reconcile this with the periodicity is somewhat difficult, unless it is assumed that there is a certain cumulative tendency in bacterial growth or toxin development to an appreciable extent, expressing itself in the formation of transudate, then spending itself and disappearing with periodic regularity. The periodicity is as difficult to explain as are many other periodic phenomena encountered in disease conditions. An association of these several suggestions may offer the best explanation. The special anatomic arrangement of the knee joint, particularly with reference to the circulation and the nervous system, permits mild irritants, either acting by way of the circulation or nerve distribution, to produce the characteristic effects peculiar to this condition. The value of quinin in the affection, dissociating its influence with any malarial origin, may best be explained by the well known sedative action of the several salts of quinin.

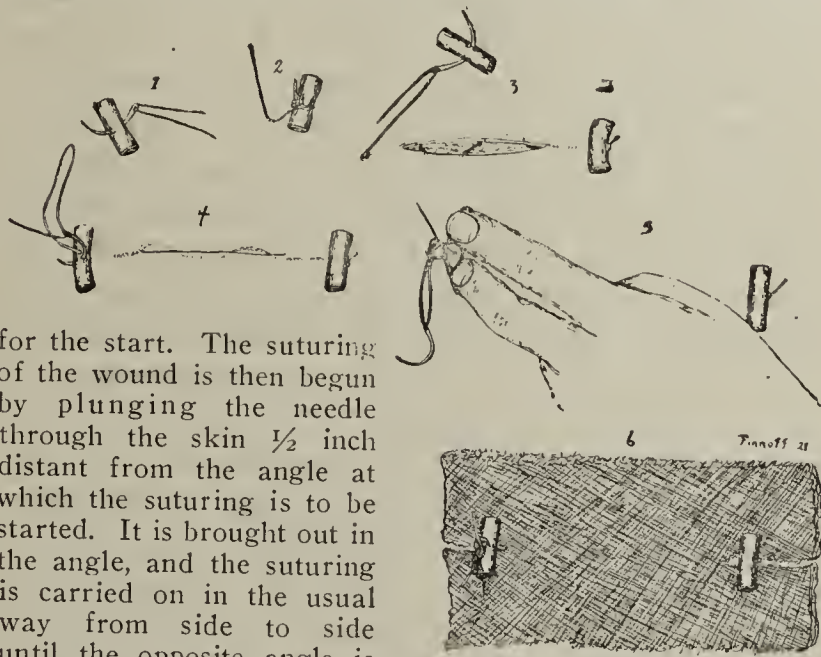
Clinical Notes, Suggestions, and New Instruments

A SIMPLE AND EFFICIENT METHOD OF ANCHORING THE ENDS OF A SUBCUTICULAR SUTURE

L. M. VAN METER, M.D., DENVER

In February, 1919, while operating in Base Hospital 103, I made practical use of a method of anchoring the ends of a subcuticular suture that I had been evolving in my mind for some time. I have never seen it used by another or elsewhere described. The advantages of the method are that it obviates: (1) a tying across of the suture at each end of the wound; (2) several undesirable punctures of the skin necessitated by this method of tying of the suture, and (3) the necessity of having to carry the suture from the surface downward between the edges of the skin incision before the first intracutaneous bite is taken.

The method is simplicity itself: Two pieces of small rubber tubing about $\frac{1}{4}$ to $\frac{5}{16}$ inch in diameter and about 2 inches long, such as are always available in the operating room, ready sterilized, are used. The needle threaded with the suture material is passed through the center of one of these pieces at its midpoint. The suture is drawn through to near its end, when it is tied snugly to the tubing. This affords the anchor



Steps in methods of anchoring ends of subcuticular sutures.

for the start. The suturing of the wound is then begun by plunging the needle through the skin $\frac{1}{2}$ inch distant from the angle at which the suturing is to be started. It is brought out in the angle, and the suturing is carried on in the usual way from side to side until the opposite angle is reached; then when the last bite is taken, the needle is carried under the skin, and made to emerge $\frac{1}{2}$ inch distant in the line of the wound. The second piece of rubber tubing is then transfixed as was the first. The tubing is threaded along the suture until it rests firmly against the skin, where it is held by an assistant. The tubing is again pierced by the needle in a plane at about a right angle to the first passage of the needle; the short end of the suture is not drawn entirely through, the loop is drawn down snugly and the suture tied. This method gives a neat subcuticular closure with only a single skin puncture, about $\frac{1}{2}$ inch from each angle of the wound.

In doing the dressing, I split a small gauze pad and slip it astride the suture beneath the rubber tubing to lift it slightly from the skin, and so prevent direct pressure of rubber on skin. I then lay a sufficient thickness of gauze between the two pieces of tubing over the wound to fill in this interval up to the thickness of the tubing. The method is so easy and simple that it would seem strange if it has not been used by others; but I have never seen it described and have seen no one else employ it. My choice of material for the ordinary intracutaneous suture is No. 0 chromic catgut.

After eight or ten days the ends are cut beneath the bits of rubber tubing, the latter are lifted off, and the buried portions of the suture are left for absorption. The resiliency and smooth yielding surface of the rubber tubing make it preferable to the perforated lead shot or a button or disk of metal or other hard substance.

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SATURDAY, SEPTEMBER 3, 1921

FOOD ALLERGY AND ABDOMINAL PAIN

There is some danger at the present time that the words "anaphylaxis" and "allergy" may become applied in clinical medicine in the haphazard way that characterizes various terms coined to meet the demands of modern endocrinology. To the students of immunology, anaphylaxis has come to mean something definite, to designate specific and characteristic symptoms such as are observed in the usual reactions with typical soluble proteins. Wells¹ has insisted that reactions produced by substances not coming within this class cannot be considered as true anaphylactic reactions unless they can be demonstrated to exhibit the same phenomena. The term allergy, he adds, is broad enough to cover all those manifestations of altered reactivity and to indicate their relationship to one particular form of allergy, anaphylaxis.

Whether the various conditions, such as the tuberculin reaction, hay-fever, and food and drug idiosyncrasies, which manifest cutaneous hypersensitivity belong in the domain of anaphylaxis has been seriously debated by students of the subject.² This fact at once serves as a warning against too hasty generalizations, while it encourages a more vigorous study of the problems with the end of securing a more rational prophylaxis and therapy of the skin manifestations or other aberrant symptoms that are suspected to have their origin in some form of allergy. With this reserve we refer to a recent report presented by Duke³ to the St. Louis Medical Society. He ventures to cite food allergy as an occasional cause of abdominal pain. A number of cases which he has cited as following the ingestion of certain articles of food were found by intradermal skin tests to give local reactions in the same persons to the suspected food. In the majority of cases, pain was associated with nausea and vomiting; less frequently with indigestion, bloating, diarrhea and mucous stools, and much less frequently with hives, angioneurotic edema and purpura. The pain complained of was interpreted as the result of a reaction of allergy caused

by contact between the gastro-intestinal mucosa and the food product to which it was sensitive. According to Duke, this contact gives rise evidently to gastro-intestinal symptoms in much the same way that contact between the mucous membrane of the respiratory tract with the pollen to which it is sensitive gives rise to hay-fever and asthma. It differs only in the fact that abdominal pain is the symptom in the one case and respiratory distress in the other.

If food allergy is a "real cause of gastro-intestinal turmoil," as it has been charged with being the inciting factor in "hives," angioneurotic edema and asthma, for example, the diagnosis should be rendered easier by skin tests with proteins, and the prospect of relief made more likely by avoidance of suspected foods or by desensitizing measures. Duke states that many of his patients exhibiting food allergy have had demonstrable pathologic lesions in the alimentary tract or its appendages, notably recurrent appendicitis, gallstones, duodenal ulcer, dense adhesions and extreme ptosis. It is not an extreme hypothesis to assume that an abnormality in the alimentary tract may be a contributory cause in the manifestations of food allergy described as abdominal pain.

AN INFECTIOUS AGENT IN MILD DIARRHEA

Until a comparatively recent period, the study of diarrhea from an etiologic standpoint has received more scientific attention in the case of infants than in adult patients. The rise of tropical medicine as a somewhat independent discipline has been one of the factors responsible for the growing interest in the diarrheal diseases as special clinical entities in persons of all ages. In this more discriminating attitude of the medical profession, the application of bacteriologic technic to the investigation of the problems of disease has also played a significant part. Nevertheless, the terms diarrhea and dysentery are still used without the precision which medical nomenclature should represent.

Accurate diagnosis demands, among other data, a clear formulation of readily determinable symptoms of disease and, when possible, a knowledge of the inciting agency. These cannot yet be supplied in the case of some of the commoner gastro-intestinal disorders. A member of the Department of Preventive Medicine and Hygiene in the Harvard Medical School has recently made an attempt to institute some discrimination in this field.¹ He has pointed out clear distinctions between epidemic or infectious diarrhea and the more severe type of disease properly spoken of as bacillary dysentery. The latter is associated with *B. dysenteriae*, progresses rapidly, and usually requires hospitalization or similar medical care. There are evidences of toxemia in this form of disease, and the

1. Wells, H. G.: The Present Status and the Problems of Anaphylaxis, *Physiol. Rev.* **1**: 44 (Jan.) 1921.

2. Kolmer, J. A.: *Bull. Johns Hopkins Hosp.* **28**: 163 (May) 1917.

3. Duke, W. W.: Food Allergy as a Cause of Abdominal Pain, *Arch. Int. Med.* **28**: 151 (Aug.) 1921.

1. Weiss, Harry: On the Etiology of an Outbreak of Infectious Diarrhea, *Arch. Int. Med.* **28**: 37 (July) 1921.

marked general reaction is accompanied with fever ranging from 100 to 105 F. Since 1898, the etiologic agent has been definitely ascertained.

Experience with the American Expeditionary Forces during the World War called attention to a mild, non-febrile disease of short duration, characterized by symptoms of an irritating enteritis. They are purely local, and recovery usually follows purgation. The discharges from the bowel do not contain blood and mucus, both of which are characteristic of the stools of patients suffering from bacillary dysentery. Many bacteriologists have searched for *B. dysenteriae* without success in the milder cases. Weiss¹ has concluded that the milder infectious diarrhea is probably transmitted in much the same manner that other enteric diseases are spread, flies being suspected as one of the distributing factors. The Harvard investigators are encouraged to believe that they have discovered a pathogenic micro-organism which can be used to produce an active immunity against subsequent infection. Such findings, as in the comparable cases of the summer diarrhea of infants, have been singularly elusive in the past. Nevertheless, it is too early to relegate to oblivion the micrococcus isolated by Weiss during outbreaks of infectious diarrhea. Its alleged specificity is now presented for verification.

POLLEN DISEASE

The problem of seasonal hay-fever has taken on an entirely new therapeutic aspect since Dunbar, in 1905, reported his attempts to treat the condition with extracts of plant pollens. Considerable evidence has been accumulated by a number of conscientious observers regarding the possible interrelations between pollens and hay-fever; above all, however, the application of the cutaneous or skin test to ascertain the sensitivity of patients to specific antigens has promoted the management of what has long been an annoying malady for which the physician was all too often unable to suggest any durable relief. At the present time, although the essential features of the etiology of hay-fever are believed to be understood, the treatment is still largely of the hit or miss type. Preparations of mixed pollens are distributed by commercial houses and used by physicians in the hope that some ingredient will prove to be potent. Much of the sort of criticism that is today justly leveled at mixed vaccines and polyvalent products can be applied with equal reason to the exploitation of the hay-fever patient, although it must in fairness be admitted that ignorance still outweighs indifference where pollens are concerned.

Several facts seem at length to be so well established that they may serve almost as axioms in the clinic of hay-fever. One of these is that although the offending pollens vary in different parts of the world as well as

at different seasons, the number chiefly responsible for the attacks in any single locality is comparatively small. Hence it becomes a duty of the physician to familiarize himself, by personal discovery if necessary, with the offending pollens in the region where his resources are in demand or whence his patients hail. For the New England states, Walker¹ of the Peter Bent Brigham Hospital, Boston, has lately reminded us of the situation. There the pollen of timothy grass is the cause of probably nine tenths of the early hay-fever of June and July; while for the late hay-fever of August and September the pollen of ragweed is virtually always responsible. It is true that the pollens of rose and red top grass occasionally cause early hay-fever and need to be determined by diagnostic tests, but these are the exceptional cases. The upshot is that diagnosis, the indispensable forerunner of rational treatment, is greatly facilitated by a knowledge of local probabilities; hence other observers are encouraged to publish their collected information, as Selfridge² has done for California, Koessler³ for Illinois, and Scheppegegrell⁴ for the Southern states.

Like others in this field of medicine, Walker has emphasized the importance of making the treatment not only specific for a single determined pollen but also preseasonal. This yields the most satisfactory results, although treatment with pollen extracts during the season may sometimes benefit. Hence the physician should learn the technic of testing and treating seasonal hay-fever with reference to the seasons of pollination and the causative pollens. Treatment with pollen extracts during periods of hay-fever attacks is illogical from the standpoint of anaphylaxis, since it merely increases the amount of the noxious antigen present in the body. This explains, further, why treatment at such times may be actually hazardous.

Since a large variety of pollens may, in rare instances, cause hay-fever or pollen disease, those who have occasion to deal extensively with it should have a good assortment of pollens at their disposal. In extenuation of the frequent failures to relieve patients, it should be noted that certain persons are said to have vasomotor symptoms ranging from sneezing to asthmatic attacks due to the odors of flowers that have no pollen as well as to the presence of nonspecific dusts in the respired air. Walker has referred to mechanical, chemical and thermal causes of these symptoms. Obviously such irritants cannot be combated by specific pollen extracts. It is well to realize the limitations in this field of therapy; for such knowledge always makes for better practice.

1. Walker, I. C.: Frequent Causes and the Treatment of Seasonal Hay-Fever, *Arch. Int. Med.* **28**:71 (July) 1921.

2. Selfridge, G.: Spasmodic Vasomotor Disturbances of the Respiratory Tract, with Special Reference to Hay-Fever, *California State J. M.* **16**:164 (April) 1918.

3. Koessler, K. K.: The Specific Treatment of Hay-Fever (Pollen Disease), in Forchheimer's *Therapeutics of Internal Diseases*, New York, D. Appleton & Co. **5**:671, 1914.

4. Scheppegegrell, William: Hay-Fever in the Southern States, *Southern M. J.* **9**:614 (July) 1916.

METABOLIC MISCONCEPTIONS

Precisely what happens when the temperature of a patient rises is a question regarding which every practitioner ought to have accurate information. The experimentalist can bring about changes in body temperature indicative of a delicate heat-regulating mechanism in the organism,¹ but the alterations which he induces by the use of drugs or artificially produced lesions are by no means always analogous to the conditions existing in a febrile patient. The assumption has been widespread that fevers commonly represent an interference with the ability of the body to eliminate heat.

Du Bois² has pointed out, however, that this view is usually false. The rise in temperature in the chills of malaria, which represents an extreme case with complications, is due to increased heat production, and this is caused in part by shivering and in part by some chemical regulation, the nature of which is still in doubt. Again, the Chicago investigators Balcar, Sansum and Woodyatt,³ having produced excessive fever in dogs by depleting the water reserves of the animals, inferred that fever in man may be associated with an abnormal water metabolism. Du Bois insists, however, that there are no striking abnormalities in the loss of heat through vaporization in febrile patients. His calorimetric observations show that their water metabolism corresponds closely with that of patients exhibiting an equal percentage rise in metabolism caused by hyperthyroidism.

Another contradiction of current conceptions has been afforded by Means' ⁴ studies of obesity, which show the basal metabolism to be normal. Obesity must as a rule, therefore, be due to a disproportion between food intake and bodily activity, rather than to any fundamental change in the rate of combustion in the body. The widespread treatment of obesity by the administration of thyroid preparations is a device for raising metabolism to an abnormal level. The treatment of simple obesity by producing a state of hyperthyroidism Means ⁵ has recently designated as pernicious. Simple obesity can now readily be differentiated from the obesity due to endocrine disorder by determination of the basal metabolism. If this is normal, weight reduction should not be attempted by the use of thyroid, which has already become a practice of the laity and of "antifat specialist" fakers. It relieves one evil by creating another. If we accept Means' dictum ⁵ that thyroid should never be given except to persons who

exhibit subnormal metabolism—a rather sweeping pronouncement—we can sympathize with his view that the sale of this drug except on prescription should be prohibited by law.

Current Comment

ANTIVIVISECTIONISTS ATTEMPT SUPPRESSION OF TRUTH

Mr. Baynes' excellent article "The Truth About Vivisection" in the July *Woman's Home Companion* has evidently proved a body blow to the professional antivivisection agitators. This article, which has already been commented on,¹ is written by one of the leading naturalists and animal lovers in the country. After long, painstaking, and impartial investigation he found, not only that there is no basis for the claims on which the antivivisectionists base their case, but also—and far more important, since it shows the mental and moral caliber of the agitators—that their literature is a tissue of misrepresentations and of garbled and obsolete authorities. Physicians have long known this. In the hearing on the Meyers Dog Bill (S. 1258) before the Senate Judiciary Committee, the advocates of the bill quoted, without any reservation, a statement of Dr. Henry J. Bigelow as the opinion of "one of the greatest surgeons in the United States." Yet Dr. Cannon showed that Bigelow was born over 100 years ago, that he made the statement quoted in 1871, that thirty years later he made another and entirely different statement endorsing animal experiments, that this fact was publicly called to the attention of the antivivisectionists at a Congressional hearing eleven years ago and that they were still using the original and misleading quotation. Mr. Baynes found many similar instances. One Dr. John Elliotson is quoted as a physician "of the highest intelligence." Mr. Baynes found that he was a mesmerist who was born 130 years ago. He also found that the whole case of the antivivisectionists is without any sound basis of fact. Mr. Baynes, as the author of the article, and Miss Gertrude B. Lane, editor of the *Woman's Home Companion*, are now naturally subject to all the invective and misrepresentation which the antivivisectionists can command. The following circular letter, sent out by the New York Anti-Vivisection Society over the signature of Diana Belais, shows the fair-mindedness and sweet reasonableness characteristic of this organization:

To All Friends of Animals:—One of the most reprehensible and misleading attacks upon our literature has its place in the July *Woman's Home Companion*, written by one Ernest Harold Baynes, who claims to be a humanitarian, going about the country lecturing to Humane Societies against cruelty to animals, yet at the last moment of his address delivering a strong defense of the most cruel practice in the world—vivisection. (I have been informed that he has done this without warning to the Society employing him.)

Permission has been asked by me to answer his glaring misrepresentations, but appearances indicate there is a general scheme afoot to spread vivisectional teachings broadcast through those magazines appealing especially to women.

In the meantime, please write to the *Woman's Home Companion*, 381 Fourth Avenue, New York City, excoriating this

1. Barbour, H. G.: The Heat-Regulating Mechanism of the Body, *Physiol. Rev.* **1**: 295, 1921.

2. Du Bois, E. F.: The Basal Metabolism in Fever, *J. A. M. A.* **77**: 352 (July 30) 1921.

3. Balcar, J. A.; Sansum, W. D., and Woodyatt, R. T.: Fever and the Water Reserve of the Body, *Arch. Int. Med.* **24**: 116 (July) 1919.

4. Means, J. H.: *J. M. Res.* **32**: 121, 1915; The Basal Metabolism in Obesity, *Arch. Int. Med.* **17**: 704 (May) 1916. Means, J. H., and Woodwell, M. N.: *Ibid.* **27**: 608 (May) 1921.

5. Means, J. H.: Determination of the Basal Metabolism as a Method of Diagnosis and as a Guide to Treatment, *J. A. M. A.* **77**: 347 (July 30) 1921.

1. *J. A. M. A.*, Aug. 6, 1921, p. 469.

nonsensical article—full of perversions—that defends vivisection, and I sincerely hope you may follow my example by telling the editors that not only have you bought your last number, but that you will enter upon a personal campaign to urge others to withdraw all support in future.

I do not ask this of you on solely sentimental grounds, but because we must unmistakably show those who boldly and flagrantly misrepresent our literature that our united strength is something to be reckoned with.

Act at once!

Do not forget that vivisectionists have admitted that our "Medical Opinion" booklet has done them a lot of harm—hence these repeated attempts to undermine it and our other work built up with so much care.

Faithfully yours,

Diana Belais,
President.

Comment is unnecessary. It is also superfluous in view of the admirable editorial of the *Boston Herald* for Aug. 25, 1921, which says:

The New York Anti-Vivisection Society is making a serious mistake in trying to boycott the *Woman's Home Companion* because it recently printed an article by Ernest Harold Baynes, the well known nature lover and humanitarian, on the "Truth About Vivisection." Are the antis unwilling that people should hear the other side? Apparently their president has sent a letter to the faithful in which he asks them all to write to the magazine, excoriating the article, and he further expresses his hope that they will follow his example by telling the editor that they have bought their last copy of it, and they will enter into a personal campaign to urge others to withdraw all support in future. It is not by suppression of intelligent discussion that any cause really derives aid. If the cause of the antis, in this instance, is so bad that they dread the presentation of the other side, it must be even weaker than we supposed.

The attempted boycott of the antivivisection agitators against Mr. Baynes, Miss Lane, and the *Woman's Home Companion* will naturally have little effect that was not anticipated. Every fair minded person must recognize the value of such an unbiased summary of the problem as Mr. Baynes has presented. A public service of great value has been rendered by the author of the article, the editor and the periodical which have had the courage to publish the facts in the face of such an unprincipled opposition as was realized would be encountered.

PUBLIC HEALTH LEGISLATION IN THE SIXTY-SEVENTH CONGRESS

The present Congress was called by the President to meet in special session on April 11, 1921. It took a recess at midnight on August 24, in accordance with a joint resolution which had previously been agreed on. During the session there were introduced in the Senate 2,457 bills and in the House 8,405 bills, beside several hundred resolutions, joint resolutions and concurrent resolutions. Of this large amount of legislative material, 121 were bills relating in some way to public health. The most important of these have already been discussed in THE JOURNAL. As is usually the case, only a few of these bills became laws. The Sweet bill creating a veteran's bureau became a law on August 9. The Sheppard-Towner bill, frequently referred to, passed the Senate on July 22 and is now in the committee on interstate and foreign commerce in the House. The Fess-Kenyon bill, providing for a department of public welfare and regarded as an

administrative measure, is still before the committee to which it was referred. The Willis-Campbell bill amending the Volstead act passed both houses and was referred to a conference committee. The conference report was agreed on by the House prior to adjournment, but not by the Senate. The Smoot-Reavis joint reorganization commission, created by the passage of the joint resolution during the last session of Congress, is now at work on a survey of and plan for the reorganization of the entire executive department of the federal government. It is understood that the plans of the committee provide for a department of public welfare, as a part of the reorganization scheme. Other health measures include the general deficiency appropriation bill, containing an appropriation for the Interdepartmental Social Hygiene Board; a bill for the control of venereal disease in the District of Columbia; a bill creating a department of education, and several bills for the promotion of physical education. The Meyers dog bill, which was introduced at the last Congress, referred to the committee of judiciary and never reported on, was reintroduced in this session and referred to the same committee. No action on it has been taken. The adjournment is in the form of a recess until Wednesday, September 21, with the understanding that no business is to be transacted until Monday, October 3. This recess has no effect on the status of pending bills. All legislation now under consideration will continue as such after reassembling of Congress and if not acted on by the end of the special session will automatically come before the regular session of the sixty-seventh Congress which will meet according to law on December 5.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Hospital News.—Arrangements have been made with the Bureau of Indian Education to admit, at low rates, natives who need hospital care, to the Anchorage Hospital, which was built and is operated by the Alaskan Engineering Commission for their employees.—In accordance with a general plan for retrenchment, the Alaskan Engineering Commission has decided to limit the functions of the general hospital at Nenana to emergency work, and to transfer the general work to Fairbanks, where arrangements have been made with St. Joseph's Hospital to handle railroad cases under contract. Chief Surg. Thomas O. Lake will make his headquarters at Fairbanks, and will have charge of all the hospitals in the northern division.

CALIFORNIA

Personal.—Dr. Frank W. Hodgdon, Jr., was appointed health officer and city physician of Pasadena, August 16, to succeed Dr. John Severy Hibben, who resigned to engage in private practice.—Dr. C. F. Brown has resigned as surgeon at the San Pedro receiving hospital to take charge of a 200-bed hospital in the province of Hunan, China. Dr. Brown is being sent as a medical missionary to China by the Westlake Presbyterian Church of Los Angeles.

Hospital News.—Following a survey of the hospital facilities of Merced County, plans were made, in consultation between officials of the League for Conservation of Public Health and the Merced County Medical Society, for a hos-

pital that would meet the actual needs of the county. It was decided to build a community hospital, the board of directors of which would be laymen, and the staff, physicians of the county medical society; the institution would be incorporated and the stock sold to the citizens of the community. Educational propaganda was started in March, and plans for the financial arrangements are so nearly completed that work can be started on the first unit of the hospital.—The cornerstone of the new \$100,000 Orthopaedic Hospital School at Los Angeles was laid, August 21. In addition to the 940 patients now being treated by the Orthopaedic Foundation for part time, the new home will provide permanent quarters for from sixty to eighty inpatients. Five orthopedic surgeons will constitute the staff, no member of which will receive compensation for his services. The work is to be charitable, except in cases in which the condition warrants the payment of a fee by parents or guardians.

DISTRICT OF COLUMBIA

Dr. Peabody Accepts New Appointment.—Dr. William D. Tewksbury has resigned as superintendent of the Tuberculosis Hospital of the District of Columbia. He was succeeded by Dr. Joseph W. Peabody, who was named immediately by the commissioners of the District of Columbia.

ILLINOIS

Chicago

Personal.—Dr. P. J. H. Farrell has been elected Commander of the Chicago Chapter of Military Order of the World War.

National Hospital Day.—A meeting will be held at Chicago, September 10, to which all hospitals interested in the movement to educate the public to the true scope of hospital service are invited.

INDIANA

Sterilization Law Declared Unconstitutional.—The state supreme court has declared the sterilization law unconstitutional. The principal point taken is that the statutes do not give the person concerned a hearing before a judicial body where he may present his side of the case and evidence. The question was also raised as to sterilization being an extra punishment not ordered by a court.

MASSACHUSETTS

Personal.—Dr. Florence A. Sullivan was elected a member of the board of health, Haverhill, to fill the vacancy that was made by the death of Dr. John F. Croston.

MICHIGAN

State Bureau of Laboratories.—According to a statement of the commissioner of health, 149,542 specimens were examined during the fiscal year, ending July, by the bureau of laboratories—an average of thirty-four specimens to every physician in the state. Increased laboratory service for physicians throughout the state will be made possible, October 1, when the bureau of laboratories of the state department of health moves into its quarters in the new state office building.

Health Camp for Children.—The summer health camp on the grounds of the Municipal Tuberculosis Sanatorium, Northville, opened the doors of its permanent buildings, July 28. There are now about seventy-five children, undernourished and tuberculosis exposures. Ornamenting the space over the doorways of the various units are the plaster reproductions of Mother Goose fables—The Three Men in a Boat, Old King Cole, Humpty Dumpty, etc. This, together with the high gables, the expansive roofs of multicolored shingles, the miniature doorways and other unusual features suggest the gingerbread house famous in the adventures of Hansel and Gretel. The children will remain at camp until the opening of school. It is expected that the capacity will be doubled next summer by the erection of additional units.

MONTANA

Government Aids in Campaign Against Rocky Mountain Spotted Fever.—Following the report of Dr. Thomas Parran, Jr., who was sent from Washington, D. C., to investigate the spotted fever situation in this state, it was announced that the U. S. Bureau of Public Health will spend \$21,000 this year to aid in research work in the Bitter Root Valley in the campaign against spotted fever. A field laboratory is to

be established near the regions where the disease is prevalent. The state will continue its control work, for which there is an annual appropriation of \$9,600. There have been eleven cases of spotted fever this season, with nine deaths.

NEW HAMPSHIRE

Health Day.—At the Health Day conference held, August 5, at Durham, Dr. William R. P. Emerson, Boston, Dr. Helen I. D. McGillicuddy, Boston, field agent of the Interdepartmental Social Hygiene Board of the United States, and Dr. John Bowler, physical director of Dartmouth College, were among the speakers.

NEW JERSEY

Typhoid in New Jersey Towns.—Approximately 100 people are ill and one person has died in Burlington County towns, of typhoid traced to a church harvest home picnic held about three weeks ago. Nurses and physicians have been sent to the scene of the epidemic to assist local physicians in giving residents the typhoid immunizing treatment.—David C. Bowen, chief of local health administration at Trenton, stated that a farm hand was responsible for seventy-four cases of typhoid in previous epidemics. Officials of the state board of health have started an investigation to determine whether any of the typhoid cases in Burlington County can be traced to this farm hand, who has been declared a typhoid carrier.

NEW YORK

Infantile Paralysis Spreads.—Within a short period ten cases of infantile paralysis have been reported in Westchester County, thirty-three in Utica, fourteen cases in Herkimer County, and others in various parts of the state, making a total of 100 cases. Dr. Herman M. Biggs, state health commissioner, states that there is no need for alarm, but urges parents to keep their children away from large gatherings and advises that children be not allowed to become overfatigued. During the first eighteen days of August, fifty-three cases with eight deaths occurred in New York City. The cases are mostly of a mild type. It is thought that most of them have been brought from out of town.

New York City

Personal.—Dr. George O'Hanlon, general medical superintendent of Bellevue Hospital, and Dr. John W. Perilli have been made Chevaliers of the Crown of Italy by T. F. Bernardi, the Italian Consul General, the decorations being authorized in recognition of their work in the reorganization of the Italian Hospital in this city.

Typhus Suspect Holds Up Liner.—A suspected case of typhus in the second cabin of the Cunarder *Aquitania* which arrived in quarantine, August 21, detained the vessel an entire day. The patient and sixty-one passengers in her section were detained on Hoffman Island for observation. With present methods of inspection no repetition of a "typhus scare," such as occurred earlier in the summer, is anticipated.

OHIO

Personal.—Dr. John Dudley Dunham, who has been connected with the Grant Hospital, Columbus, has been elected as assistant professor of medicine at the Ohio State University, College of Medicine, Columbus.

State Health Meeting.—At the second annual conference of the Ohio State Health Commissioners, which was held, August 12-16, at Columbus, Dr. Haven Emerson, Dr. Richard A. Bolt, general director of the American Child Hygiene Association, and Dr. John A. McMullen were among the visiting speakers.

PENNSYLVANIA

Aged Physician Honored.—Dr. Donald Guthrie, head of the Packer Hospital, Sayre, recently entertained the members of the Sullivan County Medical Society at a dinner in honor of Dr. Martin E. Herrman, Dushore, who will be 80 years old in four months, and has just completed his fifty years as a surgeon and physician of active practice. At the conclusion of the banquet the Sullivan County Medical Society presented Dr. Herrman with a silver loving cup.

State to Clean Up on Harrisburg Ice Cream.—Questions involving authority of the state department of health in third-class city health affairs have arisen as a result of a demand by state health officials that Harrisburg clean up its ice cream

and milk supplies. The municipal authorities have agreed to enact supplements to the milk regulation ordinance. State health authorities have called attention to reports on some of the ice cream sold and it is understood if the city authorities do not act, the state will take charge of plants and stores and enforce regulations.

Warns Against Danger of Polluting Water.—Warnings against the dangers of pollution of water and milk supplies were issued by the state department of health following investigations made by sanitary engineers into typhoid outbreaks in various parts of the state. Dr. John Moore Campbell, chief of the division of medical inspection, urged that promiscuous drinking of water from springs and wells be avoided; that local milk ordinances be passed to secure pasteurized milk, and the dairy farms be inspected and suspicious illnesses promptly reported.

Philadelphia

Typhoid Traced to Milk Supply.—Thirty-one cases of typhoid fever discovered within the last few weeks in the vicinity of Bryn Mawr have been traced to an infected milk supply. The wave of typhoid had been assuming the proportions of an epidemic when the health authorities took a hand. All the cases were in a section that embraces part of lower Merion Township, a district that had been supplied with milk by one dealer.

TENNESSEE

Hospital News.—The contract has been awarded for building the King's Daughters Hospital at Gullfort, at the cost of \$90,000.—Plans have been completed for a new \$450,000 Jewish hospital to be erected at Memphis.

VIRGINIA

Personal.—Dr. Edwin J. Nixon, Petersburg, had two ribs broken recently in an automobile collision.

WEST VIRGINIA

Personal.—The governor has appointed Dr. Dennis McClung, Rupert, as superintendent of the State Hospital for the Insane at Spencer, to succeed Dr. Samuel R. Holroyd.

GENERAL

American Academy of Ophthalmology and Oto-Laryngology.—The twenty-sixth annual meeting will be held at Philadelphia, October 17-22. The Trunk Line Association has granted an extension of time on the purchase of return tickets at half rates, from Oct. 26 to Nov. 1, 1921, provided 350 tickets are purchased on the certificate plan.

Personal.—Dr. Ma Saw Sa, head of the Lady Dufferin Hospital, Rangoon, Burma, and first woman of her country to receive a degree from a university, has come to the United States to continue the study of medicine at Johns Hopkins University, Baltimore. Dr. Ma Saw Sa has been made an honorary member of the Royal College of Physicians and Surgeons, Dublin.

Anesthetists to Place Morton Bust in Hall of Fame.—At the annual dinner of the American Association of Anesthetists held in Boston during the annual session of the American Medical Association it was voted to solicit funds for the purpose of placing a bronze bust of Morton in the niche assigned to him by the electors controlling the Hall of Fame. The bust is to be placed on October 16 in celebration of the anniversary of Morton's first public demonstration of ether anesthesia. Those desiring to contribute may send check or money order to Dr. F. H. McMechan, secretary of the American Association of Anesthetists, Avon Lake, Ohio.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hoffman Memorial Hospital, Little River, Kan., \$50,000, as endowment fund from George M. Hoffman.

The Reid Memorial Hospital, Richmond, Ind., \$30,000, by the will of Mrs. Helen Dongan.

Methodist Episcopal Hospital and Deaconess Home, Indianapolis, \$6,000, for the endowment of a room, by the will of Fidelia Anderson.

Hahnemann and Flower Hospital, New York City, each \$5,000, by the will of Mrs. Fannie J. Byrnes.

Mount Sinai Hospital, Philadelphia, \$3,000; Jewish Hospital, \$2,000; the Hebrew Sheltering Home, and the Hebrew Orphans' Home, the Downtown Consumptive Institute and the Juvenile Aid Society, each \$1,000, by the will of Louis Mark of Philadelphia.

Home for the Aged, Newport, R. I., \$3,000; Homeopathic Hospital, Providence, and the Homeopathic Hospital, Boston, each \$2,000, and the Newport Hospital, \$1,000, by the will of Dr. Nathaniel G. Stanton of Newport.

The Wesley Hospital, Chicago, and a Des Moines hospital, each a farm, under the will of Miss Hannah Longshore, Cambridge, Ill.

Child Health Council to Make Demonstration.—The National Child Health Council, the recently created national body for coordinating child health activities, has announced that plans for a novel national child health demonstration will be centered in Mansfield and Richland County, Ohio. With an appropriation of \$200,000 set aside for the purpose, to be supplemented by funds from the community, it is hoped in the five years which the demonstration will cover to develop a program for child health that shall be so comprehensive and well balanced that communities all over the country will watch and profit by it. The Council made a careful study of the relative merits of approximately eighty communities which applied for the demonstration. Mansfield and Richland County won its vote because they most nearly met the requirements, the chief purpose of which was to select a city and county which should be fairly typical of the average of American life, the city to have a population of between 20,000 and 30,000 and the county of between 50,000 and 60,000. Some of the specific conditions laid down were that a normal percentage of the population should be engaged in manufacturing; there should not be any strikingly predominant racial stocks; there should be a variety of industries; the surrounding area should be an agricultural territory; the community should be located in the birth registration area and vital statistics should be fairly complete; the mortality of infants and children should not be strikingly abnormal. Enthusiastic pledges of cooperation have come from the medical profession, business and labor representatives, city and county officials, women's organizations, churches, civic and social organizations, etc. Dr. Walter H. Brown, health officer of Bridgeport, Connecticut, also distinguished for service with the Red Cross and later with the American Commission for the Prevention of Tuberculosis in France, has been secured to direct the demonstration.

Senate Deadlocks on Volstead Amendment.—As stated previously in THE JOURNAL, House Bill 7294, known as the Willis-Campbell bill, passed the House of Representatives, June 27, and the Senate, August 8. On account of a few differences in the form of the bill as it passed the two houses, it was referred to a conference committee in accordance with congressional procedure. The conference committee agreed on a report, which was presented in both the House and the Senate on Tuesday, August 23. The only essential difference in the two bills is that the Senate added Section 6, forbidding any officer of the United States to search property or premises of any person without a search warrant. The provision has no effect on the privileges of physicians in prescribing alcoholic liquors, which are as stated in the previous editorial. The conference committee agreed on a compromise prohibiting any search of a private dwelling. The House accepted the committee's report, thereby adopting the bill as amended. In the Senate, however, a protracted discussion developed on the constitutional provision regarding the right of search and seizure, a purely technical legal question, the discussion of which prevented the Senate from adopting the conference report before the time set for adjournment. As a result, the bill is still in the hands of the conference committee and will so remain until after the reassembling of Congress. Under the parliamentary rules of Congress, however, only those points on which there was a disagreement between the two houses are open to further discussion. The main provisions of the bill have been adopted by both houses by a large majority. On account of this situation, Secretary Mellon has refused to issue the regulations drawn up by the Bureau of Internal Revenue following Attorney-General Palmer's decision that beer could be dispensed as a medicine. Mr. Mellon has pointed out that the antibeer bill had passed both branches of Congress and that the question of the right of search and seizure, which prevented its final enactment, had no bearing on the use of beer as a medicine, which question had been finally settled by the action of Congress.

LATIN AMERICA

Election of Officers.—The Sociedad de Cirugía of Bogotá elected in July the following officers: Dr. Martín Camacho, president; Dr. J. Aparicio, vice president; Dr. J. Rico, treasurer and Dr. R. Amayo Arias, secretary.

Centennial of the Foundation of the University of Buenos Aires.—The graduation exercises of the National University of Buenos Aires were held, August 11, at the same time as the ceremonies commemorating the centenary of the foundation of the university.

Personal.—Dr. Buenaventura Cádiz of Valparaíso has been appointed superintendent of the Hospital of San Agustín.—Dr. Fernando Calderón, dean of the Medical School of the Philippines and director of the General Hospital of Manila, is now in the United States, visiting medical centers and schools.

Plan for a New Medical School in Chile.—The Concepción University authorities have submitted, at the request of the Chilean government, plans for the establishment of a medical school at Concepción, Chile, in which there may be studied the first two years of medicine. It is estimated that the original expenses will amount to 540,000 pesos (about \$54,000).

Congress and Conference Week at Montevideo in October.—The Second South American Congress on Dermatology and Syphilography is to convene at Montevideo, October 9-16, of the current year, as already mentioned in these columns. The same week will witness the meeting of the Second National Medical Congress of Uruguay; the third reunion of the South American Conference on Hygiene, Microbiology and Pathology, and also a conference on "medical pedagogics," to which the medical faculties of all the South American universities have been officially invited.

Prizes Offered by the Havana Academy of Sciences.—The *Revista de Medicina y Cirugía* of Havana gives the details of the competition for three prizes offered by the Academia de Ciencias Físicas y Naturales for the best articles on "The Problem of Acidosis in Children"; or a discussion of the theme: "Is the unconscious memory—as E. Hering asserts—the most important property of organized matter?" The Cañongo prize is offered for the best article on any theme selected. The competing articles must be in Spanish, English or French and sent with name in sealed envelop. The competing articles must be received before March 31, 1922. They become the property of the Academy whether they win a prize or not. The Suárez Bruno prize is 300 pesos, the Gordon prize a gold medal, and the Cañongo prize 50 pesos.

Day Nurseries in Factories.—By a law of Chile, signed, March 22, owners of factories employing fifty or more women over 18 years of age are given six months in which to provide day nurseries for the children of their women employees. Plans are to be approved by the National Bureau of Public Health. Rooms must be well lighted and ventilated, with accommodations for not more than twenty-five children, and each room used for this purpose must be in charge of a competent person, paid by the employer. A medical certificate, which may be obtained free from a hospital or dispensary physician, is required for the admission of the children. The only bar is a contagious disease. Every mother of a child less than a year old, may have two half-hour periods each day, in addition to the regular rest period, for nursing her child.

FOREIGN

Bookkeeping for Physician's Wife.—A three hour course has recently been held at Frankfurt-on-the-Main designed to teach the wives of physicians how to do the bookkeeping for their husbands.

Physicians in France.—The *Gazette Hebdomadaire* states that of the 22,990 physicians in France and its colonies, 5,415 are located at Paris. The total population of France proper was 39,601,509 in 1911.

Hospital News.—Work will be started this fall on the buildings for St. Luke's International Hospital, Tokyo, which was established and has been maintained for many years by the Protestant Episcopal Church of the United States.

International Epizootics Conference.—The recent conference at Paris to discuss ways and means to stamp out disease and prevent epizootics among domestic animals and cattle was attended by delegates from forty-three nations, according to the report in the *Annali d'Igiene*. A permanent international committee was appointed to organize a system of international prophylaxis, to work subsidiary to the International Bureau of Hygiene at Paris.

Venereal Disease at Paris.—The *Presse Médicale* states that syphilis is being encountered with such frequency at Paris since the war that the municipal authorities have arranged for additional evening special consulting stations in six of the public hospitals, including the Charité and Boucicaut. The editorial adds that the location and hours of these stations should be placarded in all the comfort stations, etc. These now are given over to the posters of charlatans claiming to cure venereal disease in a short time.

Health Week.—Under the patronage of the king and queen, Health Week will be generally observed throughout Great Britain, October 9-15. It is suggested that "health, happiness and efficiency" and the consideration of what each individual can do for himself and his neighbor in securing a healthy life" should be the dominant ideas. The movement was instituted in 1912, and in 1914 the Royal Sanitary Institution appointed a committee to undertake the central organization. Local committees control the local celebration in each center, which is necessarily governed by the resources and needs of the locality.

Permanent International Committee on Military Medicine and Pharmacy.—At the conclusion of the recent International Military Medical Congress, a permanent committee was appointed to prepare for the next congress and to centralize and adopt standards for promoting the physical welfare, etc., of recruits. The members of the committee are Bainbridge for the United States; Uzac, France; Van Baumerghen, Spain; Stirling, England; Caccia, Italy; Da Fonseca, Brazil, and Thomann, Switzerland, with Wibin, Belgium, president, and Voncken, Belgium, secretary. The latter is co-editor, with Stassen, of the *Archives Médicales Belges*, for seventy-four years the organ of the medical department of the Belgian army. Voncken's address is Direction Générale du Service de Santé de l'Armée Belge, Brussels.

Reciprocity Between Germany and Spain Advocated.—The *Deutsche medizinische Wochenschrift* relates that the Berlin Medical Society at a recent meeting decided to appeal to the government to enter into agreements with the government of Spain for reciprocity of medical degrees. Dührssen stated that when he was in Brazil recently, the Brazilian minister of public instruction assured him of his desire to have a similar treaty of reciprocity drawn up between Brazil and Germany. The German minister has expressed his willingness to cooperate and enter into negotiations with the governments of all countries in which the settling of German physicians can be regarded as feasible. Our exchange states that it has been advocating the principle of reciprocity since 1899, when its first special article on the requirements for practice in foreign countries was published.

Fourth Annual Meeting of the French Interns.—The Fourth Congrès de l'Internat Français, recently held at Toulouse, discussed among other subjects the necessity for interns being insured against professional accidents, and appealed to the authorities that this should be done in all the public hospitals. The question of the interns' treating beneficiaries of workmen's compensation was referred to a legal authority for discussion at the next meeting. The material interests of the intern were also the topic of discussion, and the question of interchanging interns between the public hospitals of large cities was deliberated. Toulouse and Lyons were particularly interested in the question of three month interchanges. The next congress is to be held at Lille in 1923. Prof. R. Cruchet of Bordeaux is the secretary of the organized interns.

Congress of Catalan-Speaking Physicians.—On June 26-28, there was held in the city of Gerona the Fourth Congress of Catalan-Speaking Physicians. The congress was well attended by physicians from Catalonia, Balearic Islands, and Valencia, Spain, and the Oriental Pyrenees, and Roussillon, France. The subjects discussed were present status, diagnosis and therapy of parasyphilis and chronic intestinal stasis. The essayists included Drs. Farruella, Pujol and Brull of Barcelona and Professors Bartrina, Morales and Nubiola y Peyri. In the section on surgery Dr. Corachón, head of one of the services of the Hospital General of Barcelona, presented a paper on "Cineplastic Amputation, Cinematization of Stumps and Application of Prosthetic Apparatus," which attracted much attention. Dr. Corachón is the first person who has devoted attention to this subject in Spain. Other papers presented which were much discussed were Prof. Ribas y Ribas' "Anesthesia of the Gasserian Ganglion," and Professor Prug's "Gastrotomy by Transplantation." In connection with the congress there was held a very complete exhibition. The fifth congress will be held in 1923 in the city of Lérida. Dr. Farruella was elected president. The official subjects to be discussed will be compound fractures and brain hemorrhage.

Deaths in Other Countries

Dr. F. W. N. Haultain, on staff of Royal Maternity Hospital, Edinburgh; one of the first in the country to advocate the practice of early rising in puerperium; author of "Practical Handbook of Midwifery," and also made many con-

tributions to the literature of obstetrics, printed in the medical journals, aged 60.—Dr. A. B. R. Myers, awarded gold medal for Alexander prize essay on the "Etiology and Prevalence of Diseases of the Heart Among Soldiers," also Suakim medal with clasp for service in the Sudan Expedition of 1885, aged 83.—Dr. W. W. E. Fletcher, twenty-five years service as medical inspector, local government board, London, aged 64.—Dr. D. Gerhardt who was called in 1911 to be the successor of von Leube in the chair of clinical medicine at the University of Würzburg, one of the leading German internists of the day, aged 56.—Dr. E. Perrier of Paris, an authority on zoology and member of the Academy of Medicine.—Dr. P. Bérard and Dr. J. Blechmann, also of Paris, frequent contributors to medical literature.—Dr. J. E. Ferrán, professor of surgery at the University of Havana, and connected with various hospitals and dispensaries and with the municipal public health service, founder of the sanatorium "Cuba."

CORRECTION

Prophylaxis and Serum Therapy of Yellow Fever.—In the article by Dr. H. Noguchi on this subject which appeared in THE JOURNAL for July 16, 1921, page 181, there are several errors in the text as well as in the charts. These errors appeared also in the original manuscript. Corrections of these errors have been made in the reprints of the article, which Dr. Noguchi will be glad to send to those interested. He may be addressed at the Rockefeller Institute, Sixty-Sixth Street and Avenue A, New York.

Government Services

Resignations from Army Medical Corps

Resignations of Major Calvin D. Cawles, Jr., and First Lieut. James M. Odell, Medical Corps, U. S. Army, have been accepted by President Harding to take effect on their arrival in the United States from foreign service.

Health of the Army

For the week ending August 13 there were in the Army 116,485 men in United States and 13,487 men in Germany, with a noneffective rate per thousand of 29.34 for troops at home and 31.74 for troops abroad. Of troops in the United States the most common causes of illness were the common respiratory diseases with 128 cases; venereal diseases, 113; malaria 38, and common diarrhea 36. Among the troops abroad there were 35 new cases of venereal disease with only one or two cases of any other form of illness. The malarial rate is still rising and is much higher than the normal rate for August. Twenty of the 38 cases of malaria were reported from the Seventh Corps area.

Medical Corps Reserve Units

Medical Corps reserve units have been established in nine additional Class A medical schools of the country, where students will be given courses to join the Army Medical Reserve Corps. The list includes:

- University of Pittsburgh, Pittsburgh, Pa.
- Baylor University, Dallas, Texas.
- University and Bellevue Hospital Medical College, New York.
- Cornell University, New York.
- State University of Iowa, Iowa City, Iowa.
- Western Reserve University, Cleveland.
- Ohio State University, Columbus, Ohio.
- University of Buffalo, Buffalo, N. Y.

Three assignments of officers to serve as professors of military science and tactics from the Medical Corps of the Army have been made. They are Major Ralph G. Devoe to University and Bellevue Hospital Medical College; Major Charles W. Farr, Medical Corps, retired, to University of Buffalo, and Major Harry Beery to the Ohio State University. Steps are now being taken by the Surgeon-General of the Army looking toward the assignment of officers in a similar capacity to the other medical schools mentioned in the list. To date medical reserve corps schools have been established in eighteen medical colleges. Under the allowance made by the Secretary of War it is expected that about five more medical schools will be permitted to open courses.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 8, 1921.

Jewish Vital Statistics

To the *Jewish Chronicle* Dr. R. N. Salaman has contributed an interesting review of Jewish vital statistics. The mortality of the Jews is everywhere lower than that of their Gentile neighbors. Though hounded on all sides, and herded together as they are in the Russian pale, living under the most insanitary conditions in Europe, the Jewish death rate is far less than that of their neighbors, no matter under what conditions they live. Thus, in Prussia in 1908, the Jewish death rate was 13.68 and the non-Jewish 17.92. In Russia, in 1905 it was 14.5 as against 30 for the general population. Even in Galicia, where the poverty and squalor of the Jews reaches the limit, the death rate is still less than among the non-Jews. Between 1897 and 1900 the following relation existed between population, births and deaths, in Galicia:

	Population	Births	Deaths
Roman Catholics	48.39	43.53	42.69
Greek Church	42.23	45.42	58.76
Jews	11.66	10.50	7.99

while in the cities the death rates were:

	Jews	Christians
Lemberg, 1907	21.3	27.65
Cracow, 1902	20.5	36.9

Turning to the new world, Fishberg gives an equally good account of the Jewish death rate in New York. Except for infants under 1 year in eastern Europe, the advantage the Jews have in the death rate holds good at all age periods. Rosenbaum calculates that the Jews of London as well as Great Britain have an exceptionally favorable death rate.

Two facts help to explain this superiority: (1) The Jew, no matter in what part of the world, is free from alcoholism, and this freedom has been but little modified by his assimilation with the west. In the London Hospital a Jewish alcoholic is one of the rarest events of the year, while the Jewish Board of Guardians of London, which deals with some 1,100 new cases of poverty a year, finds it unnecessary to make the smallest provision for destitution arising from alcoholism. Saleeby, speaking of the Jews, says: "The practically complete immunity of their parenthood from alcohol is one of the great factors that explain the all but unexampled persistence of the Jews, and their present status in the van of the world's work and thought." The second point is: There is much less syphilis among Jews than among others. Among observant Jews it may be discarded as a factor affecting their vital statistics, and even among Jews who are no longer influenced by Judaism as a code of life the incidence of this disease is still low. This is due to the Jewish traditional family life and to their relative higher standard of education. Circumcision is possibly some protection, but there seems to be no reason to believe that the relative immunity is due to anything other than a moral environment. Of late years it seems that the chastity of the young Russo-Jewish women in the east end is not what it used to be even ten years ago. Formerly the fact that a patient at the London Hospital was a Jewess was sufficient to dispel even a suggestion of venereal disease. Today this is no longer true. The young men of Russian origin are also said to be more infected than ten years ago. This change is a direct result of the economic degradation produced by the Russian persecution. In general the Jewish youth of today is little if any better than the Gentile youth of the corresponding social class. Fishberg records a similar lapse from the traditional standards in the New York Jewry.

In respect to tuberculous diseases the Jew exhibits a paradox. A town dweller of generally inferior physique, living, at least in many parts, under profoundly unhygienic conditions, pursuing occupations which for the most part confine him to close workrooms, it would be thought that he would be an ideal victim for the ravages of the tubercle bacillus. But he is more resistant than any of the peoples among whom he lives. Statistics for Budapest in 1901-1905 show that the mortality per thousand for pulmonary tuberculosis was 44.15 for Catholics, 20.06 for Jews, and 39.27 for persons of other faiths. In Vienna during 1901-1903 for all forms of tuberculosis per thousand the mortality was 49.6 for Catholics, 32.8 for Protestants, and 17.9 for Jews, while to pulmonary tuberculosis there succumbed per thousand: 38.8 Catholics, 24.6 Protestants and 13.1 Jews. In Tunis, 1894-1900, the mortality was: 11.3 for Arabs, 4.13 for Europeans, and 0.75 for Jews. Attempts to explain this immunity have been made in different ways. Some urge the absence of alcoholism as robbing the tubercle bacillus of a valuable ally. Others regard the immunity as due to the dietary laws; this argument, however, is untenable, for man is usually affected by bovine tubercle not through meat, but through milk, and this in the earliest years of life at a period in which the Jewish mortality is so extremely favorable. For almost 2,000 years the Jews have been subjected to an environment favorable to the development of tuberculous disease. The susceptibility to tuberculosis has been shown to run in families. It is not unreasonable to suppose that the susceptible strains have been eliminated and that the insusceptible have survived.

Sir Arthur Keith on Immortality

The conferring of knighthood on Professor Keith is universally regarded as a well merited recognition by the government of a great anatomist, physiologist, pathologist and anthropologist who is the most philosophical biologist of the day. In a recent press interview he has stated that we hope some day to know what life is, but at present are so ignorant of its mechanism that we cannot say. He does not regard eternal life as impossible, but as undesirable. "The desire for the extension of the span of human life is a form of madness, and if people would only think of the conditions of life they would never entertain the idea. Old age is not a disease, but part of the essential machinery of nature for running human life. Look on nature as the business manager of human life. What nature requires is to keep life going. Nature aims at the species, not at the individual. Nature has built our bodies in such a way that we should have short lives. The whole system is built up on a period of short existences. In trying to extend the span of life you are right up against nature's basal law. Her whole idea is to use young and vigorous lives and kill off the old. Civilization has tended to extend the span of human life. Animals like the gorilla and anthropoid apes that are nearest to man are old at 40. The aborigines of Australia and Patagonia were old at 60. Human life is longer now. Experience points to the fact that life might be extended by at least another decade. But is it desirable? What we want now is young, healthy people. What we need is to extend the period of their vigorous life. This necessity is now being generally recognized, and it is the rational view. I will give you two similes which I think will appeal to the general public. Regard life as a restaurant, and nature as the manager. People rush in at midday to lunch. It is crowded; there are no seats. Why? Because some people who have finished their meal are lounging about and occupying the seats. The manager says: 'I must make regulations. I must limit them to half an hour to make room for the others.' Nature in the same way has put a limit to the life of man. Another simile: You know the principle of the continuous performance at the cinema. You pay your money and see the show round. You

are then supposed to come out, but some will stay. The second time you see the show you will be bored; the third time you go mad; and the fourth time you may commit suicide. Human life is something like that. People crave after human immortality. They have never thought what it means."

BELGIUM

(From Our Regular Correspondent)

Aug. 10, 1921.

Congress of Medicine and Pharmacy as Pertaining to Military Organizations

The sessions of the first International Congress of Medicine and Pharmacy as Pertaining to Military Organizations, which were held in the halls of the Palais Mondial, July 15-20, were a pronounced success for the medical corps of the Belgian army. Having but recently emerged from the great upheaval caused by the World War from 1914 to 1918, with its ranks diminished and impoverished, the medical corps nevertheless gave evidence of its vitality in bringing to a fruitful issue this great project, the conception of which dates back approximately one year; namely, the idea of holding a convention in the Belgian capital of the official representatives of the medical corps of all the armies of the world. This was not an easy task; especially the coordination of the suggestions coming from all sources, in order to reap the fruits of widespread cooperation. The results reached by this first congress are tangible and the conclusions adopted will have almost the force of law. The most vital problems of the present day were discussed by the most competent authorities.

Dr. Wibin, inspector general of the army medical corps, gave a short historical account of the arduous struggles that the army medical corps had had to face in the past before it reached its present state of efficiency, and he also outlined the plans for future development. An outline of the conclusions adopted by the congress in regard to the questions brought up for discussion follows:

The General Organization of the Army Medical Corps and Its Relation to the Red Cross

The congress held the opinion that all measures in regard to the adaptation of medical knowledge to military organizations, whether during peace or war, should be adopted only after close cooperation between the commanding officers and the army medical corps. In order that in all measures, as far as the exigencies of war will permit, account may be taken of medical considerations, without which any sanitary organization will be deficient, it is necessary that representatives of the army medical corps shall be members of the staffs with the same rank as the officers of the fighting forces, in order that they may have a voice in deciding questions of interest to the medical department. It is indispensable that in every large military unit, under the authority of the supreme command, representatives of the army medical corps, working in accord with such command and in harmony with other services, shall have the power to elaborate measures pertaining to the functioning of the army medical corps in all its capacities, and shall also see to it that its orders are transmitted and properly executed.

In time of war it is essential that technical medical consultants, chosen from the ranks of physicians, surgeons, hygienists and chemists, and eminently qualified by their scientific training, shall be associated with the representatives of the army medical corps that are responsible to the supreme command. All the medical personnel of the nation, practicing in any branch of the profession, should be invited to prepare for some special service, so that in time of war there may be an adequate number competent to fill the various posts, and competence should be the sole factor in

the choice of incumbents. Facilities of a material nature utilized by the army medical corps for the transport, evacuation and treatment of the wounded and for the make-up of the sanitary formations and the technical units attached thereto, should be planned in accordance with the latest progress in industry and science. An adequate equipment from the quantitative as well as the qualitative standpoint should be assured at the beginning of hostilities. In the organizations needed for the study of chemical questions that arise in all armies it is essential that account should be taken of the special competence that army pharmacists have acquired.

War Gas

In time of war it is of paramount importance that special sanitary formations be organized for the treatment of the gassed; these should be mobile units and should be located near the front. They would be analogous to the "Z" hospitals of the French army. The treatment of acute cases should be intrusted to medical specialists who are thoroughly acquainted with intoxication by gas. A distinctive mark such as would be readily seen should be placed on the diagnosis tag of every soldier intoxicated by gas. This mark should not be affixed until the diagnosis has been confirmed in a hospital especially equipped for the purpose. It is quite exceptional to observe pulmonary tuberculosis as the direct result of intoxication by gas. The permanent affections that the medical expert should take into consideration in establishing the percentage of disability of men formerly gassed may be summed up under these heads: (1) tachycardia, irritable heart; (2) chronic respiratory affections (emphysema, asthma, pulmonary cicatrices, etc.); (3) more or less extensive loss of teeth; (4) neurasthenia and neuroses, and (5) ocular affections (rare and easily recognized). In establishing the percentage of disability, account should be taken of the fatigue effect of chronic respiratory affections (obliterative, fibrous bronchiolitis; emphysema, etc.) on the heart; also of the state of lessened resistance of the lung toward ulterior, acute pulmonary infections. The permanent lesions just enumerated need not be taken seriously into account except after a grave, acute intoxication necessitating prolonged hospitalization.

Lessons of the War in the Treatment of Limb Fractures

The congress held that, of the determining principles in the treatment of fractures that may be derived from the lessons of the war, it is well to emphasize the following: (1) the absolute necessity of constant and frequent roentgenographic control, and if need be, at the bedside; (2) the necessity of proportioning the removal of splinters from exposed fractures in accordance with the need of drainage and surgical disinfection; (3) the primary importance of the surgeon regulating the treatment from the first day in accordance with the future functioning of the member and of utilizing for this purpose all the resources of physiotherapy; more particularly mobilization as early as possible; (4) the fact that the indications for the classic treatment of fractures by immobilization in plaster casts are becoming more and more rare; the old appliances of the prewar period should be abandoned and should be replaced by apparatus that proved its standard value in the armies—more especially, walking apparatus and apparatus for continued extension, with or without suspension; (5) the necessity of reducing, in time of war, apparatus for transport to a few elementary types—strong, of simple construction, with interchangeable parts and easy of adjustment, carrying out, as far as feasible, the extension idea, and (6) the desirability of organizing in peace times, in the large industrial and urban centers, special services analogous to those required during war and provided with competent personnel and the necessary equipment.

The Antituberculosis Campaign in the Army

The congress gave expression to the conviction that, in order to be effective, the antituberculosis campaign in the army must be based primarily on the rigorous application of collective and individual hygienic measures the utility of which is universally recognized and which concern more particularly: quartering in barracks, the food supply service, physical education, prophylaxis against the diseases to which troops are susceptible; the antialcoholism campaign, etc. The antituberculosis campaign should include education not only of the staffs but also of the troops, by means of leaflets, talks, formal lectures, etc. By reason of the special conditions of evolution of tuberculosis, it is advisable to provide for each man an individual sanitary register and a medical record setting forth the personal and family history of the soldier and his state of health during the period of his active service. It is desirable that such documentation should be extended to the period of service in the reserve. It is indispensable that all men be subjected to rigid and repeated examinations, particularly during the first few months following mobilization. No person suffering from tuberculosis should be admitted to the army. Rejections should be made not only during the process of recruiting but also immediately after mobilization. For prophylactic reasons, the temporary or final removal of all who present any manifestations of tuberculosis is required. It would likewise be desirable that studies be undertaken with the view to determining the practical value of the various numerical indexes and schemes for biometric evaluation that have been proposed, in order to estimate the degree of robustness, more particularly with reference to tuberculosis. It is well to organize special services for the more efficient supervision of suspects. A practical course of instruction in the diagnosis of tuberculosis should be given for the benefit of members of the army medical corps. In aid of national prophylaxis, a permanent connection should be established between civilian antituberculosis organizations and the military authorities. The army should notify the civil authorities without delay of all soldiers who are dismissed from the service by reason of tuberculosis.

The Antivenereal Campaign

The congress, having secured evidence of the extent and the gravity of the peril of venereal disease in the army, is of the opinion that it is of interest not only to the army but also to the individual and to society in general that the most rigorous antivenereal campaign possible be waged, in connection with which it offers these formal recommendations: I. Venereal diseases—infectious diseases—should be combated above all among the civilian population, in order that all the foci of infection may be reached and thus tend to prevent the contamination of the army. II. In the armies, the antivenereal campaign, in all its forms, should be organized or changed at once to comply with the principles hereinafter stated: A. Educative measures as extensive, as early and as comprehensive as possible. B. Measures having for their purpose the preservation of sound bodies and minds; (1) provisions for amusement and entertainment: recreation rooms, sport activities, etc.; (2) supervision of sources of infection, working in harmony with the civil authorities, and (3) conservative prophylaxis by placing at the disposal of soldiers such things as: individual sanitary toilets, individual combs, brushes, soap, etc. C. Measures concerning patients: (1) early detection of the sick; (2) isolation of contagious cases; (3) treatment by the most effective means in specialized services; (4) follow-up supervision of patients, and (5) in the case of patients with venereal disease who may be dismissed before they are entirely cured, imparting of the necessary information in regard to the places where they may secure treatment in civil life.

Purification and Sterilization of Drinking Water

During the war (1914-1918), the purification of drinking water for the use of the allied armies was usually accomplished by means of chlorin (solution of chlorinated potassa, chlorinated lime, solution of chlorin, etc.). The very extended use of chlorin as a purifying agent has shown that it presents important advantages. The question of the amount of chlorin to be employed, although established in practice in an approximate manner, nevertheless has not been quite definitely settled. Various devices have been tried, most of which would be utilizable in the future according to the indications furnished by the situation. When the supply is turbid, special methods must be used to clarify the water before it is treated. In the present state of our knowledge the utilization of chlorin for the purification of the water supply does not seem to be superseded. However, when it is possible we may consider using other agents than chemical products. Further investigations should be made to establish the value, especially, of certain physical methods of sterilization, more particularly those based on the use of ultraviolet rays or of ozone.

Countries Represented at the Congress

Twenty countries sent official representatives to this meeting, generally the commander of the medical department of the army or navy, or both. The international committee of the Red Cross was represented by Professors D'Espine and Reverdin of Geneva, and the League of Red Cross Societies by Colonel Ritchie. The delegates from America were: from the United States, Dr. W. S. Bainbridge, commander medical corps naval reserve force; from Mexico, Dr. L. Rivero Borrel; from Guatemala, Dr. M. Arroyo; from Brazil, a group of four army medical officers, headed by Maj. J. A. de Souza Ferreira and Dr. J. F. Meira; from Argentina, Lieut.-Col. N. Gaudino, and from Chile, Dr. M. Donozo and Dr. Cifuentes. China was represented by Maj. Gen. S. H. Chuan and Japan by Dr. K. Oyama.

PARIS

(From Our Regular Correspondent)

Aug. 5, 1921.

Vital Statistics for 1920

The minister of labor recently published the vital statistics of France for 1920. This statistical report is all the more interesting because, from 1914 to 1919, vital statistics were limited to the seventy-seven departments not affected by the war, and the results thus obtained did not offer any serious basis for calculation, on account of the shifting of the population. In 1920, for the first time since the war, records of the total number of births, marriages and deaths throughout France, including the three departments in Alsace and Lorraine, were collected. The figures given for the ninety departments in 1913 were: births, 790,355; deaths, 731,441; excess of births over deaths, 58,914; marriages, 312,036. For 1920 the records show: births, 834,411; deaths, 674,621; excess of births over deaths, 159,790; marriages, 623,869. The demographic situation in the ninety departments of France was accordingly much better in 1920 than in 1913. The number of marriages has doubled. The number of births (living children) shows an increase of 44,056. On the other hand, there were 56,820 fewer deaths in 1920 as compared with 1913. Thus we note an excess of births over deaths which amounts to 159,790, while during the period from 1914 to 1919 there was an excess of deaths over births, and in 1913 the excess of births over deaths was only 58,914.

Medical Fees for Care of Disabled Soldiers

In a previous letter I mentioned the termination of the disagreement between the government and the medical pro-

fession relative to the establishment of a schedule of fees for the remuneration of physicians who give to disabled soldiers the care and treatment they are entitled to by virtue of the pension law. The *Journal officiel* has just published a decree pertaining to the decision reached in the matter. This decree differentiates between three classes of physicians. Those living in localities with less than 5,000 inhabitants, which takes in the majority of the rural communes, may exact a fee of 5 francs for office consultations and 6 francs for home consultations. In localities of from 5,000 to 100,000 inhabitants, the fee for office consultations will be 7 francs, and for home consultations, 8 francs. In cities of more than 100,000 inhabitants, the office consultation fee will be 8 francs, and the home visit, 10 francs. Special provisions for still higher fees are made to apply to suburbs of large cities where the cost of living is exceptionally high. As regards the liberated regions, special provisions have also been made on account of the high cost of living and the peculiar difficulties encountered.

Myron T. Herrick the Recipient of Medal Betokening the Gratitude of the French People

The *Journal officiel* announces that the médaille de la reconnaissance française has been awarded to Hon. Myron T. Herrick, the newly appointed American ambassador to France, with the following mention: "The Hon. Myron T. Herrick, of American nationality, vice president of the Société France-Amérique, has used his great influence for the service of France by assisting in the creation of several welfare enterprises during and since the war, the success of which undertakings was assured by reason of his support."

Dangers from Frozen Eggs

The heat that has prevailed in France for several weeks past has been particularly unfavorable for the preservation of foodstuffs. Many cases of poisoning have occurred from eating pastry and cakes with "cream" fillings. Since these poisonings have been found to be due to eggs that have not been properly inspected, Monsieur Martel, chief of the bureau of veterinary inspection for Paris and the department of the Seine, has just made an interesting inquiry into the condition of cans containing frozen opened eggs, intended for the use of bakers and biscuit manufacturers. In many cans were found mold, streptococci, staphylococci and *B. coli*. In the face of such results, Monsieur Martel has asked the council of public health to exercise strict supervision over importers, merchants and cake and pastry bakers. Frozen eggs are imported from China into Europe, and especially into the United States. The eggs are opened, put into cans and frozen at a temperature of -15°C . Monsieur Lindet, member of the Academy of Sciences, who has made a special study of the question, states that frozen eggs must not be allowed to thaw before delivery nor a long time before being used. Sanitary precautions must be taken in the manipulation and transportation of frozen eggs, and they should not be used for any other purpose than biscuit making, since here prolonged baking at a high temperature destroys the bacilli with which they are contaminated.

Death of Prof. Edmond Perrier

The field of natural sciences has suffered a great loss in the death of the famous zoologist Edmond Perrier. He was born in Tulle, department of Corrèze, May 1, 1844. He was appointed, in 1867, associate professor at the university, and the following year became assistant naturalist to the museum of natural history. In 1869 he became doctor of natural sciences and was appointed in 1876 to a professorial chair and also served as administrator of the museum. In 1892 Perrier was elected member of the Academy of Sciences in the department of zoology, to succeed Quatrefages de Bréau, and in

1898 he was in turn elected by the Academy of Medicine as associate member. In 1900 he was appointed director of the Museum of Natural History, a post that had become vacant through the death of the famous naturalist Milne-Edwards. For nearly twenty years he remained director of this center of learning, for such the museum is entitled to be called. He founded one of the first marine laboratories, for the study of biology, on Tatihou Island in the department of Manche. He became president of the Academy of Sciences in 1913 and received the title of doctor *honoris causa* from Oxford University. Perrier wrote a *Traité de zoologie* which has long been considered a classic, and a series of other smaller works: *La terre avant l'histoire*; *La philosophie zoologique*, etc.

Centennial of First Description of Paretic Dementia

The Société médico-psychologique, the Société de médecine mentale, and the Société de psychiatrie, met recently in plenary session and agreed upon the celebration, in 1922, of the centenary of Bayle's discovery of general paralysis. Coincident with this event, the first annual meeting of the psychiatric societies will take place; for the three societies have decided to organize an annual meeting of all psychiatric societies similar to that of the annual meeting of the Société de neurologie of Paris.

BUENOS AIRES

(From Our Regular Correspondent)

July 25, 1921.

Influenza

The influenza epidemic has begun to decline. There was a large percentage of bronchopneumonia and pneumonia cases. At a time the number of influenza cases treated each day, free of charge by the Public Assistance authorities, rose to 220 a day and that of pneumonia to seventy cases.

At the Ramos Mejía Hospital a meeting was held to discuss this subject. The only bacteriologic studies were those reported by Dr. César Pico, who has not found the Pfeiffer bacillus, but pneumococci, streptococci, *Micrococcus catarrhalis*, etc. In his opinion these data and the clinical symptoms suggest that the disease was probably influenza nostras and not the pandemic influenza. Dr. J. Méndez again asserted that the Pfeiffer bacillus, the pneumococcus and the streptococcus are just one and the same germ. Dr. Méndez is the manufacturer of a vaccine called "haptinógeno" which knowing physicians consider analogous to the other pneumococcic vaccines, but which among the people here enjoys an unbelievable prestige as a preventive and a remedy for catarrhal affections. Of late, however, its reputation seems to be decreasing.

Dr. Sharpe's Lecture

Dr. William Sharpe, professor of neurology and surgery at the Policlinic Medical School, New York, is now in Buenos Aires. While other American surgeons who visited our city stayed here hardly time enough to see some of the hospitals, Dr. Sharpe has established close relations with surgeons in all hospitals, scientific societies and medical professors. On the 21st he gave a lecture in Spanish at the medical school. Competent physicians are always welcome here, as their visits tend to establish a closer fellowship with American medicine. Therefore the news that an important group of American physicians will visit this city next year has been received with much approval. It would be specially advisable that, besides clinicians and surgeons, there should also come physiologists, biologists, pathologists, bacteriologists and sanitarians.

Kraus Goes to Brazil

Professor Kraus from Vienna, who has been the director of the bacteriologic institute of the Argentine Public Health

Department, will complete his term next August. The Institute of Butantan (São Paulo, Brazil) has now put in a bid for his services. Kraus was the organizer of the institute, which now provides practically all the serums and vaccine used in this country.

New Schools of Medicine

The medical schools are still struggling with difficulties. Even that at Buenos Aires is facing three serious obstacles: (1) an excess of students, over 1,000 each, in the first and second years; (2) lack of practical teaching, owing to the excess of students, insufficient laboratories and lack of personnel, and (3) inadequate control, as the examinations are often faulty and perhaps too lenient. At the Rosario medical school there is a strike, and the students have asked the government to remove the acting director. A number of professors have not been appointed as yet, and so far only the first year classes have started. At La Plata School the second year courses have not been organized as yet. Besides, there has been appointed as acting professor of physiology a physician who holds the same position at the Rosario school and the Buenos Aires School of Pharmacy, so he is compelled to give classes in three different cities, two of which are 36 miles and 180 miles, respectively, from Buenos Aires.

New University

The much vaunted and not as yet organized Universidad del Litoral is receiving very hearty support from the national government. There have been appropriated three more millions for its establishment, one million being intended for the School of Medicine of Rosario, which has not yet begun its courses, although the year is far advanced.

BUDAPEST

(From Our Regular Correspondent)

July 12, 1921.

The Fate of Pawlow

Different rumors have been in circulation with regard to one of the greatest scientists of Russia, Dr. Pawlow, who filled the chair of professor of physiology for more than twenty-five years at the St. Petersburg University. About a year ago a Vienna daily paper announced that Pawlow had been removed from his chair by the soviet government because he could not accommodate himself to the new régime. Another paper stated that he was sentenced to death because the tone of a lecture which he delivered at a popular meeting was hostile. Now a Budapest newspaper prints the information obtained from a medical man recently returned from a Russian prison. The last rumor dates from December, 1920, at which time Pawlow was yet alive, though most Russian papers wrote of him as being dead; the poor gray savant had suffered the greatest imaginable misery. He asked food from a friend in Kief when on the verge of starvation. He complained to his friend that for him, at least, times had extraordinarily changed. While formerly it was his ambition to work in the laboratory, he would be happy to peel a few potatoes, but even this modest food was wanting. Through the Kief medical society, relief was obtained without delay, but Pawlow, to whom physiology is so much indebted for his epoch making researches and discoveries, could not bear the misery of hunger and cold longer than January, 1921. He was taken to a hospital, where he died after a few days.

A German Prize Won by a Hungarian Physician

The Gesellschaft für Stoffwechsel und Verdauungskrankheiten has set a prize of 1,000 marks for the best work (dissertation) on digestive troubles. The prize has been won by a Hungarian practitioner, Dr. Laszlo Friedrich. The title of the dissertation was "The Influence of Chewing and

of the Salivary Glands on the Function of the Healthy and the Morbid Stomach." The judges of the competition were Professors Noorden, Bergmann and Boas.

Dog Meat as Food in Germany

According to the report of the German imperial slaughter houses and meat inspection offices during the second quarter of the year 1919—that is, during three months—the meat of 3,642 dogs was subjected to inspection, 2,301 in Saxony alone. The number of horses slaughtered was twice that of peace time. There was such demand for horseflesh that the number slaughtered could easily have been ten times that of peace time; but there was a great shortage of horses in Germany owing to difficulty of importation. With the rise in the number of horses slaughtered, there was a decrease in the slaughtering of calves and pigs. The traffic in these animals was not more than one-fortieth that of peace time.

Treatment of Night Terror in Children

According to Professor Hamburger of the University of Graz, the pavor nocturnus of children can be cured only by suggestion. It is natural, he said, that his statement refers only to genuine night terror and not to that of febrile children. It is very easy to mistake the frightful awakening and eventually the shrieking of a child on the verge of a febrile disease with a "pavor nocturnus." The causative agent of the latter is always some frightening observation of the child, some "psychic trauma" which occupies the thought of the child and influences its dreams. The child awakening with the signs of fright is still asleep even if he sees and is able to answer questions; at least he is dream-dizzy. Certain periodically repeating manifestations show that always one and the same remembrance is causing the night fright. Dr. Hamburger does not consult with the parents regarding the attendance and treatment of these children. He prescribes some innocent drug and orders the child to take 5 drops at bedtime. He gives the instructions directly to the children, stating very positively that the taking of the medicine insures a quiet night and undisturbed sleep. Hamburger says that the methods hitherto applied and found efficacious, for instance, adenotomy, are good only through suggestion.

Blindness Following Prophylactic Use of Silver Nitrate Solution

The *Budapesti orvosi ujság* (Budapest Medical News) reports a case in which a midwife dropped in the eyes of a new-born babe a 10 per cent. silver nitrate solution instead of the customary and compulsory 1 per cent. solution. The infant cried for two hours incessantly with the eyelids tightly closed. Opening the eyes revealed a gelatinous mass, and a putrefactive process began which ended with the total blindness of the infant in consequence of the perforation of the cornea and prolapse of the iris, despite iridectomy. As a result of this unfortunate occurrence the highest board of sanitation intends to issue a new order prescribing a 1 per cent. solution of silver acetate instead of silver nitrate, the former having the advantage of not being soluble in a higher percentage than 1:100.

Control of Venereal Diseases in Roumania

It is of interest to note that in Roumania the legislature has taken some bold steps with respect to venereal diseases. By an order of the board of sanitation which came into force lately, syphilis, both primary and secondary, and gonorrhea have been made compulsorily notifiable in certain counties of the kingdom. The certificate of notification which is required to be given sets forth the sex, age, occupation and marital condition of the person reported, and the stage of the disease or its duration. The name and

address of the person is not disclosed, but he is denoted by a number or other reference in the records of the medical practitioner notifying. In a circular letter addressed to the medical practitioners in Transylvania, the commissioner of public health states that after the publication of the order making venereal diseases notifiable, persons other than a medical practitioner or a person acting under a practitioner's direct instructions are forbidden under heavy penalties to attend or treat any person suffering from venereal disease within the area to which the order applies. With a view to lessening any hardship which might thus occur, it is intended to establish dispensaries in the larger towns for venereal diseases, under state control. In these dispensaries free outpatient treatment can be obtained without unnecessary questions or inquiries. A useful and enlightening pamphlet for public information has been drawn up by the commissioner of public health pointing out the seriousness of the different forms of venereal disease and explaining how free treatment can be obtained.

BERLIN

(From Our Regular Correspondent)

Aug. 4, 1921

New Prussian Regulations with Respect to Disinfection

Whereas former regulations in Prussia and throughout the German empire in regard to the disinfection of sick-rooms in connection with infectious diseases were based on the assumption that the disease-producing agents were scattered in all directions by the patients and that they remain viable in apartments for a long time, if a thorough postmortem disinfection of the dwelling does not destroy them, more recent investigations have shown that disease germs do not remain long viable in room dust, but that the spread of disease bacteria for years after the recovery or death of a patient is due alone to human bacteria carriers. Therefore, the new regulations lay the chief stress on day-by-day disinfection at the bedside, in order to render all eliminations and contaminated utensils innocuous, until repeated bacteriologic investigations furnish evidence that the inciting organisms have disappeared. The danger that lurks in bacteria carriers and spreaders of disease-producing organisms must be met by the detection of such persons, in order that they may be enlightened in regard to the menace that is inherent in their condition and that they may be constrained to observe the necessary cleanliness of person, more particularly with respect to the washing of hands. The Prussian public health administration decided, however, not to give up terminal disinfection entirely, as has been stated by the medical inspector, Dr. Lentz, in an address delivered before the Berlin society for public health culture. But if there has been thorough daily disinfection at the bedside, terminal disinfection may be confined to the fumigation of beds and utensils, and the cleansing and airing of the sick-room. Since the severe epidemic of dysentery in 1916 and 1917, during which, owing to the lack of proper disinfectants and disinfection apparatus, the then existing regulations were not complied with, it has become evident that such rigorous requirements were unnecessary, and the public health administration, two years ago, announced that the terminal disinfection might be dispensed with, provided, in the opinion of the county (*kreis*) physician, the daily disinfection had been properly carried out. The new regulations that have just appeared contain some general instruction in regard to the mode of transmission of various diseases, such as dysentery, typhoid, scarlet fever, tuberculosis, trachoma and cerebrospinal meningitis, and also in regard to measures to be employed to prevent infection. Instructions are also given with respect to the disinfection of vehicles, and other means

of transport; daily disinfection at the bedside, and terminal disinfection (after the recovery or death of the patient or his removal to a hospital, and in the case of tuberculosis, after a change of residence). As means of disinfection, mercuric chlorid, lime and sterilizing by means of boiling water are recommended. But other disinfectants also may be employed. The daily disinfection at the bedside is the duty of the attending nurses, who should have had a week's special training in methods of disinfection. If necessary, visiting nurses or professional disinfectors may instruct the attending nurses or the friends of the patient in regard to the best methods of carrying out daily disinfection, but they must not interfere in any way with the treatment that is being employed. The terminal disinfection should be carried out by the trained person who attended to the daily disinfection, but it is imperative that such person must have had the necessary training for these duties. Only in case the county (*kreis*) physician thinks that a special disinfection is necessary shall such disinfection be carried out, but it must be done immediately after the recovery or death of the patient. The police authorities must furnish the needed disinfectants. It is desirable that everywhere such expense shall be borne by the commune or city. During the course of the discussion it was brought out that, in the past, final disinfection in Berlin was often carried out very tardily—sometimes weeks or even months after the death or the recovery of the patient, which may be ascribed to defects in the system of reporting cases. In the case of diphtheria a more efficient method has been in vogue for the year last past, as the provision for the diphtheria welfare nurses has made this possible. But in two thirds of the cases the old method of disinfection has proved to be necessary, as the apartments were in such an insanitary condition.

Institute for Clinical Pharmacologic Research

Owing to the exertions of Professor Brauer, under the name of "Forschungsinstitut für klinische Pharmakologie," a scientific institute has been created at the Eppendorf Hospital in Hamburg. The purpose of the institute, as set forth by Brauer in No. 16 of the *Deutsche medizinische Wochenschrift*, is to establish close connections between pharmacologic investigation and the practical treatment of patients. In other words, the institute will deal with questions of applied pharmacology. The many valuable results of pharmacologic investigation are to be brought into more systematic connection with the practical work done at the bedside, and, on the other hand, the clinical observations made in the course of the practical medical treatment of patients are to be clarified and given a more solid scientific foundation by means of experimental pharmacology. The pharmacologist studies the effect of remedies mainly through experimentation with healthy animals or on a single organ. It is, however, an established fact that medicaments when introduced into a healthy organism exert a different effect than they would on a person in a pathologic condition; and especially is it true that the effect on the healthy animal organism is very often essentially different from the effect on the patient. Pharmacologic investigation must, therefore, be supplemented by clinical observations. For this purpose a full-time pharmacologist will be employed at the new institute. He will observe and study in detail the therapeutic action of drugs on patients, and will assist the clinician with his counsel by drawing the necessary conclusions from the theoretic standpoint. The clinician remains responsible for the treatment of the patients and for the clinical observations. The institute will have at its disposal a complete collection of drugs arranged in accordance with scientific principles; also a supply of all remedies that have a scientific basis for their existence.

Marriages

CHRISTO P. BALABANOFF, Tacoma, Wash., to Mrs. Alice M. Byam of Montreal, in Vancouver, B. C., in July.

JOHN RAYMOND THRASHER, Indianapolis, to Miss Winnifred Natalie Siever, at Irvington, Ind., in July.

EDWIN CLEVELAND YODER, Denison, Iowa, to Miss Leona McLean of University Place, Neb., recently.

EDWARD C. BROOKS, Iowa City, to Miss Edna H. Crowe of Des Moines, Iowa, at Chicago, in July.

RAY C. JONES, Brandon, Manit., to Miss Hazel Agnes Richardson of Winnipeg, in August.

VERNE PHEEM MASON, Baltimore, to Miss Lucy Meredith Ginn, at Millwood, Va., August 17.

HOWARD FRANK STEELE, Claypool, Ind., to Miss Gertrude Ethel Jayne, at Claypool, in July.

FREDERICK H. DUBBE, New Ulm, Minn., to Miss Lillian Steinke of Minneapolis, in July.

HENRY E. FLANSBURG to Miss Mary Helen Allensworth, both of Lincoln, Neb., July 20.

ALFRED J. HELTON, Yakima, Wash., to Miss Olive M. Harris of Kansas City, Mo., in July.

KENNETH C. PEACOCK to Miss Bernita Whitehead, both of Sioux City, Iowa, recently.

JOSEPH J. REILLY, Denver, to Miss Teresa Gertrude Cannon of Cresco, Iowa, August 6.

ARCHIBALD LEIGH DEAN, JR., New York, to Miss Ella Cecile Lang of Boston, August 9.

EDWIN H. VAN PATTEN to Miss Helen Edminston, both of Dayton, Ohio, recently.

SYLVESTER C. KEHL to Miss Carolyn L. D'Autrey, both of Chicago, August 10.

WILLIAM M. CRAIG to Miss Ella Branson, both of Petersburg, Ill., August 4.

CHARLES E. PRIOR to Miss Alice A. Brady, both of Malden, Mass., August 6.

CHARLES A. KATHERMAN, Sioux City, to Miss Geraldine Visser, recently.

CLAUDE E. PETTIBONE, Crown Point, Ind., to Miss Helen Hixon, June 18.

FRANK WHITMORE to Miss Louise Bishop, both of St. Paul, recently.

FRANK SECOY to Miss Ethel Henry, both of Sioux City, Iowa, recently.

C. L. RUDESIL to Miss Florence E. Harry, both of Indianapolis, July 2.

Deaths

Joseph E. Ingoldsby, Boston; Medical School of Harvard University, Boston, 1898; member of the Massachusetts Medical Association; served during the late war as examining physician for local exemption board division 19; died, August 8, as the result of a nervous breakdown, suffered three years ago, aged 48.

Ebenezer Alden Dyer, Whitman, Mass.; Bellevue Hospital Medical College, New York, 1882; member of the Massachusetts Medical Association; member of the state legislature, 1906, and since then has served on the local board of health and the school committee; died, August 5, after a long illness, aged 64.

Joseph Alphonse Lorrain, Montreal, Canada; Montreal School of Medicine and Surgery, 1896; served during the World War in France as officer in charge of the radiological service of the Laval Medical Unit, since then as chief of the radiologic clinic at the Bruchesi Institute; died, July 26, aged 48.

⊕ Indicates "Fellow" of the American Medical Association.

Justin Lowe Jackson, Savannah, Ga.; Atlanta College of Physicians and Surgeons, 1903; at one time president of the Georgia Medical Society; specialized in ophthalmology, otology, laryngology and rhinology; died, August 11, at a local hospital, from typhoid fever, aged 46.

Walter L. Chase, New Bedford, Mass.; University of Vermont, 1903; Medical School of Harvard University; formerly on staff of Boston City Hospital, and later ophthalmologist at St. Luke's Hospital, Bedford, where he died suddenly, August 8, from angina pectoris, aged 52.

Thomas Hughes Meighen, Wheeling, W. Va.; Hospital College of Medicine, Central University of Kentucky, Louisville, 1892; member of the West Virginia State Medical Association; served as captain in the late war; died, August 9, at Littleton, W. Va., aged 56.

Elmer Ellsworth Barrett ♂ Glencoe, Minn.; Dartmouth Medical College, Hanover, 1887; founder of the McLeod County Hospital, Glencoe, in 1906; died suddenly, August 9, at the home of his brother-in-law, near Ipswich, S. D., from chronic nephritis, aged 58.

Alexander Mitchell Loewenstein, Cleveland; Albany Medical College, 1908; member of the Medical Society of the State of New York; during the late war served as captain in the sanitary corps in Russia, of epidemic encephalitis; died, August 10, aged 36.

Henry A. Henriques ♂ Morristown, N. J.; College of Physicians and Surgeons, New York, 1883; president of the Shonghum Sanatorium; member of the staff of the Memorial Hospital; died suddenly, August 19, from heart disease, aged 60.

John H. Baird, Sr., Mars Hills, N. C. (license, North Carolina, 1885); member of the Medical Society of the State of North Carolina; assistant surgeon in the Confederate Army; practitioner for sixty years; died, August 16, aged 77.

Henry W. Mindel, Philadelphia; Jefferson Medical College, Philadelphia, 1873; practitioner for nearly half a century; died, August 14, in Wildwood, N. J., while on the way to the station to be taken to a Philadelphia hospital, aged 69.

Edgar Joseph Howland, Goldfield, Nev.; Tufts College Medical School, Boston, 1897; member of the Nevada State Medical Association; specialized in ophthalmology, otology, laryngology and rhinology; died in August, aged 61.

James V. Woofter, Centralia, Va.; Chicago College of Medicine and Surgery, 1906; Spanish-American veteran; during the late war served as first lieutenant, discharged, Jan. 28, 1919; died, July 20, aged 45.

George R. Rowland ♂ Covington, Ind.; University of Michigan, Ann Arbor, 1865; Medical College of Ohio, Cincinnati, 1866; specialized in dermatology; died, August 10, from arteriosclerosis, aged 81.

Melancthon S. Ayers, Teaneck, N. J.; Long Island College Hospital, Brooklyn, 1871; member of the state legislature, 1903-1904; practitioner for nearly half a century; died, August 15, aged 74.

Henry Veazie, New Orleans; Tulane University of Louisiana, New Orleans, 1876; formerly on the staff of the Charity Hospital; died, August 11, at the Touro Infirmary, New Orleans, aged 66.

Clinton H. Coy, Napoleon, Ohio; College of Physicians and Surgeons, Baltimore, 1888; member of the Ohio State Medical Association; died, August 9, after illness of three months, aged 66.

Philip Y. Eisenberg ♂ Norristown, Pa.; University of Pennsylvania, 1873; Civil War veteran; practitioner for fifty years in Norristown; died in August, after a long illness, aged 74.

James Willis J. Marion ♂ Calais, Me.; Medical School of Harvard University, Boston, 1908; was drowned while bathing in the Mascoma Lake, at Enfield, N. H., August 10, aged 40.

William H. Oviatt, Lakewood, Ohio; University of Buffalo, 1869; surgeon in the Civil War; was struck by an automobile, suffering a fractured skull, and died, August 2, in Cleveland, aged 87.

George Stedman ♂ Boston; Medical School of Harvard University, Boston, 1875; associate medical examiner for Suffolk County, 1890-1910; died, August 16, from cancer, aged 71.

Robert T. French ♂ Rochester, N. Y.; University of Buffalo, 1888; member of the Rochester Academy of Medicine; died suddenly, August 18, from heart disease, aged 57.

George J. Zuebelen, Dayton, Ohio (license, Ohio, 1896); practitioner for over sixty years; died, August 8, at St. Elizabeth's Hospital, from bronchopneumonia, aged 84.

Herman Lee Poff, Ferrum, Va.; Medical College of Virginia, Richmond, 1912; was shot and killed, August 6, by a merchant of the town, in his own home, aged 34.

Robert B. Patrick ♂ Waycross, Ga.; University of Maryland, Baltimore, 1912; died, August 8, in a local hospital, following an operation for appendicitis, aged 35.

Howard Wheelwright Kline, Richmond, Va.; Medical College of Virginia, Richmond, 1920; died, August 14, in the Johnson-Willis Sanatorium, Richmond, aged 44.

Edwin A. Hambright, Philadelphia; Philadelphia College of Pharmacy, 1866; Hahnemann Medical College, Philadelphia, 1874; died, August 9, aged 75.

William B. Kinniston ♂ Exeter, N. H.; Medical School of Maine (Bowdoin College), 1895; died, August 18, from heart disease, at Skowhegan, Me., aged 51.

Frederick McCormick, Monroe, La.; Tulane University, New Orleans, 1869; Confederate veteran; died, August 4, at the home of his daughter, aged 83.

Joseph A. Lagace, Montreal, Canada; University of Vermont, Burlington, 1887; practiced in Nashua, N. H., until recently; died in August, aged 61.

Thomas H. Leidy, Reading, Pa.; Jefferson Medical College, Philadelphia, 1869; Confederate veteran; died, August 14, from liver complications, aged 76.

M. R. Waggoner, Sr., DeWitt, La.; Hahnemann Medical College and Hospital of Chicago, 1871; died, August 12, from angina pectoris, aged 83.

Nellis Clement Satterlee, Williamsfield, Ohio; University of the City of New York, 1887; died, May 15, from carcinoma of the liver, aged 50.

Daniel W. Harner, New Holland, Pa.; Homeopathic Hospital College, Cleveland, 1878; died, August 14, in Atlantic City, N. J., aged 66.

Mary Ellis Morrison, Washington, D. C.; Howard University, Washington, 1886; died, June 25, at Newport News, Va., aged 68.

James W. McKibbin, Adams, Neb.; Northwestern University Medical School, Chicago, 1878; died suddenly, August 10, aged 69.

Fulton Monroe Lothridge, Toccoa, Ga.; University of Georgia, Augusta, 1893; died suddenly in his office, August 5, aged 52.

Edwin G. Renner, Monroe, S. D.; Chicago Homeopathic Medical College, 1895; died, July 31, from cocaine poisoning, aged 48.

James Fuzzell, Fitzgerald, Ga.; University of Georgia, Augusta, 1894; died, August 17, at a local sanatorium, aged 54.

Frederick D. Vanderhoof ♂ Phelps, N. Y.; College of Physicians and Surgeons, New York, 1864; died, July 29, aged 78.

William E. Walker, Greer, S. C.; University of Tennessee, Memphis, 1881; died, August 14, after a long illness, aged 69.

Charles R. Wilson, Louisville, Ky.; Louisville Medical College, 1875; died, July 17, from cerebral hemorrhage, aged 69.

William Montgomery, Newbern, Tenn.; Eclectic Medical Institute, Cincinnati, 1882; died, July 8, after a long illness.

Frederick Norman Swift, West Chazy, N. Y.; Long Island College Hospital, Brooklyn, 1896; died, August 10.

Josephus Williams, Hood River, Ore.; University of Nebraska, Omaha, 1883; died recently, aged 74.

Sidney J. Gano, Dallas, Texas; University of Pennsylvania, Philadelphia, 1891; died on July 14.

Horace P. Haddock, Baltimore; Atlantic Medical College, Baltimore, 1908; died, August 6.

William F. Ross, Booneville, Ark. (license, Arkansas, 1903); died, August 10, aged 60.

Mary Elizabeth Shipp, Salt Lake City (license, Utah, 1894); died, July 23, aged 68.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

"BASIC CANCER RESEARCH" AND "COSMOPOLITAN CANCER RESEARCH SOCIETY"

Medical journals, and some other technical publications, have received recently what purport to be items of news value sent out by the "Medical News Bureau," 77 Seventh Ave., Brooklyn, New York. The "manager" of this alleged bureau is given as D. E. Woolley. These "news items" are undated but are marked: "(For immediate release.)" One of these starts with the statement, attributed to Mme. Curie, that cancer can be cured by radium and then continues:

"Cancer can be cured by the use of selenium and tellurium, more plentiful and less costly elements," says F. W. Humphreys of Brooklyn, an American born student of chemistry and science who has devoted years to the study of the cause of cancer and the discovery of methods for relief. . . ."

"For the purpose of further developing methods of control and treatment of disease by the use of selenium and tellurium discovered by a number of local scientists, chemists and physicians, the Basic Cancer Research has been organized and an efficient laboratory established at 847 Union Street, Brooklyn. . . ."

"Through the education of the people and special instruction to physicians, it is hoped it may soon be possible to gain control of and eradicate the disease which now appears so great a menace. Mr. F. W. Humphreys one of the organizers of the new institution estimates that within ten years, or perhaps less time, cancer will no longer be considered a fatal disease."

Evidently the joker here is the "Basic Cancer Research" of 847 Union Street, Brooklyn!

Newspapers are approached from a different angle. They receive free publicity matter on stationery reading "Cosmopolitan Cancer Research Society" (D. E. Woolley, secretary), 847 Union St., Brooklyn, N. Y. With this matter is a letter from Woolley addressed to the editor of the paper to which the stuff is sent and asking:

"In the interest of suffering humanity will you please give space to the enclosed?"

"No object of greater importance has ever been presented for your helpful consideration. Thousands are dying whom you can help save."

According to the "news item" that accompanies this letter the "Cosmopolitan Cancer Research Society" has been founded for the purpose of "investigating and developing methods" by which cancer "may be successfully combated and eventually eradicated." It states further that the "society" will "disseminate information concerning symptoms, diagnosis, treatment and methods of prevention" of cancer. Furthermore, the membership of the society "includes physicians, scientists and chemists of prominence, laymen of means, and the sympathetically inclined from all walks of life." Nor is this all!

"Doctor Frederic Klein the eminent authority on urinology and the chemistry of cancer, has evolved a new colormetric test which is a most wonderful and valuable discovery in the diagnosis of cancer and various other diseases. This test will be particularly valuable in all life extension work because it determines, even in children the possibility of predisposition toward any particular disease, whether tuberculosis, cancer, diabetes or any of the diseases which in later life may become fatal. It determines also the vitality of the subject enabling the physician to accurately determine the condition of any of the vital organs."

We learn in closing that memberships in the "society" are "graduated from \$1.00 upwards according to the ability and disposition of those who may be interested."

Located at 77 Seventh Avenue, from which the press-agent material of the "Medical News Bureau" is sent, is the "Basic Chemical Corporation of America." According to such information as we have been able to get, the president of this concern is F. W. Humphreys, the "student of chemistry and science who has devoted years to the study of the cause of cancer and the discovery of methods of relief." We are informed that Mr. Humphreys was for a while in the employ of a "chemical company" of Philadelphia, and has been in the photographic line down in Virginia and later was connected with a real estate concern in Brooklyn. Another officer of the Basic Chemical Corporation is said to have been in the grocery line in a small village in Missouri, selling out and

later coming to Brooklyn and entering the insurance business. Still another officer, it seems, was in the fish business. In addition to these three officers, there are two directors, one of whom is in the fancy grocery line, and the other is a local practicing physician whose name we find in the Propaganda department's testimonial file under Sanmetto and Arsenauero.

The Dr. Frederick Klein, who is described as the "eminent authority on urinology and the chemistry of cancer," is not a physician but claims a Ph.D. from Munich, Bavaria. Klein claims to have developed certain urinary tests. One of these, according to him, "indicates the body *Vitality* with great accuracy," another proves the presence of cancer, a third is the "syphilis test" and a fourth is the "pregnancy test." And these are not all!

Those who read the reports of the Council on Pharmacy and Chemistry may remember that Frederick Klein is the gentleman who made "Sulfo-Selene," which the Council, in refusing it recognition, described as a "mixture containing a selenium compound of undetermined composition produced by reduction of nitro-selenous acid with sulphurous acid, mixed with bile salts and diluents." Sulfo-Selene was widely exploited in the newspapers in 1916 as a remedy for cancer, and Klein got a good deal of publicity at that time.

Just what product the Basic Chemical Corporation of America is putting, or is about to put, on the market we do not know. From the rather vague talk about selenium and Frederick Klein's marvelous diagnostic discoveries, it might be inferred that "Sulfo-Selene" was to be resurrected. Be that as it may, it seems fairly obvious that the material being sent out by D. E. Woolley—whether as "Manager" of the "Medical News Bureau" or as "Secretary" of the "Cosmopolitan Cancer Research Society"—is advertising matter in the guise of news.

In this connection it is worth noting that the American Newspaper Publishers' Association, in a special bulletin issued in 1909, published a very complete list of press-agents and the interests these agents represented. This list contains the name D. E. Woolley, who then was sending out press notices for the National Association of Piano Dealers of America. Is this the gentleman who is now acting as press-agent for the Basic Chemical Corporation of America? If it is, it may be that the slump in the piano trade has caused Mr. Woolley to turn from musical instruments to cancer cures.

Correspondence

PYRETHRUM

To the Editor:—For some time, probably six months or a year, the reading of THE JOURNAL has been made a sporting proposition from the presence of ants. They are attracted by the glue. For several years, beginning with the protection and conservation of food during the war, ants began seeking strange and unusual substances, such as electricity in light sockets and telephones, which killed them by the thousands and incidentally put the lights and telephones out of commission, and finally they committed the unpardonable by making the reading of THE JOURNAL a swatting campaign: for their bite is quite painful. The remedy was found in placing here and there through the leaves a small quantity of pyrethrum.

In this climate, where ants are on the job in all seasons, it is a godsend to spread a thin layer on a shelf and render any kind of food placed there immune for an indefinite period. One dusting is good for a year and probably longer. Its use as a mosquitocide (culicide, I should say) about residences has long been known, but I doubt whether its effect in the open on large and powerful ones bred in brackish water (the New Jersey variety) is sufficiently understood. I had a good illustration of this recently: I went fishing among the Florida keys provided with everything for the chowder except the fish. There were potatoes, onions, tomato paste, salt pork, and everything except his honor the

jewfish. We went into an atoll, anchored alongside the mangroves, and beneath us plainly visible in the pellucid water 20 feet deep were fish of all kinds, and even our special quest, the jewfish, sticking his head out from under a rocky ledge. And then the mosquitoes came by the thousands and it looked as if we should have to beat it at once and go without the pièce de résistance (some of them weigh from 100 to 200 pounds, and resist is right). However, before making a retreat, I decided to try the fumes of pyrethrum, although I had little faith in its effect on *Aedes sollicitans*. But it worked. In five minutes the boat was free of every single mosquito, and by keeping a smudge going, we were able to catch all the fish we wanted, cook the chowder, and eat it under the awning on the open deck. It was four bells (2 p. m.) when we sat down to the delectable repast, and by six bells every one of the eight good and true trenchermen showed signs of extreme repletion. Of the aforesaid eight one did not smoke, and I noticed that no two of the seven smoked the same brand, which shows how free this country is.

Pyrethrum botanically belongs to the order of the *Compositae*, and all the plants in this order mentioned in the U. S. Dispensatory (and only those) are vermifuges. From seeing a child who had eaten some pyrethrum powder promptly and safely expel a number of lumbricoid worms, I have an idea that in pyrethrum santonin has a rival which it might be well and profitable for some laboratory to prove. The war caused the price of insect powder to quadruple because a large amount of it is grown along the Adriatic in Dalmatia and Herzegovina, and this supply was cut off. Several years ago, natives of these districts moved to Stockton, Calif., and cultivated buhach in that locality on a large scale. Insect powder, if burned in an hermetically sealed room, will eventually kill mosquitoes. Burned in an open room or an ordinarily closed one, it causes intoxication, falling to the floor, and movements of the limbs like strychnin poisoning; but the mosquitoes will recover when the fumes give out. In Havana, during the mosquito extermination campaign, this was so well understood that paper was placed on the floor, and the insects that had fallen were burned with the paper after the rooms were opened. It was the practice there, when a case of yellow fever occurred in a block, to burn pyrethrum in every house in the block. This necessitated powder in enormous quantity, a shipload, three mosquito brigades to operate in different sections (Regla, Jesus Del Monte, Guanabacoa), false screens (biombos), paper and flour paste, to seal up more or less the al fresco houses.

GEORGE R. PLUMMER, M.D., Key West, Fla.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

REPORT ON VITAMINS

To the Editor:—The most interesting and instructive reading I have enjoyed in the past few years has been your editorials. . . . It is refreshing to read your articles on food. Please inform me where I can get the report of "Lister Institute and Medical Research Committee on Food Factors."

W. EHRHARDT, M.D., Westfield, Texas.

To the Editor:—In a recent issue of THE JOURNAL I note a reference to a report published by a committee appointed jointly by the Lister Institute and the Medical Research Committee which details briefly "The Present State of Knowledge Concerning Accessory Food Factors (Vitamins)." I am especially interested in this report and should appreciate your telling me as to where it can be obtained and also as to the cost.

BLANCHE COOPER, B.S., Logan, Utah.

Associate in Human Nutrition, Utah Agricultural College.

ANSWER.—The "Report on the Present State of Knowledge Concerning Accessory Food Factors (Vitamins)" is Special Report No. 28, issued by the Medical Research Committee.

It can be purchased direct from H. M. Stationery Office, Imperial House, Kingsway, London, W. C. 2, England. The price is four shillings, which at the present rate of exchange is equivalent to about 75 cents in U. S. currency.

FAMILIAL ACIDOSIS

To the Editor:—I am presenting a brief history of a familial type of acidosis in childhood, of a fatal type, and asking for help, hoping to avert a fatality to a recently born baby.

The family history offers nothing significant. The mother has had seven children, four of whom have died from the same disease. Erwin, the oldest living child and the first born, is sturdy and normal. He was breast-fed. Erna was breast fed and lived seven months and four days. Ernst was breast fed and lived seven months and twenty-two days. Clarence was breast fed for three months and then was given malt soup. He is living and is now 6 years old. Arnold was breast fed and died at the age of 7 months and 28 days. Laura was breast fed for six weeks and then fed milk and dextrin maltose. She lived eight months. Laurine is now 3 months old and weighs 14 pounds. She seems normal in every way. She still takes the breast.

The children were all healthy in appearance and of normal or slightly above normal weight. The acidosis appeared around dentition time and was of a fulminating type; the important symptoms were drowsiness, vomiting, increased pulmonary ventilation and coma. The children lived about two days. Each of these was seen by a different pediatrician. Blood transfusion was tried in one case. All had large doses of soda by proctoclysis and intravenously.

I am seeking advice as to the proper procedure in the 3 months old baby. The mother's milk shows fat and proteins, each 2 per cent., and sugar, 7 per cent. Would routine urine analysis to determine the ammonia output be of help?

HENRY F. LANGHORST, M.D., Elmhurst, Ill.

ANSWER.—The so-called cases of familial acidosis in childhood have been occasionally observed and have been noted in the literature. The children so affected are usually large, well developed and have been breast fed. The attack occurs somewhat late in the period of lactation, from the sixth month on. The little patients usually become fat and flabby and develop the attack of acidosis suddenly, which is characterized by rapid superficial breathing, rapid pulse, drowsiness deepening into coma, and constipation. As a rule a paralytic ileus with complete obstruction takes place; the liver is enlarged and the course of the disease is rapid, death ensuing, as a rule, in from three to five days. On necropsy these cases show fatty changes in many of the organs. The liver sometimes shows extreme fatty degeneration resembling phosphorus poisoning or acute yellow atrophy. The kidney, heart muscle, the skeletal muscles and the vascular walls all show fatty changes.

In analyzing this group of cases, the outstanding facts are that they occur in large, breast-fed children, and that the attack comes on during the middle or toward the close of the lactation period. An explanation for the occurrence of this condition may be suggested. The infants who are strong, vigorous, and who are being fed on breast milk find that the nutriment contained in the maternal food is no longer able to provide for the needs of the growing body. At this time the infant begins to draw on his reserve supply of food; and, when this is exhausted, he proceeds to consume the tissues of his own body. It is assumed that this process of burning his own tissues is capable of producing the clinical results which are observed. If this assumption is correct, it is evident that mixed feeding should be begun early, although it is not necessary, indeed, not desirable to wean the baby entirely.

He should be given sugar solutions, malt soup, orange juice, and other forms of carbohydrates as early as the third month. The fourth or fifth month he should be given cooked cereals in conjunction with the breast feeding, and at the sixth or seventh month he may have animal broths with vegetables boiled in them, or baked potato and, if the condition of the bowels permits, apple sauce.

In a word, the principle of treating these babies is to begin mixed feeding early. Carbohydrate foods should be stressed, and the baby should have a sufficient amount of food. The analysis of the breast milk would not ordinarily throw any light on the solution of the problem. It is doubtful whether the estimation of the ammonia output in the urine would be of any scientific or therapeutic aid in these cases.

Gonorrhea in Women.—The diagnosis of gonorrhea in women is difficult. Success in treatment requires hospital care, and only in the very early stages is there much hope for complete cure. When the disease has passed into the chronic stage it is difficult to treat and cure is rarely accomplished except after destructive operations or the climacteric.—A. J. Casselman, *Public Health Rep.* 36:857 (April 22) 1921.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.

ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 17. Sec., Dr. Charles B. Pinkham, 906 Forum Bldg., Sacramento.

COLORADO: Denver, Oct. 4. Sec. Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.

GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.

HAWAII: Honolulu, Oct. 9. Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.

IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.

KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.

MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter P. Bowers, 144 State House, Boston.

MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. Alexander MacAlister, State House, Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.

NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 26-29. Mr. Herbert J. Hamilton, Asst. Professional Examinations, Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.

PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.

RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.

WEST VIRGINIA: Charleston, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.

WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

Oklahoma April Examination

Dr. J. M. Byrum, secretary, Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, April 12-13, 1921. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Three candidates were examined, all of whom passed. Thirty candidates, including 1 osteopath, received physician's and surgeon's license by reciprocity, and 1 candidate received an osteopath license by reciprocity. One candidate received a reregistration license. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery.....	(1914)		84
Kansas City Medical College.....	(1901)		*
University of Toronto.....	(1909)		84

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta School of Medicine.....	(1908)		Georgia
Georgia College of Eclectic Med. and Surg....	(1911), (1913)		Georgia
Medical College of Indiana.....	(1879)		Indiana
University of Kansas School of Medicine.....	(1913)		Kansas
Kentucky School of Medicine.....	(1903)		Florida
Univ. of Louisville Med. Dept.....	(1915) Kentucky, (1916)		Alabama
Tulane University	(1916)		California
American Medical College.....	(1906)		Texas
Kansas City Medical College.....	(1904)		Kansas
Missouri Medical College.....	(1885)		Texas
St. Louis College of Physicians and Surgeons.....	(1917)		Missouri
(1919, 2) Tennessee			
Washington University	(1902)		Missouri
Memphis Hospital Medical College.....	(1908), (1911)		Tennessee
(1909) Texas			
University of Tennessee.....	(1917)		Arkansas, Tennessee
Vanderbilt University.....	(1912) Kentucky, (1916, 3)		Tennessee
Dallas Medical College.....	(1903)		Arkansas
University of Texas.....	(1918)		Texas
Medical College of Virginia.....	(1915)		Virginia
Osteopath			Kansas, Missouri

* No grade given.

Massachusetts May Examination

Dr. Walter P. Bowers, secretary, Massachusetts Board of Registration in Medicine, reports the oral, written and practical examination, held at Boston, May 10-12, 1921. The examination covered 13 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 27

candidates examined, 7 passed and 20 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
American Medical Missionary College.....	(1902)		75
College of Physicians and Surgeons, Boston.....	(1908)		75.1
Middlesex College of Medicine and Surgery.....	(1920)		78
Tufts College Medical School.....	(1920)		75
Fordham University	(1917)		80
Woman's Medical College of Pennsylvania.....	(1911)		78
School of Medicine and Surgery, Lisbon.....	(1915)*		75

College	FAILED	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles.....	(1920)		63.2
Kentucky School of Medicine.....	(1906)		24.8
Baltimore Medical College.....	(1902)		69.7
University of Maryland.....	(1919)		72.7
College of Physicians and Surgeons, Boston.....	(1919)		66.8,
(1920) 64.7, (1921) 68.2			
Middlesex College of Medicine and Surgery.....	(1918)		61.6,
(1920) 66, 69.3, 70.5, 71, 71.1, 73			
Tufts College Medical School.....	(1920)		67.5
Laval University	(1920)		64.3
University of St. Vladimira.....	(1904)*		62.2
Osteopaths			63.4, 64.2, 67.9

* Graduation not verified.

Minnesota June Examination

Dr. Thomas S. McDavitt, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, June 7-10, 1921. The examination covered 15 subjects and included 80 questions. An average of 75 per cent. was required to pass. Fifty-five candidates were examined, all of whom passed. Seven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Rush Medical College.....	(1914)		87.8
College of Physicians and Surgeons, Chicago.....	(1902)		78.1
State University of Iowa College of Medicine.....	(1921)		89.3
Johns Hopkins University.....	(1916)		84
Harvard University	(1918)		90.4
University of Minnesota Medical School.....	(1917)		88.1,
(1921)* 84.9, 85.5, 85.8, 85.8, 86, 86.7, 87, 87, 87.1,			
87.2, 87.3, 87.4, 87.7, 88.1, 88.2, 88.2, 88.4, 88.5,			
88.6, 88.9, 89, 89, 89, 89.2, 89.3, 89.4, 89.6, 89.8,			
89.9, 90, 90.5, 90.6, 90.9, 90.9, 90.9, 91.1, 91.1,			
91.2, 91.4, 91.4, 91.7, 92, 92, 92.5, 93.2			
Columbia University	(1909)		89.3
University of Vermont.....	(1918)		89.3
University of Dublin.....	(1918)		94.4
University of Lausanne.....	(1920)		92

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....	(1901) North Dakota, (1903)		Illinois
University of Illinois.....	(1916), (1920)		Illinois
State University of Iowa Coll. of Med.....	(1918), (1920)		Iowa
Bowdoin Medical School.....	(1919)		Maine

* These candidates have finished the medical course and received their M.B. degrees, and will obtain the M.D. degree after they have completed a year's internship in a hospital.

Colorado July Examination

Dr. David A. Strickler, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, July 5, 1921. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 21 candidates who took the physician's and surgeon's examination, 19, including 2 osteopaths, passed and 2 failed. Thirteen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
College of Medical Evangelists.....	(1917)		83.3
University of Colorado.....	(1921) 75, 75.5, 77.2, 79.2, 80.2, 82.3,		
82.6, 83.1, 85.4, 87, 87.2, 88.			
Kansas City University of Physicians and Surgeons....	(1921)		89.1
St. Louis College of Physicians and Surgeons.....	(1921) 75.1, 76, 83		
Osteopaths			81.8, 88.2

College	FAILED	Year Grad.	Per Cent.
St. Louis College of Physicians and Surgeons.....	(1921)*		
Eclectic Medical College, Cincinnati.....	(1908)*		

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama.....	(1910)		Alabama
Atlanta College of Physicians and Surgeons.....	(1908)		Alabama
Northwestern University	(1909)		Kansas
University of Illinois.....	(1915)		Illinois
Indiana Medical College.....	(1906)		Indiana
Keokuk Medical College.....	(1901)		Iowa
Tulane University	(1916)		Alabama
Johns Hopkins University.....	(1919)		Maryland
University Medical College of Kansas City..	(1901), (1912)		Missouri
University of Pennsylvania.....	(1908)		Kansas
Jefferson Medical College.....	(1908)		Penna.
University of Texas.....	(1911)		Texas

* No grade given.

Book Notices

MEDICAL EDUCATION IN EARLY NEW YORK: TWO DISCOURSES DEALING WITH MEDICAL EDUCATION IN EARLY NEW YORK. By Samuel Bard, M.D., Professor of the Practice of Medicine in King's College. I: A Discourse upon the Duties of a Physician, with Some Sentiments on the Usefulness and Necessity of a Public Hospital: Delivered Before the President and Governors of King's College, at the Commencement, held on the 16th of May, 1769. As Advice to those Gentlemen who then received the First Medical Degrees conferred by that University. II: Discourse on Medical Education, Delivered at the Medical Commencement of the College of Physicians and Surgeons of the University of the State of New York, on the Sixth of April, 1819. Boards. Price, \$1 net. With 1 illustration. New York: Columbia University Press, 1921.

The Columbia University Press has very appropriately issued this book at a time when the medical school is about to take a long step forward in the better organization of medical education and research. The addresses are reprinted in facsimile, duplicating the style and type used in the first printing. They reveal Dr. Bard as a true leader in medical science. Particularly to be commended is the following:

Let your Prescriptions be simple, and as neat and agreeable as the Nature of the Remedy will permit—Nothing can be more absurd than the Farrago of some, nothing more disgusting than the Slovenliness of others; for it is impossible to learn the true Virtues of Medicines, from compound Prescriptions; and Inelegance frequently disappoints us of their Effects.

As indicating his advanced point of view in medical science, we quote the following from the lecture in 1819:

The great error in our system of education is, that we are too much in a hurry, and that our young men are ushered into the world, and commence the practice of their professions, at a period so early, and after a preparation so slight, that very few have acquired the prudence or the knowledge requisite to govern their conduct in either; and hence arise the errors and failure of too many, and our general, and I am afraid I may say, too just, reputation for superficial attainments.

The lecture is a plea for hospital instruction, for bedside training, for fundamental preparation—in fact for all of those advancements in medical education which we have just begun to achieve today. It is interesting to find that a physician with a clear vision of the future enunciated these principles a century ago. It is instructive to see how modern is his way of handling medical questions that we sometimes flatter ourselves we alone fully understand. And it is particularly humbling to our pride to note how at this early date he clearly sets forth the usefulness in medical education of the public hospital.

MEDICAL ELECTRICITY, ROENTGEN RAYS AND RADIUM, WITH A PRACTICAL CHAPTER ON PHOTOTHERAPY. By Sinclair Tousey, A.M., M.D., Consulting Physician to St. Bartholomew's Clinic, New York City. Third edition. Cloth. Price, \$10 net. Pp. 1337, with 876 illustrations. Philadelphia: W. B. Saunders Company, 1921.

In a commendable manner Dr. Tousey keeps his encyclopedic discussion of these subjects thoroughly up to date. He has followed the literature closely, and lists all of the newer devices and apparatus used in this work. Special attention is called to the tables showing the correct exposure for roentgenograms of every portion of the body at various weights and measurements. New sections have also been added dealing with the use of electricity and roentgen ray in the treatment of war injuries. The comprehensive character of this book makes it an invaluable reference work for those utilizing electrical methods in medical practice.

TRAUMATIC SURGERY. By John J. Moorhead, B.S., M.D., F.A.C.S., Professor of Surgery and Director, Department of Traumatic Surgery, New York Post-Graduate Medical School and Hospital. Second edition. Cloth. Price, \$9 net. Pp. 864, with 619 illustrations. Philadelphia: W. B. Saunders Company, 1921.

The author includes in this volume the large part of general surgery caused or modified by trauma. The book is well balanced, the greater space being given to such subjects as fractures, dislocations and injuries to special parts of the body. He gives a more detailed discussion of wounds and other traumatic conditions than is found in the usual general surgery. Fractures and dislocations are given their rightful prominence, and a satisfactory method of treatment is advocated in each type of injury. Brief mention is made of complications of injuries, surgical shock and bone diseases. Consideration is given the treatment of a group of

minor industrial accidents, various types of burns, heat stroke, caisson disease, gas poisoning, smoke inhalation and others. The traumatic neuroses are quite fully discussed, particularly in their relation to industrial compensation. There is a chapter on the medicolegal phase of industrial accidents, which is becoming daily more necessary for every physician to appreciate. Traumatic surgery is well brought forward as a branch of general surgery, the author viewing it in the future as a definite specialty. As in all specialties, the various conditions in each specialty overlap. The reader infers that reconstructive surgery is considered as a part of traumatic surgery, although the author considers it very briefly. However, many pages are unnecessarily devoted to illustrations on arthroplasty since the subject itself is barely mentioned. The illustrations are numerous, and most of them are well chosen. For the young man and the practitioner the book is a safe teacher and gives considerable detail; for the surgeon it is valuable as a reference work because of the large and varied experience of the writer.

CLINICAL BACTERIOLOGY AND HAEMATOLOGY FOR PRACTITIONERS. By W. D'Este Emery, M.D., B.Sc. Sixth edition. Cloth. Price, \$3.50. Pp. 310, with illustrations. Philadelphia: P. Blakiston's Son & Co., 1921.

The alterations in this edition are, as the author states, unimportant and mostly verbal. The work is divided into three parts, on bacteriology, hematology and cytodiagnosis. In the bacteriological section the author discusses clearly and concisely the methods involved in such work, omitting, however, much reference to anaerobic cultures, which are today of so much importance in bacteriologic investigations. The chapter on the diagnosis of certain diseases is especially valuable, as it points out the methods to be employed in the bacteriologic diagnosis of various diseases and gives much attention to the interpretation of the results obtained. In his discussion of syphilis the author includes a brief but adequate description of the Wassermann reaction. The section on hematology includes the usual routine blood examinations, such as the determination of hemoglobin, the counting of the red and white cells, the differential counting of the white cells, and the examination of stained smears for various abnormalities. This section does not deal at all with the methods of blood chemistry, which are assuming so much importance in the present-day diagnostic work. The chapter on cytodiagnosis treats of the methods of examination of the various exudates and transudates, with especial reference to their cellular peculiarities. This book should find wide acceptance by physicians who may wish to do their own laboratory work and who desire a brief but reliable guide for the proper performance of such work.

ARTERIOSCLEROSIS, CARDIOVASCULAR DISEASE. Their Relation to Infectious Diseases. By William Ophüls, Professor of Pathology, Stanford University Medical School. Paper. Price, \$1. Pp. 102. Stanford University, California, 1921.

This monograph is based on the study of 500 consecutive necropsies performed by the author personally or under his personal supervision. These necropsies, in connection with the clinical histories, have led Ophüls to the conclusion that arteriosclerosis is closely connected with injury to the arteries resulting from various infections. This relation is carefully considered, as is the relation of arteriosclerosis to hypertension and nephritis. The subject is handled in a scholarly manner. It is a real advantage to have the results of Ophüls gathered into this one compact volume.

A TREATISE ON THE TRANSFORMATION OF THE INTESTINAL FLORA, WITH SPECIAL REFERENCE TO THE IMPLANTATION OF BACILLUS ACIDOPHILUS. By Leo F. Rettger, Professor of Bacteriology, Yale University, and Harry A. Cheplin, Seessel Fellow in Bacteriology, Yale University. From the Sheffield Laboratory of Bacteriology, Yale University. Cloth. Price, \$3. Pp. 135. New Haven: Yale University Press, 1921.

The contents are indicated by the title. It appears that the change in the intestinal flora on feeding sour milk containing *B. bulgaricus* is not due to implantation of this bacillus but to stimulation of the growth of *B. acidophilus* by the sugar in the milk. Milk cultures of *B. acidophilus* are shown to be effective in changing the intestinal flora in man. While no claims are made that such milk cultures have therapeutic value, suggestions to that effect have not been suppressed.

Miscellany

DISORDERED HEART ACTION FROM EXTRACARDIAC CAUSES

A. Mut reviews this extensive field in *Archivos de Cardiología y Hematología* 1:196 and 299, 1920. Tachycardia, bradycardia and other disturbances in the rhythm reveal the pseudocardiopathies which are comparatively harmless. But there are many grave conditions elsewhere which may first attract attention by their action on the heart. With nephritis, for example, it must not be forgotten, he reiterates, that oliguria is a sign that the heart is weakening, and treatment should be addressed to the heart rather than to the kidneys. With diseases of the lung the heart may suffer and overshadow the emphysema and bronchitis. By treatment of the bronchitis, etc., and breathing exercises, we improve conditions and the heart functioning returns to normal. To distinguish between cardiac asthma and essential asthma may be difficult during the paroxysm, but the condition in the interval usually clears up the diagnosis. He recalls that the stomach, liver and uterus influence the heart by mechanical means, by toxic, and by reflex means. The toxic action from the liver may induce such changes in the circulation as to warrant the term hepatic heart. But the uterus, he says, is the most liable of all organs to induce reflex action. He quotes an old saying that "Woman is a uterus served by organs" but he thinks it would be more correct to say "The uterus is the petted child of the female organism." The uterus lords it over the heart. He discusses further the heart in obesity, in gout, in diabetes, in autointoxications and puberty, with directions for management of each class. It is often useless to give heart stimulants in autointoxications, as still better effects are realized by restriction to milk and vegetables, with little salt, massage of the abdomen to stimulate the circulation in the portal vein, supplemented by diuretics which will relieve the heart without acting on it directly.

MENTAL DISEASES IN TWELVE STATES DURING 1919

The data comprised in a study made by H. M. Pollock and E. M. Furbush (*Mental Hygiene* 5:353 [April] 1921) were obtained from the standard tables filled out by forty-six state hospitals of twelve states for the fiscal year ending in 1919. The state hospitals represented are distributed as follows: Arizona 1, Colorado 1, Iowa 4, Maine 2, Massachusetts 12, Nebraska 3, New Hampshire 1, New York 15, Rhode Island 1, South Carolina 1, South Dakota 1, Virginia 4. This study is the first attempt to use for comparative purposes the results of the uniform system of statistics of mental diseases which was adopted by the American Medico-Psychological Association in 1917. At the beginning of the fiscal year of 1919, the hospitals comprised in this study had a total of 79,039 patients on their books; they received during the year 16,176 first admissions, 4,476 readmissions, and 1,660 transfers; they discharged 3,325 patients as recovered, 4,025 as improved, 2,041 as unimproved, 886 as without psychosis, and 1,745 by transfer to other institutions for mental diseases. The deaths numbered 9,309. The number of patients remaining on the books of the hospitals at the end of the fiscal year was 79,960, an increase of only 921, or 1.2 per cent., over the number at the beginning of the year. The high death rate during the fiscal year of 1918-1919, due to the influenza epidemic, was a factor in preventing a larger increase. Arizona, Rhode Island, and Virginia were the only states in which there was a decrease in patients under treatment during the year, although the increase was very small in several of the other states. The main clinical groups in which the male first admissions notably exceed the female were: dementia praecox, 2,230 males, 2,050 females; general paralysis, 1,226 males, 288 females; with cerebral arteriosclerosis, 537 males, 307 females. The clinical groups in which the female first admissions notably exceed the male were: manic-depressive insanity, 922 males, 1,347 females; with other somatic diseases, 262 males, 415 females; involution melancholia, 123

males, 330 females. The rate of general paralysis, according to these figures, is more than four times as high in cities as in rural districts. Alcoholic psychoses are also comparatively rare in rural districts. The onset of dementia praecox occurs earlier in life among males than among females. The relatively high percentage of women with general paralysis in the separated or divorced group is noteworthy. On the whole, the figures given indicate that each group of mental diseases presents its own problem and should receive separate consideration.

TRINITROTOLUENE POISONING AND PHAGOCYTIC ANEMIA

Trinitrotoluene poisoning presents an important problem in industrial medicine, since the health of many workers in munition plants has been and may be seriously impaired by it. Voegtlin, Hooper and Johnson have recently presented several new and important facts relative to the nature of poisoning with this substance (Trinitrotoluene Poisoning. Its Nature, Diagnosis and Prevention, Bull. 126, Hyg. Lab., U. S. P. H. S., 1920). The poisoning is mainly brought about by trinitrotoluene or its derivatives, and not by impurities contained therein. Trinitrotoluene, after being absorbed through the respiratory passages, gastro-intestinal tract or skin, is reduced to hydroxylamin, which is conjugated with glycuronic acid and excreted as such in the urine, where it may be detected by the Webster test; but the test, either positive or negative, has no prognostic importance. By many the anemia in trinitrotoluene poisoning is supposed to be due to hemolysis and changes in the hematopoietic organs caused by the chemical, but Voegtlin and his co-workers appear to have demonstrated that trinitrotoluene does not give rise to hemolysis in vitro and has no pernicious effect on the marrow. They observed, both in clinical cases and in animals poisoned experimentally, fragmentation of the erythrocytes in the peripheral circulation and accumulation of erythrocytes in the phagocytic cells of the spleen, lymph nodes, marrow and liver. On this account they believe that trinitrotoluene causes changes in the erythrocytes that subject them to phagocytosis, and for this reason they term the anemia phagocytic anemia. The development of icterus, they hold, is not due to any morbid changes in the liver itself, such as necrosis or atrophy, which were not found in their experiments, but they assume that the icterus is of an obstructive type due to the excessive amount of bile pigments from destruction of erythrocytes, the hepatic cells being unable to excrete the pigments promptly. In some animals in the early stage of trinitrotoluene poisoning, incoordination develops and gradually disappears. This condition has been attributed to a temporary disturbance of the cerebellar centers, but there is no substantial evidence to this effect, and it will be interesting to learn just how incoordination actually develops.

THE HOMERIC DESCRIPTION OF THE FIRST MEDICAL SCHOOL

The earliest college of medicine, says Mousson-Lanauze (*Paris médical*, Feb. 26, 1921), rose, as was proper, in the cradle of civilization, in ancient Greece, in Upper Thessaly, on the slopes of Mount Pelion. Its founder and its first and only professor was Chiron, the centaur. All Greek heroes were taught by him, but among his pupils only one, Aesculapius or Asclepius, equaled the master in renown. He learned from his teacher the curative properties of plants, the art of treating wounds, and the formulas to relieve or eradicate disease. In fact, he even surpassed his master; and the tradition goes that, not satisfied with curing the sick, he even attempted to resuscitate the dead. Aesculapius' two sons, Machaon and Podalyrc, were also sent by him to the Thessalian school. If we may credit the Homeric epic, they were the real organizers of the first known army medical corps, in which capacity they took part in the siege of Troy. All of Chiron's pupils became more or less famous. According to Mousson-Lanauze, all these legends, which finally became part and parcel of Greek life, were testimonials to the profound respect in ancient times for scientists and especially

physicians. "A physician," says the Iliad, "is worth many men." Homer reflects the popular views which placed among the gods Apollo, the father of medicine, Aesculapius, his son, and Chiron, the wondrous centaur who founded the first school of medicine.

Medicolegal

Death from Wounds Resulting in Septic Poisoning

(*Harrison v. State (Okla.)*, 195 Pac. R. 511)

The Criminal Court of Appeals of Oklahoma, in affirming a judgment of conviction of defendant Harrison of manslaughter in the first degree, holds that where a wound inflicted by the defendant resulted in septic poisoning, from which the wounded man died, the defendant was responsible for the death. The court says that the defendant fired two shots from a shotgun, one of which struck the man he wounded in the leg and the other in the shoulder. Septic poisoning set up, and the man, after lingering seventeen or eighteen days, died as a result of the poisoning. It appeared that a wad from one of the loads and some shot and perhaps articles of clothing lodged in the wounds and contributed to some extent to the infection. It was urged that the defendant ought not to have been convicted, because it was undisputed that neither of the wounds inflicted was necessarily fatal, and that death would not have resulted except for the fact that proper case was not taken of the wounds, and that septic poisoning set up in the wounds, death resulting from the poisoning and not because of the fatal nature of the wounds themselves. But the wounds caused the poisoning to set up. The defendant could not escape responsibility for the death because of the intervening cause of the poisoning. Such is not the rule in this jurisdiction. The rule here is, as stated in 21 Cyc. 700, if a wound or other injury cause a disease, such as gangrene, empyema, erysipelas, pneumonia or the like, from which the injured person dies, he who inflicted the wound or other injury is responsible for the death. He who inflicted the injury is liable even though the medical or surgical treatment which was the direct cause of the death was erroneous or unskilful, or although the death was due to negligence or failure by the injured person to procure treatment or take proper care of the wound. The only exception to this rule is found in the state of Texas, where by statute it is provided that on the infliction of a wound not necessarily fatal, if by gross negligence on the part of the person who received the wound or persons having his custody, the person wounded is permitted to die by gross negligence, the person inflicting such wound cannot be held guilty of homicide. But as there was no showing of gross negligence on the part of the person injured in this case, that rule could not even be invoked were such a statute in effect in Oklahoma. On the contrary, it was shown that the injured man was treated by a regularly licensed physician, on whose suggestion the man was taken to a hospital for treatment, at which place he died.

Valid Law Against Advertising of Medical Business

(*Glass v. Board of Medical Examiners et al. (Calif.)*, 195 Pac. R. 73)

The District Court of Appeal of California, Second District, Division 1, in affirming a judgment that affirmed an order of the board of medical examiners revoking the certificate of appellant Glass licensing him to practice medicine and surgery in that state, says that the medical practice act of the state provides for the revocation of a certificate whenever the holder thereof is guilty of unprofessional conduct. The words "unprofessional conduct" are declared, by Subdivision 3 of Section 14, to mean "all advertising of medical business which is intended or has a tendency to deceive the public or impose upon credulous or ignorant persons, and so be harmful or injurious to public morals or safety." It appeared that the appellant's license was revoked by reason of acts constituting a violation of this subdivision, and he argued that the subdivision was unconstitutional for the reason that it denied to citizens the equal protection of the law and was class legislation. But that proposition was without

merit. The law does not recognize the right of any person to do acts which are harmful or injurious to public morals or safety. So far as the penalty was concerned, it was made as broadly applicable as the subject-matter would permit; in fact, it included the entire public to which it could possibly apply, since a certificate to practice medicine could not be taken away from a person who did not hold any such certificate.

It was contended, further, that Subdivision 3 was void because of uncertainty and indefiniteness, the principal authority relied on to support that contention being the case of *Hewitt v. Board of Medical Examiners*, 148 Calif. 590, 84 Pac. 39, wherein it was held that the provision that "all advertising of medical business in which grossly improbable statements are made" should constitute unprofessional conduct was too indefinite to state an offense. But a comparison of the language used by the supreme court of the state in that case with the words used in Subdivision 3 under consideration here was sufficient to test fairly the whole matter. The legislation was evidently framed with the direct purpose and intention of stating a rule in conformity with the principles declared in the *Hewitt* case. Under these provisions a certificate could not be revoked unless it was first determined by the board that the advertising complained of was in fact false and was intended or had a tendency to deceive the public or impose on credulous or ignorant persons, and so be harmful to public morals or safety. It would not be possible to frame a definition of unprofessional advertising which would anticipate in terms every form of advertisement which unscrupulous practitioners might thereafter devise. This being so, it cannot reasonably be held necessary to the validity of the statute that it go further than to state a reasonable definite rule under which all such specific acts might be included. This the court thinks has been done in the terms of the statute so far as these were presented for consideration. Precisely the same words are found in the medical practice act of the state of Washington. In *State Board of Medical Examiners v. Macy*, 92 Wash. 614, 159 Pac. 801, this provision was attacked on the same grounds urged by the appellant here. After an extensive review of decisions from various states, including *Hewitt v. State Board of Medical Examiners*, the court held that this definition of unprofessional conduct in advertising was not void or unconstitutional for vagueness or uncertainty.

The Supreme Court of California denied the appellant a hearing.

Operations Required by Compensation Law—Evidence

(*Schiller v. Baltimore & Ohio R. R. Co. (Md.)*, 112 Atl. R. 272)

The Court of Appeals of Maryland says that the real controversy here was whether the claimant for compensation, who had sustained a hernia while in the employ of the railroad company, should have submitted to an operation, and, if the jury so found, whether compensation should have been continued beyond the time which would have been required for his recovery after such an operation. He contended that one should not, as a condition precedent to continued compensation during disability, be required to submit to an operation the result of which might be fatal even if such result was so unlikely as to make the danger practically negligible. To support this, he cited three New Jersey cases. But the overwhelming weight of authority is opposed to that view, holding that a man cannot continue to receive compensation and at the same time refuse to submit to proper medical or surgical treatment such as an ordinarily reasonable man would submit to in like circumstances. The safety of an operation for hernia and its probable effect in removing the disability of the claimant therefore bore on the merits of the case and were relevant questions.

There was no error in permitting a physician to testify that the place on the body which a witness pointed to as the place where he had a rupture which was cured by certain treatment which the claimant testified he was using was not a place where the sort of hernia the claimant had could be. Nor was there error in permitting the physician to answer a question as to his opinion of the effect of the treatment which the claimant had testified that he was giving himself.

Service of Alienist Not Chargeable to Incompetent

(McClenahan v. Howard (Calif.), 195 Pac. R. 68)

The District Court of Appeal of California, First District, Division 1, says that the plaintiff sought to recover a sum slightly in excess of \$1,800 for professional services rendered as an alienist. It appeared that the defendant had created some kind of a disturbance which resulted in her arrest on a charge of insanity made by a Mr. Morris, who was the attorney for her brother and certain members of the family. In a sanatorium devoted chiefly to alcoholic cases, she in some manner obtained and imbibed a large quantity of whisky, and early in the morning the physician in charge informed the plaintiff over the telephone that one of the patients was in a precarious condition. The plaintiff immediately went to the sanatorium and remained there, rendering assistance until nearly noon, and until the defendant was out of danger. On his return to the office of the sanatorium he was met by a man who said he was personal attorney for the defendant, which man made some suggestion that the plaintiff look into the case. In the afternoon, at the suggestion of the plaintiff, there was a family gathering held at his office in order to get information and history of the defendant's case to make the investigation as to her mental status. The attorney who made the insanity charge was present also. From then on for a period covering sixty-eight different days, the plaintiff rendered services either by observation of the patient, consultation with her relatives and friends, or in attendance on the court. For about nine months the defendant was practically in custody under the charge of insanity, after which that charge was dismissed, and a new proceeding was brought which resulted in the appointment of a guardian for both her person and her estate. The plaintiff never acted as her physician at any time. He never prescribed for her. He did not treat her. The only examinations he made were by way of observation. He refused to consult with her attorneys. He declined to report the result of his opinion or tell them anything, unless Mr. Morris, who made the insanity charge, instructed him so to do. He was a witness and gave testimony against the defendant in the insanity charge and the contested guardianship proceedings, and was called by the attorneys acting against her. The only circumstances referred to as indicating that he was acting at the request of the defendant were that it did not appear that she objected to the rendering of his services, and that once, at her request over the telephone, he took lunch with her and some of her relatives. There was nothing, however, to indicate that she had knowledge while in custody under a warrant of insanity that any services were being rendered for her benefit. Under all the circumstances mentioned, the finding that the services were not rendered at the request of the defendant, but were rendered at the request of her relatives, was not without support in the evidence.

It was urged that the proceedings taken against the defendant were not adversary in their nature, and also were in fact beneficial to her. As to the first proposition, the authorities are to the contrary. As to the second proposition, in the absence of evidence that the services were rendered at the defendant's request, it developed on the plaintiff to prove that they were beneficial to her. Cases in which the estates of minors, idiots, insane and persons bereft of reason by the sudden stroke of accident or sickness are held liable for necessities furnished in good faith while in that condition had no application here, for in those cases a recovery is permitted on the theory that the services were necessary or beneficial. But the court knows of no presumption that services rendered in observation and consultation by an expert alienist to determine the mental condition of a person are either necessary or beneficial to such person. The record in this case did not indicate that, other than the time when the defendant was unconscious, she ever received any medication or any advice for her physical or mental welfare or improvement, or for the palliation of any of her infirmities; and it was likewise silent as to any benefit to her property because of any act or suggestion by the plaintiff. Wherefore the court affirms a judgment in the plaintiff's favor for \$45 only, which was deemed the reasonable value of the services which he rendered to the defendant at the time when she was unconscious.

Society Proceedings

COMING MEETINGS

- Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American College of Surgeons, Philadelphia, Oct. 24-28.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Oct. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 27-29.
Medical Association of the Southwest, Kansas City, Mo., Oct. 25-28.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
Missouri Valley, Medical Society of the, Kansas City, Mo., Oct. 25-28.
New England Surgical Society, Worcester, Mass., Sept. 21-22.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

May 15, 1921, 29, No. 1

- Development of Eyelids of Albino Rat, Until Completion of Disjunction. W. H. F. Addison and H. W. How, Philadelphia.—p. 1.
Histochemical Studies on Mechanism of Renal Secretion. E. J. Stieglitz, Chicago.—p. 33.
Studies in Dynamics of Histogenesis. IV. Tension of Differential Growth as a Stimulus to Myogenesis in Limb. V. Compression Between Accelerated Growth Centers of Segmental Skeleton as Stimulus to Joint Formation. VI. Resistances to Skeletal Growth as Stimuli to Chondrogenesis and Osteogenesis. E. J. Carey, Milwaukee.—p. 93.
*Mitochondria and Golgi Apparatus of Giant Cells of Red Bone-Marrow. H. E. Jordan, Charlottesville, Va.—p. 117.

Giant Cells in Bone Marrow.—The results of his cytologic investigation of giant cells in the red bone marrow of the rabbit and the guinea-pig lead Jordan to the tentative conclusions that the so-called trophospongium of these cells as demonstrable in Carnoy fixed tissue is an artefact, that the Golgi network consists of anastomosing varicose fibrils and rods, and that the Golgi apparatus and mitochondria are only morphologically different portions of the same substance, the former resulting from a fusion of the latter while aggregated in the neighborhood of the centrosphere.

July 15, 1921, 29, No. 2

- *Structure and Multiplication of Bone Cells Facilitated by New Technic. T. H. Bast, Madison, Wis.—p. 139.
Histogenesis of Dense Lymphatic Tissue of Intestine (Lepus): Development of Lymphatic Tissue and Blood-Cell Formation. J. S. Latta, Ithaca, N. Y.—p. 159.
Interstitial Cells of Urodele Testis. R. R. Humphrey, Ithaca, N. Y.—p. 213.
Cultivation in Vitro of Liver Cells from Chick Embryo. R. S. Lynch, Baltimore.—p. 281.

Study of Bone Cells.—The following procedure gave Bast satisfactory results in the study of bone cells: (1) Fix small pieces of thin bone in 95 per cent. alcohol. (2) Wash in water. (3) Stain for from eight to twenty-four hours in a dilute aqueous solution of gentian violet. (The stain should be diluted until it is transparent when viewed in a test tube.) (4) Dehydrate as rapidly as possible in 75 per cent., 95 per cent. and absolute alcohol. (5) Clear in benzol. (6) Place in a watch glass of benzol and carefully scrape off all of the periosteum under a binocular microscope.

American Journal of Medical Sciences, Philadelphia

July, 1921, 162, No. 1

- *Leukocytic Picture in Influenza. C. H. Bunting, Madison, Wis.—p. 1.
*Basal Metabolism Estimations in Goiter. C. H. Frazier and F. H. Adler, Philadelphia.—p. 10.
Paroxysmal Auricular Fibrillations and Flutter. E. M. Smith, Chicago.—p. 13.

Relation of Endocrine System to Glycemic Reaction Following Injection of Homologous Protein. G. L. Rohdenburg and O. Krehbiel, New York.—p. 28.

*Leukocytes After Hemorrhages. J. H. Musser, Jr., Philadelphia.—p. 40.

*Polariscopic Study of Urines of Group of Syphilitics. S. P. Taylor and K. P. A. Taylor, Philadelphia.—p. 47.

Neurogenic Irregularities of Heart in Adults. A. M. Wedd, Pittsburgh.—p. 49.

*Evaluation of Allen Method of Treatment of Diabetes Mellitus. J. R. Williams, Rochester, N. Y.—p. 62.

Application of Occupational Therapy in Civil Life to Cases Presenting Paralysis, Contracture, Fibrosis, or Lack of Coordination. J. H. Arnett, Philadelphia.—p. 73.

Use of Arsphenamin: Its Effect on the Kidneys and Its Therapeutic Results. H. B. Anderson, Philadelphia.—p. 80.

Treatment of Tuberculosis Adenitis by Roentgen Rays and Radium. R. H. Boggs, Pittsburgh.—p. 90.

Gallbladder Disease. T. G. Schnabel, Philadelphia.—p. 95.

Physical Exercise in Heart Disease. T. B. Barringer, Jr., New York.—p. 103.

Occultism with Particular Reference to Some Phases of Spiritism. C. K. Mills, Philadelphia.—p. 113.

Leukocytes in Influenza.—Bunting states that there is a consistency in the blood findings of cases of influenza, which would seem to justify certain conclusions. This is the basis for the point emphasized earlier, that in practice, influenza patients should not be allowed to get up and resume their ordinary life immediately on the cessation of fever, but should be kept quiet and isolated until their blood has approached at least the normal leukocytic formula, which apparently requires almost a week from the cessation of the fever. The great platelet decrease in the blood in influenza, apparent in blood smears, but established by the actual counts of Kinsella and Broun, is apparently responsible for the hemorrhagic character of the pneumonic exudate in that complication of the disease.

Basal Metabolism in Goiter.—Frazier and Adler state that estimations of basal metabolism are of value in the following ways: Positive: In eliminating those cases which will not be benefited, and might be made worse by operation. Supplemental: (a) In offering confirmatory evidence of the degree of toxicity. (b) In offering a quantitative rather than a qualitative index for use in diagnosis and treatment. Problematical: It may be possible to determine by the metabolic rate how much thyroid tissue may be removed. The reduction of the metabolic rate to points well below that of the normal range (10) should imply that too much secreting substance had been removed. Such cases must be studied clinically for signs of hypothyroidism. Of two patients whose metabolic rate after operation fell well below normal—in one to —17 per cent. the second to —30 per cent. Neither has shown signs of hypothyroidism.

Leukocytes After Hemorrhage.—According to Musser a marked leukocytosis is the general but not constant rule after hemorrhage and is of variable duration. The persistence of the leukocytosis would seem to bear a general relation to the severity of the hemorrhage. This leukocytosis is made up largely of an increase in the polymorphonuclear neutrophils. Eosinophils do not disappear from the circulating blood as they do in the leukocytosis of sepsis and other conditions. The factors which seem to play a part in the pathogenesis of the condition are: retention of the leukocytes in the blood stream during hemorrhage by adhesion to the vessel walls with diminution of blood volume, and, presumably, an outpouring of white cells from the bone marrow after hemorrhage in response to an unknown stimulus.

Polariscopy of Urine of Syphilitics.—The study made by the Taylors of fifty proved syphilitics without manifest true nephritis failed to reveal the double refractile lipoids.

Valuation of Allen Treatment.—Williams asserts that the Allen treatment of diabetes is of little avail when serious infections are present or when the patient is afflicted with the degenerative processes of old age. Many patients find the Allen treatment too exacting and rigorous. A very considerable proportion of those persons who die from diabetes are patients with severe cases who wilfully violate their diets and they rapidly succumb to the malady. Comparatively few fatal cases, less than 14 per cent., were persistently faithful to the treatment. Many patients unquestionably die because of lack of courage. Patients with serious or hopeless complications frequently abandon dietary treatment. In many cases in adults death resulted because of the inability of the patients

to provide suitable care. It will be noted that comparatively few were faithful to the treatment. Neglected diabetes is more rapidly and certainly fatal in a child than in an adult. Persistent and careful treatment imposes on the parents a task requiring much fortitude and intelligence. There is little question but that many failures ascribed to the treatment are due to lack of faithfulness on the part of the patient. The majority of patients who live within their food tolerance gain in physical vigor; furthermore the distressing symptoms incident to the disease noticeably lessen. Moderately severe cases do surprisingly well. Severe cases which have not been rigidly dieted are markedly benefited by the institution of the Allen treatment. Patients who have been dieted carefully for long periods do less well. Kidney functional tests in thirty-nine cases after the administration of thirty doses of arsphenamin, each dose consisting of 4.6 g. and distributed over a two-year period failed to give any conclusive evidence of injury to the kidneys. Barringer says that physical exercise must not only increase the resistance to general infections of patients with heart disease exactly as it does normal people, but that in all probability it makes the heart itself more resistant to the serious menace of reinfections. There can be no excuse in the majority of instances for advising heart patients against exercise nor any reason for not being specific and definite when prescribing this valuable therapeutic measure.

American Journal of Physiology, Baltimore

July 1, 1921, 56, No. 3

Gastric Juice in Pancreatic Diabetes. M. E. Steinberg, Chicago.—p. 371.

Studies of Thyroid Apparatus. II. Changes in Amount of Intestine-Contracting Substances of Thyroid of Albino Rat According to Age. F. S. Hammett and K. Tokuda, Philadelphia.—p. 380.

Studies of Thyroid Apparatus. III. Action of Thyroxin on Isolated Intestinal Segment. F. S. Hammett, Philadelphia.—p. 386.

Studies in Carbon Monoxid Asphyxia. I. Behavior of Heart. H. W. Haggard, New Haven, Conn.—p. 390.

*Studies in Nutrition. VIII. Nutritive Value of Proteins of Tomato Seed Press Cake. A. J. Finks and C. O. Johns, Washington, D. C.—p. 404.

Mode of Action of Low Temperatures and of Cold Baths in Increasing Oxidative Processes. W. E. Burge and J. M. Leichsenring, Urbana, Ill.—p. 408.

Studies on Consecutive Phases of Cardiac Cycle. I. Duration of Cycle and Criteria for Precise Determination. C. J. Wiggers, Cleveland.—p. 415.

Studies on Consecutive Phases of Cardiac Cycle. II. Laws Governing Relative Durations of Ventricular Systole and Diastole. C. J. Wiggers, Cleveland.—p. 439.

Effect of Short Spells of Rest on Physical Efficiency as Measured by a Bicycle Ergometer. L. A. Wallrich and P. M. Dawson, Madison, Wis.—p. 460.

Surface Temperature of Elephant, Rhinoceros and Hippopotamus. F. G. Benedict, E. L. Fox and M. L. Baker, New York.—p. 464.

Studies on Responses of Circulation to Low Oxygen Tension. V. Stages in Loss of Function of Rhythm Producing and Conducting Tissue of Human Heart During Anoxemia. C. W. Greene, Columbia, Mo., and N. C. Gilbert, Chicago.—p. 475.

Oscillations in Diaphragm Muscle. L. B. Nice and A. J. Neill, Norman, Okla.—p. 487.

Nutritive Value of Tomato Seed Press Cake.—A diet in which tomato seed press cake furnished the sole source of protein and water-soluble vitamin enabled albino rats to grow at the normal rate. Such a diet was made adequate by the addition of starch, a suitable inorganic salt mixture, butter-fat and lard. Normal growth was also obtained when the butter fat of the above diet was replaced by lard.

American Journal of Roentgenology, New York

July, 1921, 8, No. 7

Reduction of Bone Density. D. B. Phenister, Chicago.—p. 355.

Making and Filing of Records in Section on Roentgenology in Mayo Clinic. R. D. Carman, Rochester, Minn.—p. 372.

Congenital Nonrotation of Stomach. L. C. Kinney, San Diego, Calif.—p. 383.

Transposed Viscera. W. O. Upson, Battle Creek, Mich.—p. 385.

Case of Diverticulum of Lower Portion of Esophagus. H. W. Dachtler, Toledo, Ohio.—p. 389.

Total Radiation Falling on Surfaces Exposed to Point Sources. J. Kaufman, Brooklyn.—p. 390.

Roentgen-Ray Spectrums and Structure of Matter. J. M. Cork, Ann Arbor, Mich.—p. 393.

Roentgenography of Mastoid. A. S. Macmillan, Boston.—p. 399.

Head Rest for Roentgenography of Accessory Sinuses. G. W. Grier, Pittsburgh.—p. 402.

Table Designed for Simplification of Pneumoperitoncum Technique. L. R. Sante, St. Louis.—p. 404.

Radium in Treatment of Myxomatous Nasal Polyps. H. R. Lyons, Rochester, Minn.—p. 407.

American Review of Tuberculosis, Baltimore

July, 1921, 5, No. 5

- *Hypertrophic Osteoarthropathy in Pulmonary Tuberculosis. J. Corper and P. Cosman, W. M. Gilmore and L. T. Black, Denver.—p. 357.
- Survival and Virulence of Tubercle Bacilli in Excised Animal Lymph Nodes. G. B. Webb, C. T. Ryder and G. B. Gilbert, Colorado Springs, Colo.—p. 388.
- What Constitutes the Early Recognition of Tuberculosis? S. Simon, St. Louis.—p. 397.
- Problem of Child with Latent Tuberculosis. H. J. Achard, Chicago.—p. 405.
- *Vaccines in Treatment of Tuberculosis. A. Minnig, Denver.—p. 421.

Hypertrophic Osteo-Arthropathy in Pulmonary Tuberculosis.

—In order to obtain information on the incidence of the various manifestations of hypertrophic osteoarthropathy affecting the hands and feet of consumptives in various stages of the disease and classified according to the activity and approximate duration of the pulmonary condition, the hands and feet of 102 pulmonary tuberculosis patients were examined by Corper and his associates. They found a high percentage of hyperconvex nails regardless of the stage of the disease. The incidence on the hands is exactly the same as that on the feet. Lateral ridging of the finger nails in the consumptive becomes more marked, and pronounced transverse and mixed ridging is much more frequent. Hypertrophy of the soft tissues of the hands and toes, especially to be seen at the tips of the fingers and thumb, is common. The incidence of bone hypertrophy of the hands and feet, especially to be seen as burring of the tips of the distal phalanges and periosteal thickening of the shafts of the phalanges and the metacarpal and metatarsal bones is common to a pronounced degree. The incidence of bone hypertrophy is about the same in the toes and in the fingers. The incidence of bone hypertrophy is greater in the active than in the inactive cases. No significant differences in the incidence of the manifestations of hypertrophic osteoarthropathy were noted, whether the pulmonary condition had been of short (one year or under) or long (over three years) duration. There is also found a high incidence of hypertrophic involvement of the gums which is slightly more pronounced in the active than in the inactive cases. The teeth show nothing of especial significance. Hypertrophy of the bony processes of the jaws (mandible and maxilla) is fairly common, the incidence being greater in the active cases. Hypertrophy in the midline of the hard palate is fairly common, and the incidence is greater in the active cases, which seems to correlate this condition with general hypertrophic osteoarthropathy. There seems to be very little correlation between the above conditions and the actual duration of the pulmonary condition. The condition of the soft palate and tongue could not be correlated with the general condition of hypertrophic osteoarthropathy. Although malar thickening and globular formation of the nose was noted, its relation to hypertrophic osteoarthropathy could not be definitely established because of the difficulty in interpreting these conditions in the patients studied.

Vaccines in Tuberculosis.—The vaccines used by Minnig in sixty-three cases were all autogenous and prepared in the usual way. Only one organism to a vaccine was preferred, but in a few cases two were used. The organisms used were the streptococcus, *Streptococcus hemolyticus*, *Streptococcus viridans*, pneumococcus, pneumostreptococcus, and the pneumococcus and streptococcus together. The vaccine was usually prepared with five hundred million killed organisms to the cubic centimeter. A total of seventy-seven vaccine courses was given. In twenty-four cases there was a decrease in the amount of sputum, in six there was no change, and in sixteen the sputum increased in quantity. In the remaining cases the records are not complete. Twenty-two patients gained weight. Twenty became worse, eight remained stationary, and thirty-two were considered improved both as to subjective symptoms and physical examination. Three died: one of influenza, and two of pulmonary tuberculosis. Of the thirty-two who improved, fifteen were in stage III., ten were in stage II. and eight were in stage I. Of the remaining thirty-one who remained stationary, got worse or died, twenty-seven were in stage III., two were in stage II. and one was in stage I. The organisms which gave the best results in the above series of cases was the *Streptococcus*

hemolyticus. Vaccines are contraindicated when there is present some evident form of infection outside the lung. Here the course indicated is to remove the other focus and after a month or two start vaccine therapy. The vaccine treatment is not suitable when there is a coexisting acute infection, an acute exacerbation of tuberculosis or persistently high temperature.

Boston Medical and Surgical Journal

Aug. 4, 1921, 185, No. 5

- Accessory Blindness, Differential Diagnosis and Operative Technic. L. E. White, Boston.—p. 133.
- *Rare Fracture of Lower End of Humerus. L. G. Paul, Boston.—p. 145.
- Reconstruction of Ears. H. F. Day, Boston.—p. 146.
- One Thousand Cases of General Anesthesia W. T. Bailey, Boston.—p. 147.
- Significant Reactions of Arterial Tension Manifestations of Angiokinetic Energy Clinically Observed and Interpreted. C. J. Enebuske, Boston.—p. 150.

Rare Fracture of Lower End of Humerus.—A girl fell down several steps while carrying a younger child. The elbow was swollen and tender over the external part, and motion was much restricted on account of pain. There was a slight bruise of the skin just above and back of the head of the radius. She had about twenty degrees of flexion, and about the same degree of extension, without pain. The rotation was about one half normal. The bony landmarks were in normal relation, and no abnormal mobility or crepitus was noticed. The roentgenogram showed a vertical fracture of the lower end of the humerus, in which the anterior part of the articulating surface had been separated from the rest of the bone, and this fragment had been forced out of the joint, and was lying on the anterior surface of the lower end of the humerus, fully an inch above its normal position. An unsuccessful attempt was made to reduce the fracture, and incision into the joint was made on the outer side of the elbow. All attempts to replace the fragment were without success, until the forefinger was placed in the wound over the fragment, and between the fragment and the tendons of the biceps and brachialis anticus muscles, the elbow being flexed to somewhat beyond a right angle. The assistant then extended the forearm, and at the same time exerted a pull to increase the space between the humerus and the upper ends of the radius and ulna. The fragment was pushed into place. Three months later, the movements of the joint were normal.

Endocrinology, Los Angeles

July, 1921, 5, No. 4

- Parathyroid Glands: Review of Literature. W. M. Boothby.—p. 403.
- Epilepsy Suggestive of Endocrine Relationship. H. J. Van Den Berg, Grand Rapids, Mich.—p. 441.
- Does Administration of Anterior Lobe of Hypophysis to Tadpole Produce an Effect Similar to that Obtained from Thyroid Feeding. P. E. Smith and G. Cheney, Berkeley.—p. 448.
- *Internal Secretion of Spleen. N. B. Eddy, Edmonton, Can.—p. 461.

Internal Secretion of Spleen.—The hypothesis that the spleen produces an internal secretion, Eddy asserts, is supported by (1) the changes in the erythrocytes after splenectomy, (2) the modification of the blood picture in hyperplasia of the spleen, ameliorated in some cases at least by splenectomy, and (3) the specific effects on the red blood corpuscles of injection of splenic extract. He suggests that the chief function of the spleen is the removal from the circulation of the disintegrated erythrocytes; that the splenic cells elaborate this material producing thereby an internal secretion, which was a component of the erythrocyte, either stroma or pigment portion; that this internal secretion reduces the resistance of all the red blood corpuscles, the effect amounting to actual destruction of the older cells; and, finally, that this internal secretion, possibly after modification by the liver, stimulates the erythrocytic function of the bone marrow and is used up in the manufacture of new corpuscles.

Johns Hopkins Hospital Bulletin, Baltimore

August, 1921, 32, No. 366

- *Chronic Meningococcus Septicemia: Report of Two Cases. H. J. Morgan, Baltimore.—p. 245.
- *Pernicious Anemia. S. A. Levine and W. S. Ladd, Boston.—p. 254.
- Gland Puncture as a Diagnostic Measure. C. G. Guthrie, Baltimore.—p. 266.
- *Present Views on Anaphylaxis. J. Bordet, Brussels, Belgium.—p. 262.

Chronic Meningococcus Septicemia.—In both instances reviewed by Morgan the organism was isolated in pure culture from the blood stream during the course of a long septic disease. Gratifying therapeutic results were obtained by the use of specific serum.

Pernicious Anemia.—A clinical study was made by Levine and Ladd of 150 consecutive cases with special reference to gastric anacidity. In seven cases the subsequent course of the disease either indicated that the diagnosis was wrong or threw considerable doubt on its correctness. The gastric secretion in the fasting contents and after an Ewald test breakfast was analyzed in 107 of the 143 cases of pernicious anemia. In only three cases was free hydrochloric acid found at any time in the gastric secretion, and in two of these cases the diagnosis of pernicious anemia was questioned. These figures, then, show a persistent anacidity in 104, or 99 per cent. of cases of pernicious anemia. Pepsin was tested for in a small number of cases and was always found lacking. In five patients who showed varying amounts of free hydrochloric in the gastric secretion, operation, postmortem examination or subsequent findings practically ruled out pernicious anemia. A distinct familial incidence was discovered in these 143 cases. In nine patients there was a definite family history of pernicious anemia in some other member of the family. In two others there was a history of death from an unknown type of anemia. Forty-one had a family history of tuberculosis or cancer or of both, and as these diseases are easily confused with pernicious anemia, these figures may well include cases of anemia. Pernicious anemia is less frequent in the Italians, Russian Jews, and immigrants from eastern Europe, than in Americans, Canadians, or immigrants from Ireland, England, Sweden or Denmark. Syphilis bore no relation to the development or course of pernicious anemia in this series. Of 143 patients, six, 4.3 per cent., gave a positive Wassermann, which is about one third the percentage of positive Wassermann reactions in all medical patients admitted to the hospital. When the Wassermann reaction was positive, antisyphilitic treatment did not alter the course of the anemia. The presence of eosinophilia is a common finding in pernicious anemia. Out of the 143 patients, fifty-four showed 5 per cent. or more at one time or another. Even a very high eosinophilia—25 per cent. or more—is not incompatible with the disease. In 76.9 per cent. of the cases the blood smear might be called typical of pernicious anemia, in 18.2 per cent. it was suggestive and in 4.9 per cent. it was atypical or within normal limits. This is in striking contrast with the more constant finding of anacidity. Of 127 patients in whom the appearance of the tongue was described, in 63.8 per cent. it was typically smooth and atrophic, in 19.7 per cent. it was suggestive, and in 16.5 per cent. its appearance was about normal. Notwithstanding the fact that this disease belongs to adult age, the hair seems to turn gray prematurely and often takes on a strikingly silky white appearance.

Anaphylaxis.—Bordet states that it would be quite unjustifiable, however correct may be many assumptions of the cellular theory, to disregard the humoral side of the anaphylactic phenomena. Anaphylatoxin has undoubtedly much to do with real anaphylaxis and even did such a connection not exist in reality, the capacity for normal serum to be converted readily into a poison by the action of agar is an unexpected and very striking fact, enigmatic enough to deserve, at any rate the serious attention of the physiologist.

Journal of Cancer Research, Baltimore

January, 1921, 6, No. 1

- Effect of a Reduction of Lymphocytes on Growth Rate of Transplanted Spontaneous Tumors in Mice. F. Prime, New York.—p. 1.
- *Comparison of Growth of Mice Which Ultimately Develop Carcinoma with Growth of Mice Which do not Develop Carcinoma. T. B. Robertson and L. A. Ray, Toronto.—p. 7.
- Effect of Blood from Immune Animals on Transplantable Tumors. I. Kross, New York.—p. 25.
- Inoculation of Sarcomatous Tumors into Negro Fowls, with Special Reference to Significance of Chromatophores. Y. Kon and T. Fujii, Tokyo.—p. 31.
- Influence of Lymphocyte on Peritoneal Implantation of Sarcoma in Mice. E. Kellert, Albany, N. Y.—p. 41.
- *Primary Spontaneous Squamous Cell Carcinomas in Mice. Studies on Incidence and Inheritability of Spontaneous Tumors in Mice. M. Slye, H. F. Holmes and H. G. Wells, Chicago.—p. 57.

Relationship of Growth and Carcinoma.—The incidence of carcinoma in mice, according to Robertson and Ray, is foreshadowed in their preceding development. The animals which ultimately develop carcinoma are distinguished by relatively energetic growth during the period of adolescence. The lead over the other animals which is thus established is usually maintained throughout life, but is sometimes lost in the latter periods of life through late accretion of weight by the animals which do not develop carcinoma. The results are interpreted to mean that the animals which ultimately develop carcinoma are those in which the anabolism and, therefore, the growth of parenchyma is exceptionally rapid. In such animals the energy of response to local irritative stimuli may be so excessive as to overcome the competition of other tissues and initiate a new growth. The longest lived animals in any group are, therefore, those in which the speed of anabolism and energy of growth of the parenchyma just fall short of those which lead, under the influence of recurrent irritative stimuli, to the formation of new growths.

Primary Carcinoma in Mice.—Among 28,000 mice dying natural deaths at all ages, and carefully examined after death, Slye, Holmes and Wells observed 153 growths of stratified and squamous epithelium that correspond by the usual standards to true neoplasms. Seventy-one were examples of squamous cell carcinoma of the skin or mouth. They differ from the human skin carcinoma chiefly in a low incidence of metastasis. Fifteen others are of basal cell character, arose always about the head, and produced no metastases. Trauma and chronic irritation seem to play an important part in the production of skin carcinoma in mice, most of the cases occurring about the head and face, often recognizable at the site of wounds, and nearly all the skin carcinomas of the trunk arose in old scars. Skin cancers occur at a greater average age than other tumors in mice. Fifty-six examples of squamous cell keratinizing growths arising in the mammary gland were observed, predominatingly adenocarcinomas with localized areas of keratinization. These also seldom produce squamous cell metastases. Other tumors in this group were: squamous cell carcinomas of the stomach, rectum, vulva, keratinizing tumor of the lung, sebaceous adenocarcinoma of the preputial gland, and, as hitherto undescribed mouse tumors, squamous carcinoma of the vagina and adenomas of the Meibomian glands, one of these being infiltrative and apparently malignant. The literature of the comparative pathology of squamous cell carcinoma in animals is reviewed.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, 1921, 17, No. 6

- *Route of Administration of Drugs in Relation to Toxicity in Chemotherapeutic Investigations with Special Reference to Intrapleural Injections of Ethylhydrocuprein Hydrochlorid. J. A. Kolmer, Philadelphia.—p. 431.
- *Comparative Effects of Morphin and Alkaloids of Benzyloquinolin Group on Cardiac Muscle. P. J. Hanzlik, Cleveland.—p. 445.
- *Attempt to Detect Thyroid Secretion in Blood Obtained from Glands of Individuals with Exophthalmic Goiter and Other Conditions Involving Thyroid. J. M. Rogoff and H. Goldblatt, Cleveland.—p. 473.
- Liver as a Blood Concentrating Organ. P. D. Lamson and J. Roca, Baltimore.—p. 481.

Toxicity of Drugs and Route of Administration.—Ethylhydrocuprein hydrochlorid, other quinin compounds, mercurophen, arsphenamin and neo-arsphenamin were found by Kolmer to be from 0.6 to 0.7 times more toxic for white rats by intrapleural than by intravenous injection. Ethylhydrocuprein hydrochlorid and mercurophen were from seven to eight times more toxic for rabbits by supthecal injection than for white rats by intravenous injection. Ethylhydrocuprein hydrochlorid, other quinin compounds and mercurophen were from three to four times less toxic for white rats by intraperitoneal injection than by intravenous injection; arsphenamin and neo-arsphenamin were from one to two times less toxic. Ethylhydrocuprein hydrochlorid, and other quinin compounds and mercurophen were from ten to sixteen times less toxic for white rats by subcutaneous injection than by intravenous injection; arsphenamin was two times less toxic but neoarsphenamin was from one half to once again more toxic. The toxicity of ethylhydrocuprein hydrochlorid by

intravenous injection to mice, rats, guinea-pigs and rabbits was quite uniform, the highest tolerated doses being from 0.03 to 0.04 gm. per kg. of weight. The toxicity of arsphenamin and neo-arsphenamin by intravenous and subcutaneous injection varies with the test animal, the highest tolerated doses being observed with mice, next with rats and rabbits in the order named. There is no constant or uniform relation among the highest tolerated doses of different compounds for animals of the same species with the same route of administration. In very general terms a compound is apt to be about eight times more toxic by subthecal than by intravenous injection; from 0.6 to 0.7 times more toxic by intrapleural, from one to four times less toxic by intraperitoneal and from two to sixteen times less toxic by subcutaneous than by intravenous injection.

Effect of Morphin on Heart Muscle.—Using the perfused amphibian heart as a test object, the effects of a number of representatives of the benzylisoquinolin group of alkaloids were compared by Hanzlik with the action of morphin. Morphin (pyridinphenanthrene) augmented the tone, temporarily increased but later slowed the rate and shortened the amplitude, while papaverin, chelidonin, hydrastin and narcotin (benzylisoquinolin) lowered the tone, slowed the rate and reduced or abolished the amplitude of contractions of the perfused hearts. Cotarnin hydrochlorid (stypticin) and hydrastinin, which belong chemically to the benzylisoquinolin group, possessed actions similar to morphin (pyridinphenanthrene group), the general effects on rate, tonus and amplitude of contractions being equivalent to stimulation, although individual variation was encountered. Antagonistic effects on cardiac muscle were produced in mixtures and by independent applications of morphin and chelidonin, morphin and cotarnin salts, morphin and narcotin, cotarnin and hydrastin and cotarnin and chelidonin and hydrastinin and hydrastin. The results obtained indicate various difficulties involved in the correlations of chemical structure and pharmacologic actions and the unreliability of classifications derived from limited data. The results are also of value in appraising the importance of the cardiac factor in circulatory collapse resulting from the administration of these drugs or other causes, and their therapeutic value in collapse. Accordingly, therefore, morphin would not be expected to cause cardiac collapse or injure the heart in collapse by direct action, while papaverin, chelidonin, the cotarnin salts, hydrastin and narcotin could cause cardiac collapse and injure a depressed heart.

Thyroid Excretion in Blood in Exophthalmic Goiter.—Blood was examined by Rogoff and Goldblatt from thyroid glands of ten individuals on whom thyroidectomy was performed for exophthalmic goiter, three for thyroid adenoma and two for colloid goiter, and tested for the presence of thyroid secretion, utilizing the "tadpole reaction." No evidence was obtained, in any of the specimens, of the presence of active thyroid material in the blood.

Medical Record, New York

Aug. 6, 1921, 100, No. 6

Constitution and Perspectives of Pathogenesis of Today. J. C. Hemmeter, Baltimore.—p. 223.
Arrest and Cure of Dementia Praecox. B. Holmes, Chicago.—p. 231.
Psychogenic and Neurogenic Factors in Skin Diseases. M. Scholtz, Los Angeles.—p. 234.
What Principle Must Govern Estimates of Visual Loss in Compensation Cases? W. Mehl, Buffalo.—p. 237.
Occupational Therapy in Mental Hospitals. R. A. Jackson, Danville, Pa.—p. 240.
Proctitis and Sigmoiditis. C. J. Drueck, Chicago.—p. 242.

Aug. 13, 1921, 100, No. 7

What Medicine Owes to Italy. J. J. Walsh, New York.—p. 265.
History of Alcohol as a Substance for Human Consumption. J. C. Hemmeter, Baltimore.—p. 271.
Pharmacology of Alcohol and Its Influence on Metabolism. J. Diner, New York.—p. 273.
Effect of Alcohol on Gastrointestinal Tract. W. J. Mallory, Washington, D. C.—p. 275.
Effect of Alcohol in Therapy of Internal Diseases. C. G. Stockton, Buffalo.—p. 277.
Effect of Alcohol on Heart and Blood Vessels. L. F. Bishop, New York.—p. 279.
Effects of Alcohol on Endocrines. C. E. de M. Sajous, Philadelphia.—p. 280.
Alcohol in Surgery. R. T. Morris, New York.—p. 284.

Mental Hygiene, Albany, N. Y.

July, 1921, 5, No. 3

Rôle of Situation in Psychopathic Conditions. E. L. Richards, Baltimore.—p. 449.
Mental Hygiene in Industry. C. M. Campbell, Boston.—p. 468.
Has Mental Hygiene a Practical Use in Industry. B. Fisher, Boston.—p. 479.
Industrial Hygiene. W. Wright, Boston.—p. 497.
Mental Hygiene Aspects of Illegitimacy. M. E. Kenworthy, New York.—p. 499.
Educational Value of Psychiatric Social Work. M. C. Jarrett.—p. 509.
Mental Health Clinics. H. D. Singer, Springfield, Ill.—p. 519.
Significance of Spiritualism. C. O. Cheney, New York.—p. 529.
Laws Controlling Commitments to State Hospitals for Mental Diseases. J. V. May, Boston.—p. 536.
State Psychopathic Hospital. A. M. Barrett, Ann Arbor, Mich.—p. 545.
Economic Status of Forty-One Parietic Patients and Their Families. H. C. Solomon and M. H. Solomon, Boston.—p. 556.
Records and Statistics in Occupational Therapy. H. M. Pollock, New York.—p. 566.
Outline for a State Society of Mental Hygiene. E. S. Abbot.—p. 574.
Social Facts Relative to Patients with Mental Diseases. E. M. Furbush.—p. 587.

Nebraska State Medical Journal, Norfolk

August, 1921, 6, No. 8

Lyon-Meltzer Gallbladder Drainage. A. Sachs, Omaha.—p. 225.
Traumatic and Effort Hernia. J. W. Duncan, Omaha.—p. 235.
*Rational Viewpoint in Practice of Medicine. I. S. Cutter, Omaha.—p. 243.
Civilian Surgeon's Story of Great War. H. W. Orr, Lincoln.—p. 250.

Influence of Postgraduate Study.—In order to add to the sum total of human knowledge of disease and receive the stimulus of medical research Cutter says the practitioner should keep in close touch with some center of medical teaching. This does not mean necessarily the attendance on so-called postgraduate courses offered by advertised postgraduate schools, but it means that the practitioner should for one or two weeks out of each year visit some center of medical teaching, become acquainted with the staff, visit the classes, laboratories and clinics and follow the staff members on ward walks. This will prove a real vacation and a profitable one. Ideas long dormant will be awakened and new ones acquired. There will be the feeling of good fellowship, of acquaintanceship and a common purpose, and the practitioner is bound to return to his field of labor broader, more capable and more valuable to his patients. Visits of this kind will serve to orient the practitioner in his evaluation of diagnostic and therapeutic procedures. He will be less constrained to accept new ideas at 100 per cent. and more loath to give up older procedures of proven clinical value.

Ohio State Medical Journal, Columbus

August, 1921, 17, No. 8

Psychic Element in Anesthesia. J. R. Eastman, Indianapolis.—p. 533.
Obstetrics and Gynecology from Standpoint of General Practitioner. R. Peterson, Ann Arbor, Mich.—p. 538.
Diseases of Pancreas. W. D. Haines, Cincinnati.—p. 542.
Psychoses Accompanying Extraction of Teeth. C. W. Sawyer, Marion.—p. 545.
Treatment of Cataract. H. Smith, Amritsar, Punjab, India.—p. 549.
Etiology, Clinical Diagnosis and Surgical Treatment of Senile Cataract. R. Sattler, Cincinnati.—p. 554.
Practical Points Emphasized in Smith's Technic for Intracapsular Cataract Extraction of Value in Any Method of Senile Cataract Extraction. C. King, Cincinnati.—p. 557.
Comments on and Comparison of Various Methods of Cataract Extraction in Vogue. A. J. Timberman, Columbus.—p. 559.
Treatment After Cataract Operation. J. W. Millette, Dayton.—p. 562.

Pennsylvania Medical Journal, Harrisburg.

July, 1921, 24, No. 10

*End-Results of Sanatorium Treatment for Tuberculosis. H. R. M. Landis, Philadelphia.—p. 687.
Psychotherapy of Tuberculosis. H. M. Neale, Upper Lehigh.—p. 689.
*Early Appearance of Symptoms of Combined Sclerosis of Spinal Cord and Subsequent Development of Severe Anemia. W. B. Cadwalader, Philadelphia.—p. 692.
Some Practical Aspects of Antenatal Hygiene. E. A. Schumann, Philadelphia.—p. 693.
Some Practical Aspects of Care of a Parturient Woman and Her Child. E. B. Piper, Philadelphia.—p. 697.
Factors in Fetal Mortality. W. H. Glynn, Pittsburgh.—p. 699.
Our Legislative Program. F. L. Van Sickle, Harrisburg.—p. 703.
Treatment of Wounds. H. R. Owen, Philadelphia.—p. 705.

End Results of Sanatorium Treatment of Tuberculosis.—Given the type of case which offers a chance of being

improved, Landis thinks it can be said safely that the well conducted sanatorium does all that has been claimed for it. Can the ultimate results be improved? This can be accomplished only by a well organized follow-up system. There is no doubt that patients, whether from a private or a free institution, are prone to neglect consulting anyone once they have been discharged. Those of the working classes, especially, should be urged to report to a dispensary or their physician at once on their return home, in order that their present condition may be noted. They should be visited by a nurse and they should report at the dispensary at certain stated intervals. For the great majority constant supervision and the constant reiteration of the rules of right living are essential. Follow-up work is done but, in too many instances, it is perfunctory and consists of little more than a report of conditions with little or nothing done to remove unfavorable conditions or to maintain the discipline needed to keep the patient well. Furthermore, there is often a considerable amount of social service work necessary. All this means that there must be an efficient corps of nurses maintained. For the most part this is not possible for the sanatorium, but must be carried out by the particular community to which the patient belongs.

Sclerosis of Spinal Cord and Anemia.—In the majority of cases of pernicious anemia, Cadwalader says, the spinal cord is affected. The evidences of such involvement are, however, so often entirely overshadowed by the severity of the symptoms of anemia as to be overlooked. Owing to the striking regularity and constancy in the development of the symptoms of spinal cord involvement the clinical diagnosis can be made with great accuracy, for in the combined sclerosis of the spinal cord associated with anemia the degeneration affects particularly the posterior columns. It appears first in the long fibers of the posterior, or Goll's, columns, and in the parts adjacent to Burdach's columns. In consequence, in the earliest stages of the disease deep sensation, alone—more particularly bone sensation and the sense of muscular position—is disturbed. Because of the involvement of the lateral columns the tendon reflexes may be exaggerated. Cadwalader asserts that so far as is now known, this classic type of combined sclerosis does not occur in association with any form of anemia other than that of the pernicious type, although it has been described as occurring in rare cases with gastric carcinoma and in Addison's disease. The actual exciting cause of pernicious anemia has not as yet been discovered, but the occurrence of spinal cord disease without the concomitant anemia would seem to Cadwalader to indicate that, when it does develop, the anemia is merely the most conspicuous feature of a disease that affects the spinal cord as well as the blood-forming tissues. It is certainly incorrect to attribute the spinal changes to the anemia alone, i.e., using the term anemia to indicate quantitative alterations in the blood elements. There can be no doubt, however, that the constant localization of the lesions to certain areas of the spinal cord is not brought about in a haphazard fashion during the course of a general disease.

Southern Medical Journal, Birmingham, Ala.

August, 1921, 14, No. 8

- *Chronic Myocarditis and Its Management. H. A. Christian, Boston.—p. 587.
- Treatment of Neurosyphilis. A. Keidel, Baltimore.—p. 595
- Gastric Lavage and Proper Medicaments Therein. G. M. Niles, Atlanta, Ga.—p. 601.
- Preventive Pediatrics in the South. W. L. Funkhouser, Atlanta, Ga.—p. 606.
- Roentgen-Ray Diagnosis of Gastric and Duodenal Lesions. L. J. Menville, New Orleans.—p. 609.
- Cancer of Stomach. J. T. McKinney, Roanoke, Va.—p. 613.
- Kondoleon Operation for Elephantiasis: Report of End Results. W. E. Sistrunk, Rochester, Minn.—p. 619.
- Hernia: Traumatic and Strangulated. S. O. Black, Spartanburg, S. C.—p. 625.
- Clinical Observations in Orthopedic Surgery. F. W. Carruthers, Little Rock, Ark.
- Internal Derangements of Knee Joint. R. W. Billington, Nashville, Tenn.—p. 631.
- Enucleation of Eye with Glass Ball Implantation. J. B. Stanford, Memphis, Tenn.—p. 637.
- Searcy Tonsillectomy. H. B. Searcy, Tuscaloosa, Ala.—p. 639.
- Educational Preparation for Medicine. R. Wilson, Charleston, S. C.—p. 640.

- Value of Laboratory to Medical Teaching. H. E. Tuley, Louisville, Ky.—p. 645.
- Graduate Medical Education in South. J. S. McLester, Birmingham, Ala.—p. 648.
- Postgraduate Teaching in South, with Especial Reference to Conditions at Tulane University. A. Eustis, New Orleans.—p. 649.

Chronic Myocarditis.—Treatment in chronic myocarditis, Christian says, as a rule, is very satisfactory. There are three main reliances: rest, digitalis and diuretics. Rest must be real and maintained. Comfortably in bed is the first recommendation. This means a properly arranged back rest on which the patient can sleep satisfactorily while still propped up at the most comfortable angle. Morphine frequently is of inestimable value in attaining rest, particularly in the first night of treatment. Eating, bowel movements, bathing, all need to be reduced to the lowest possible minimum of exertion. Digitalis in this group of cases is capable of accomplishing wonders up to the time the heart muscle becomes unable to respond further. There is but one essential in digitalis therapy; know what the results are that you should get and give sufficient of the drug to produce these results. The exact dosage depends on the potency of the drug used. It is immaterial what method of giving digitalis is followed. The end result is the same. For the waterlogged cardiac, a diuretic causes prompt diuresis. Christian gets best results with theophyllin and almost as good with theobromin sodium salicylate. The best way to use them is to give them after two days of digitalis therapy in two doses, one early in the morning and the other at noontime; of theophyllin, 0.2 gm., or 3 grains, or of theobromin sodium salicylate, 0.5 gm., or 7.5 grains, and repeated on the third day if necessary. If the edema is, in the main, cardiac in origin, the diuresis occurs; if it is mainly renal in origin, no diuresis results. It is inadvisable to give diuretics continuously; better results follow intermittent dosage. Vigorous catharsis should be omitted from the treatment. Diet should be simple, easily chewed and digestible. Fluids should be moderately restricted. The total intake of food should be moderate. There is no need for any special form of diet or for any particular types of dietary restriction. The guiding signs for the treatment of chronic myocarditis lie mainly in the effects on symptoms and on edema, pulse and respiration. Little change, except slowing in rate, will be noted in the heart. Physical examination of the heart is the least important thing in guiding treatment of a cardiac case. A course of treatment should not be ended until the patient is free from edema in his legs, over his sacrum and at the bases of his lungs. Until then he needs the judicious mingling of rest and digitalis. Often it is advisable to prolong digitalis treatment for many weeks by continuing small doses after a definite digitalis effect has been obtained from larger doses.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Edinburgh Medical Journal

July, 1921, 27, No. 1

- *Chronic Arsenic Poisoning. R. Stockman.—p. 1.
- "Cardiospasm," Congenital Narrowing of Esophagus and Esophagectasia. D. M. Greig.—p. 11.
- *Mesenteric Lymphadenitis Simulating Appendicitis. J. W. Struthers.—p. 22.
- Further Experience of Conduct of Labor Under "Twilight Sleep." F. W. N. Haultain.—p. 27.
- Notes on Wassermann Reaction. W. J. Tulloch.—p. 34.

Chronic Arsenic Poisoning.—Stockman claims that the administration of arsenic compounds may be safely continued for a considerable period after pigmentation of the skin and keratosis have developed. If slight, these clear off rapidly after the administration is stopped, and seem to leave no ill effects. Very deep pigmentation may be permanent, and in a few cases the development of cancer has been noted, apparently following on local irritation. On the other hand, its administration should be stopped at once as soon as the slightest signs of neuritis appear. The lesion is always tedious and troublesome to get rid of, and in some cases is permanent.

Mesenteric Lymphadenitis Simulating Appendicitis.—Cases are recorded by Struthers which show that an inflammatory reaction occurs in enlarged mesenteric glands and the overlying peritoneum, the enlargement being usually but not always tuberculous, which gives rise to symptoms closely resembling appendicitis. While the cause of the reaction cannot be precisely determined, it may be due to exacerbation of the tuberculous infection with periadenitis, to the invasion of tuberculous glands by other organisms, i. e., to the onset of a mixed infection, or to the occurrence of a transient adenitis similar to that seen in other parts of the body in association with surface infections. From the evidence presented, Struthers is inclined to think that most cases are probably due to a reaction provoked by extension of the tuberculous infection. In any event, the affection is a common one and should always be borne in mind in examining young patients presenting signs suggestive of appendicitis.

August, 1921, 27, No. 2

*Rib Pressure and the Brachial Plexus. E. Bramwell and H. B. Dykes.—p. 65.

"Cardiospasm," Congenital Narrowing of Esophagus and Esophagectasia. D. M. Greig, Edinburgh.—p. 89.

Pride of Blood. P. A. Lewis, Philadelphia, Pa.—p. 100.

Rib Pressure Causing Brachial Plexus Paralysis.—The question of brachial plexus palsies due to rib pressure is discussed by Bramwell and Dykes and eight cases are selected from twenty-three cases to illustrate the points made. Cervical ribs were present in few of the cases. Pressure symptoms referred to the brachial plexus may be caused by a cervical rib, by a rudimentary first dorsal rib, or by a normal first dorsal rib. The greater frequency with which symptoms of rib pressure are observed in the female as compared with the male sex is striking. The age at which symptoms appear is of interest. Thus, in twenty cases the average age was 22. Posture, and notably confinement to bed, is a factor of importance. Thus, two patients first developed symptoms while in bed after an operation for appendicitis, one during an attack of influenza, one while ill with diphtheria, one after a confinement, one after sitting in a dentist's chair for a couple of hours, while two attributed their symptoms to carrying a young baby. Debility, anemia, loss of weight and general ill-health undoubtedly play a rôle in certain instances, while trauma has been the obvious determining cause in some cases. The nervous symptoms due to rib pressure are commonly referred to the first dorsal root, the eighth cervical root, or the lowest cord of the brachial plexus. Exceptionally, however, symptoms referable to a higher level have been observed. Pain referred to the inner side of the forearm is the symptom for which advice is most often sought. Subjunctive sensations, such as tingling, numbness, and "pins and needles" in the finger-tips, and particularly a feeling of coldness in the hand, are of frequent occurrence and are sometimes observed in cases in which there is no complaint of pain. No objective sensory disturbance may be detected, although very usually some sensory loss, which corresponds more or less to a root distribution, is present, and it is, as a rule, of a dissociated character, tactile sensibility being less affected than painful and thermal sensibility. The sensory impairment, when present, is most commonly situated along the inner side of the forearm, while the little and ring fingers are usually involved; in rare cases the anesthesia is limited to the hand. Although sensory symptoms may be alone complained of in many cases, motor symptoms are also observed, while exceptionally the patient complains of motor weakness only. Vasomotor changes, blueness and coldness of the nails, are met with in a small proportion of cases. Cases of rib pressure in which the symptoms are not pronounced may sometimes be materially benefited by attention to the general health, and do not call for surgical treatment. When pain, occurring from time to time, is alone complained of, this symptom can usually be relieved by a sling which supports the elbow, while a blister above the clavicle may be helpful. When pain due to rib pressure is so severe as to cause constant annoyance, or when pain or muscular weakness, or both are producing such inconvenience as to interfere with the patient's occupation, surgical inter-

vention is indicated. The results of operative treatment in those cases in which pain is the prominent symptom are most satisfactory for the pain is usually completely relieved.

Glasgow Medical Journal

July, 1921, 96, No. 1

Lethargic Encephalitis. M. Manson.—p. 1.

Ophthalmology in Modern Medical Practice. A. F. Fergus.—p. 28.

Indian Medical Gazette, Calcutta

June, 1921, 56, No. 6

Statistics of Treatment of Cholera. F. P. Mackie and J. C. Gupta.—p. 201.

*Treatment of Malarial Fever in Individuals Susceptible to Attacks of Black Water Fever by Intravenous Injection of an Antihemolytic Quinin Solution. U. N. Brahmachari.—p. 203.

*Treatment of Erysipelas. F. J. W. Porter.—p. 205.

Physiologic Standardization of Digitalis: Method Suitable for Use in India. G. Tate.—p. 205.

Poison of Scolopendridae: Special Reference to Andaman Species. A. Bayley-DeCastro.—p. 207.

Radical Cure of Hydrocele by Plication and Overlapping of Tunica Vaginalis. K. K. Chatterji.—p. 209.

Practical Side of Cheap, Efficient Incineration. J. M. Pereira.—p. 211.

Case of Herpes Zoster Ophthalmicus. S. K. Ganguly.—p. 211.

Notes on 2,412 Eye Operations Performed in a Month at Shilarpur, Sind, in January and February, 1921. B. T. Holland.—p. 212.

Pathology of Ringworm and Allied Skin Diseases. A. N. *Srivastava.—p. 213.

Case of Cerebral Abscess. O. A. R. Berkeley-Hill and P. Chandra.—p. 214.

Successful Operation of Bilateral Tumors of Abdomen. E. Millikanshan.—p. 216.

An Undiagnosed Case of Hepatic Enlargement. N. S. Narasimhan.—p. 217.

Short Notes on Two Cases of Snake-Bite, Echis Carcinata (Phoorsa). R. S. Tembe.—p. 218.

Some Interesting Eye Cases. S. K. Ganguly.—p. 218.

Treatment of Malaria by Intravenous Injection of Anti-hemolytic Quinin Solution.—The solution of alkaloidal quinin which Brahmachari uses in his cases is said to possess very marked antihemolytic properties: Quinin alkaloid, 5 grains; alcohol, 50 minims; urethane, 3 grains; calcium chlorid, 7.5 grains; glucose, 300 grains; physiologic sodium chlorid solution; 200 c.c. 85 per cent. solution of sodium chlorid in distilled water. This solution is alkaline in reaction and is very well borne by malarial patients. Given intravenously, it does not lead to such profound fall of systolic blood pressure as is observed in the case of quinin bihydrochlorid. Circulatory disturbances are less marked. Ten c.c. of the solution (= ¼ grain of the quinin alkaloid) given intravenously into rabbits weighing from 450 to 470 gm. did not produce any ill effect. This will correspond nearly to giving 1,200 c.c. of the solution to a man of average weight.

Phenol Treatment of Erysipelas.—Porter paints the entire surface of the involved area with 95 per cent. pure phenol on a cotton-wool swab and extending half an inch into apparently healthy skin. It is left on until the purplish area of the inflamed skin is replaced by a complete whitening of the skin. The whitening must not be allowed to proceed to complete blanching, and when large areas are involved, only a portion must be painted at one time. The second step consists in going over the blanched area with swabs saturated with methylated spirit. If done thoroughly, the whitened area again becomes pink and the alcohol must be laid on until this is accomplished. Afterward, other areas should be attacked in the same way until the whole operation is completed in one sitting. The subsequent management consists in the application of moist dressing—simple saline or 1 : 20,000 mercuric chlorid.

July, 1921, 56, No. 7

Relapsing Fever at Meshed, North-East Persia. J. A. Sinton.—p. 241.

Flavine in Ophthalmic Practice. P. Ganguli.—p. 251.

Anal-Complex and Its Relation to Delusions of Persecution. O. Berkeley-Hill.—p. 255.

*Enteroptosis and Dropped Kidney: A New Method of Treatment. D. McCay.—p. 256.

Unique Instance of Lead Intoxication. H. V. W. Cox.—p. 257.

Case of Strangulation in a Child of 15 Months. F. J. W. Porter.—p. 258.

Case of Encephalitis Lethargica. P. Ganguli.—p. 259.

Treatment of Enteroptosis.—The treatment employed by McCay consists of absolute rest in bed, the foot of the bed being raised fifteen or eighteen inches high. The shoulders

of the patient are kept low, but the head may be raised to a comfortable position by pillows. Massage of the abdomen is carried out for half an hour twice a day. Massage is also used to the rest of the body and the muscles of the abdomen are improved in tone by exercise. The limb muscles are also kept in good tone by massage and by exercises against resistance. The spinal muscles are exercised by the movement of arching the back. The bowels are kept open by suitable doses of an aperient like cascara evacuant. After the course of rest in bed the patient is fitted with a belt to support the lower abdomen. A flat porous rubber sponge is attached to the inside of the belt. The sponge is cut so as to be thick below and thin above. The lower border of the sponge pad should be just above the pubes. After a month or two the belt can usually be discarded. In cases of pronounced downward displacement of the kidney a crescent shaped kidney pad is fixed to the inside of the belt with a safety pin. McCay reports good results from this treatment.

International Journal of Public Health, Geneva, Switzerland

March-April, 1921, 2, No. 2

- Grancher Institute for the Protection of Childhood from Tuberculosis (Oeuvre Grancher): Its Rôle in Campaign Against Tuberculosis. P. Armand-Delille.—p. 113.
Vaccination and Antivaccination in England. S. Paget.—p. 119.
Industrial Health: Its Value in Public Health Service. E. L. Collis.—p. 123.
Versailles Treaty and Question of Public Health. T. Janiszewski.—p. 140.
Protection of Public Against Syphilis. A. Vernes.—p. 147.
Popular Health Instruction. E. Stuart.—p. 152.

Journal of Laryngology and Otology, Edinburgh

August, 1921, 36, No. 8

- *Diathermy in Inoperable Pharyngeal and Epilaryngeal Malignancy. W. Milligan.—p. 369.
*Paralysis of Vocal Cords Secondary to Malignant Tumor of Mamma. A. L. Turner.—p. 373.
An Intracranial Complication of Chronic Middle Ear Suppuration. F. G. Wrigley.—p. 381.

Diathermy in Malignant Tumors of Pharynx.—Fifty consecutive cases are analyzed in which Milligan employed diathermy as ordinary surgical procedures were contraindicated either from the situation, the extent, or the fixity of the original growths. In all cases the growths were clinically malignant and, in the majority, the malignant nature of the disease was verified by microscopic examination. In the majority of the cases marked relief of urgent symptoms was effected, and, in a limited number, something approaching to a cure resulted.

Paralysis of Vocal Cords Secondary to Breast Cancer.—Pressure on the recurrent laryngeal branches of the vagus as the result of glandular enlargement consequent on malignant tumor of the breast has been noted by Turner in six cases. He believes that if the history of the cases of vocal cord paralysis in women were more carefully inquired into, the sequence might be elicited in a larger proportion of patients. The primary tumor affected the right breast in three and the left breast in three of the cases, and in each instance the breast and the axillary glands of the same side had been removed. One was a case of melanotic sarcoma, and five were cases of scirrhus cancer. The hoarseness developed at varying periods after the removal of the primary growth. In the case of the sarcoma, the symptom was noticed eight months after the breast had been removed. Of the five cases of scirrhus cancer, hoarseness developed at periods varying from two and one-half to five years, the average period in the five cases being three years and six months. In no instance had there been any operative interference on enlarged cervical glands. The right vocal cord was paralyzed in one case (sarcoma of the right breast), while in each of the other five the left vocal cord was observed to be in the cadaveric position. The paralysis was homolateral in four cases—in the case of the right mammary sarcoma, in which the right cord was affected, and in three cases of left mammary scirrhus, in which the left cord was paralyzed. The paralysis was contralateral in two cases of right mammary scirrhus, the left vocal cord being paralyzed in both. In the

five cases of scirrhus cancer, the supraclavicular lymphatic glands were found to be secondarily involved at the time of the laryngeal examination; in four instances the enlargement was homolateral, in one it was contralateral. In the case of sarcoma, no enlarged supraclavicular glands were seen, nor could they be palpated.

Practitioner, London

July, 1921, 107, No. 1

- Pleurisy. W. Hale-White.—p. 4.
Fits, Epileptic and Others. A. Feiling.—p. 22.
Significance of Albuminuria. F. G. Chandler.—p. 33.
Cardiology, Old and New: Some Contracts. G. Lambert.—p. 44.
Cardiograph in Diagnosis and Prognosis. I. Harris.—p. 62.
Treatment of Hemorrhoids without Operation. J. Eadie.—p. 66.

Archives de Médecine et de Pharmacie Militaires, Paris

April, 1921, 74, No. 4

- *Bacillary Dysentery. E. Job.—p. 368.
Jaundice and Factitious Jaundice. A. Rolland.—p. 409.

Bacillary Dysentery.—Job has had opportunity to study this disease in Africa and Europe. This experience has confirmed that the anti-Shiga serum has no influence on Flexner dysentery, and that the anti-Flexner serum is ineffectual when dysentery is already installed. It protects only when injected before infection has occurred. Flexner dysentery is mild, and usually subsides spontaneously whether the antiserum is given or not. But the Shiga antiserum has decided therapeutic efficacy. It should be given from the start of the dysentery, as it is impossible to tell at once the form of the disease, while the first forty-eight hours may decide the outcome. Milk is the best food in dysentery, he says, but it is formally contraindicated in simple colitis. Tentative emetin treatment increases the difficulty of differentiating the true cause, as the parasites disappear from the stools and treatment may be suspended, thus allowing the disease to pass into a chronic phase absolutely refractory to serotherapy, and a dangerous source of contagion. The aspect of the intestine at necropsy in these chronic cases is rather discouraging as to the prospects of direct medication by an appendicostomy or its equivalent.

Archives Médicales Belges, Liège

May, 1921, 74, No. 5

- Surgery with Advanced Cancer. W. S. Bainbridge (New York).—p. 369.
The Cerebrospinal Fluid in Epidemic Encephalitis. A. Dulière.—p. 382.
The Medical Service During Belgian Campaign in German East Africa. A. de Ruddere.—p. 387.
Progress in Neuropsychiatry in 1920. H. Hoven.—p. 400.

Bulletin de l'Académie de Médecine, Paris

July 5, 1921, 86, No. 27

- Solomon's Radiologic Ionometer. Bécère.—p. 3.
Plague at Marseilles, 1721. E. Boinet.—p. 10.
*Pathogenesis of Exostoses. G. Lardennois and M. Nathan.—p. 15.
*Clinical Gastrotonometer. R. Gaultier.—p. 16.
*Streptothricosis Simulating Tuberculosis. J. Silhol.—p. 18.

Pathogenesis of Exostoses.—Lardennois and Nathan seek to explain the development of multiple osteogenic exostoses or exostosogenic dyschondroplasia.

Gastrotonometer.—Gaultier insufflates air with the stomach tube and then determines the play of the motor functioning by a water manometer connected with the stomach tube. The insufflated air shows up the shape, the size and the position of the stomach. The amount of air the stomach can hold without pain allows an estimate of its capacity. The fluctuation of the manometer column of water reflects the contractions of the stomach wall, and is thus a gage of its tonicity.

Streptothricosis Simulating Pott's Disease.—The vertebral process in the young man progressed to a fatal termination despite all medical and surgical measures, including courses of iodid. The diagnosis had been Pott's disease with an abscess in the right hip.

July 12, 1921, 86, No. 28

- Epidemic Encephalitis and Pregnancy. G. Marinesco.—p. 34.
*Four Thieves' Vinegar. E. Boinet.—p. 40.
Benefit from Autoserotherapy in Cancer. H. Gaudier.—p. 41.
*Deep Breathing in Treatment of Toxic Vomiting. J. Pescher.—p. 43.

"Four Thieves' Vinegar."—Boinet recalls that just 200 years ago, when the plague swept away 50,000 of the 80,000 inhabitants of Marseilles, a certain aromatic vinegar was officially advised for external use as a preventive of the plague. The recipe for it was posted on the walls. It must have owed what efficacy it displayed to its odor repelling lice.

Breathing Treatment of Neurotoxic Vomiting.—Pescher declares that many nervous women have got out of the habit of breathing enough air into their lungs. Some fright or worry or other cause has checked the functioning of the centers in the medulla oblongata, and when they are tested with the spirometer, it is seen that they are using only about a fifth of their actual vital capacity. As their blood is not getting properly oxygenated, toxic waste accumulates, and uncontrollable vomiting may result if the woman is pregnant, or even in the nonpregnant. The spirometer is particularly useful for training in proper breathing, as the subject can watch her progress by the amount of water she can displace from the jar. He describes a few cases of neurotoxic vomiting treated by this intensified ventilation of the lungs, with constant and permanent success. He explains that the ahematosia, as he calls it, resulting from this inadequate oxygenation of the blood, is to the lungs what asystolia is to the heart. Whole zones of the lungs, incapable of functioning, have to be trained to do their proper work once more, and the spiroscope or its equivalent is the simplest, most convenient, and most effectual method for this.

Bulletin Médical, Paris

July 9, 1921, 35, No. 28

*Diphtheric Paralysis. C. Achard.—p. 567.

Generalized Diphtheric Paralysis.—As the diphtheria had not been recognized in either of Achard's two cases, the differential diagnosis of the paralysis was puzzling. The clue was given by the symptoms suggesting paralysis of the velum, which had been the first to attract attention in each case. In the woman of 45 this paralysis of the velum had been noted fifteen days after the sore throat; at the thirtieth day in the man of 28. Both have almost completely recovered under electricity and antitoxin in large and repeated doses.

Bulletins de la Société Médicale des Hôpitaux, Paris

July 1, 1921, 45, No. 23

- *Cleidocranial Dysostosis. Crouzon and Bouttier.—p. 972.
- Monoplegic Parkinsonian Syndrome After Epidemic Encephalitis. P. Sinton and E. Schulmann.—p. 983.
- *Incipient Leontiasis in Child. E. Apert and F. Bordet.—p. 986.
- *Test Digestion Hemoclasia. P. Pagniez and A. Plichet.—p. 988.
- Meningeal Reaction in Diphtheric Paralysis. P. Merklen, M. Weiss and L. de Gennes.—p. 990. Idem. J. Haguenau.—p. 996.
- *Dangers of Therapeutic Colloidal Shock. Glatard.—p. 998.
- Meningococcus Septicemia. Bourges, Rouiller and Jobard.—p. 1000.
- Hemiplegia After Lumbar Puncture, the seventieth Day of Epidemic Encephalitis. A. Netter.—p. 1006.
- The Peripheral Venous Tension. M. Villaret, F. Saint Girons and Grellety Bosviel.—p. 1013.
- Calcium Chlorid in Treatment of Diarrhea and Vomiting. Rist, Ameuille and Ravina.—p. 1016.
- Leukemia Plus Tuberculosis. P. Emile-Weil and Coste.—p. 1019.

Cleidocranial-Pelvic Dysostosis.—The young man presents a typical case of absence of the clavicles, and the pelvic bones are likewise partially absent, and for two years there have been occasional epileptic seizures. No other instance is known in the family. Villaret in 1905 could find only twenty-eight cases on record.

Leontiasis Ossea.—In the child of 9 the hypertrophy of the bones had begun at the age of 5, the upper jaws affected first. There is nothing to suggest syphilis in the family, but a tentative course of arsphenamin has been begun as yaws, which also induces nasal osteitis, is amenable to the arsenicals.

Modifications of Digestion Hemoclasia.—Pagniez and Plichet state that the hemoclasia which develops in some cases after ingestion of 200 c.c. of milk is modified by the mode of ingestion. The pronounced leukopenia which follows the drinking of the glassful at one time does not occur if ten minutes are taken to sip the milk. One healthy man of 32 who had jaundice in 1914, had a drop of 2,000 or 2,400 in the number of leukocytes each time he drank a glass of milk at

one time. When he sipped it slowly there was no drop but an increase of 1,700 in the leukocyte count. In another man, a syphilitic, the drop was 3,500 when the milk was drunk at once, while there was no drop but a rise of 1,000 when it was slowly sipped. It seems plausible to assume that the first swallows of the milk had a protecting action—actual skepto-phylaxis—warding off the hemoclasia response in some of the cases, but not in all. These experiences confirm anew the evils of bolting one's food. The difference is sufficient actually to modify the composition of the blood.

Dangers of Colloidal Metals in Typhoid.—Glatard has treated ninety-four typhoid or paratyphoid patients with colloidal metals by the vein. In 19 per cent. there were hemorrhagic complications while in 379 cases not treated in this way hemorrhage occurred only in 7.3 per cent. Favorable results were inconstant and collapse occasionally occurred.

Encéphale, Paris

June, 1921, 16, No. 6

- *The External Arcuate Fibers. C. Winkler.—p. 273.
- Reaction of Meninges to Tuberculosis. E. Flatau and N. Zilberlast-Zand.—p. 283. Cont'd.
- Pathologic Anatomy of Pineal Gland. Laignel-Lavastine.—p. 289. Cont'n.
- *Static Activity of Muscle. R. Mourgue.—p. 297.
- *Suicide and Homicide Obsession Impulse. A. Barbé.—p. 304.
- Self-Mutilation by Boy of Twelve. Jeanselme and Schulmann.—p. 310.
- Schizophrenia. E. Minkowski.—p. 314. Cont'n.

Anatomy of the Arcuate Fibers.—Winkler gives plates of the aberrant system of the external arcuate fibers.

Static Activity of Muscle.—Mourgue reviews the history of this conception.

Homicidal Obsession Impulse.—Barbé gives a detailed account of a case with both suicidal and homicidal obsession impulses in a man of 25.

Journal de Médecine de Bordeaux

July 10, 1921, 92, No. 13

- Test Digestion Hemoclasia. P. Mauriac.—p. 373.
- *Nystagmus and Nystagmiform Movements. C. Lafon.—p. 374.
- *Anomalies of the Radial Artery. R. Villar and Pacreau.—p. 376.

Nystagmus.—Lafon's analysis of nystagmus and nystagmiform movements confirms that true nystagmus is a static disturbance of one of the elementary functions of direction. Nystagmiform jerking, on the other hand, is a symptom of kinetic disturbance, parietic or spastic, in some psychomotor function or in the peripheral motor oculi innervation.

Anomalies of the Radial Artery.—Villar and Pacreau enumerate seven kinds of anomalies that may be encountered in the radial artery, from the complete absence of the artery in the region examined for the pulse, to chronic inflammatory processes, sclerosis or embolism, or duplication of the artery. The possibility of such anomalies imposes the necessity for examining another artery when the pulse cannot be duly palpated, instead of assuming that the heart must inevitably be at fault.

Journal de Radiologie et d'Electrologie, Paris

June, 1921, 5, No. 6

- Clinical Study with Radiography of Pleuropulmonary Cancer. F. Barjon.—p. 241.
- Differential Diagnosis of Calcareous Concretions in Lung. Darcourt and Garcin.—p. 249.
- Movable Abdominal Calcareous Concretions. Douarre.—p. 253.
- Radiology of Appendix in Chronic Appendicitis. Jaisson.—p. 256.
- Decongestive Action of Electricity. J. Laborde.—p. 264.
- Universal Apparatus for Radium Therapy. Baud and Mallet.—p. 271.

Paris Médical

July 2, 1921, 11, No. 27

- *Heart Disease in 1921. P. Lereboullet and J. Heitz.—p. 1.
- *High Blood Pressure. Vaquez and Leconte.—p. 11.
- *Acute Rheumatismal Endocarditis in Children. Nobécourt.—p. 18.
- *Acute Isolated and Nonrheumatismal Aortic Insufficiency. L. Gallavardin.—p. 23.
- *Treatment of Obliteration of Artery. R. Leriche and A. Policard.—p. 27.

Heart Disease in 1921.—Lereboullet and Heitz remark that the more we study the pathology of the heart and vessels, the greater our appreciation of the progress in late years in the methods of exploration. They describe the more recent acquisitions in this line, and review a long list of new symptoms of heart disease and their interpretation. They discuss

recent literature on quinin and quinidin in treatment of arrhythmias; benzyl benzoate with high blood pressure, and periarterial sympathectomy in treatment of a tendency to gangrene. In conclusion they cite Sicard's success in treating varicose veins with intravenous injection of 10 c.c. of a 10 per cent. solution of sodium carbonate.

The Past, the Present and the Future of Patients with High Blood Pressure.—Vaquez and Leconte analyze their experience with over 1,000 cases of high blood pressure during twenty years. Over two thirds were men, and all were over 18. Among the facts thus brought out is the prognostic importance of the water test. When the elimination of water after test ingestion was retarded, all in this group died within a few months to a year, or their condition had grown worse during the one to three years afterward; only one failed to show any aggravation. In the group with normal response (twenty-three out of the forty tested), there has been no aggravation during the year since except that two have died from cerebral lesions; the others have had no disturbance from this cause during the several years to date. This induced diuresis test is the more instructive as it is independent of albuminuria and azotemia. The high blood pressure at the menopause or with fibromas or after ovariectomy is remarkably benign, and often subsides spontaneously. As the prognosis depends in general on the state of the heart, the symptoms from failing compensation are especially baneful, particularly the permanent acceleration of the pulse (ninety-three cases) as a sign that the left ventricle has become unequal to its task; or sporadic or bunched extrasystoles (141); gallop sound (121); functional mitral insufficiency (153), and finally total arrhythmia. The latter was evident in forty-four cases in which since that time the blood pressure has returned to normal. The retrospective diagnosis in this latter group was confirmed by radiology, which is always useful in cardiovascular cases.

Rheumatismal Pericarditis in Children.—Nobécourt's charts show the findings that may be anticipated when febrile rheumatism induces pericardial effusion or dilatation of the heart. The symptoms are alike with both, only that Abram's heart reflex persists with dilatation and disappears with pericarditis. Displacement of the precordial shock and of the maximum of the first sound is likewise significant.

Nonrheumatismal Aortic Insufficiency.—Gallavardin reports seven cases of this kind with necropsy in two. The lack of any history of rheumatism may mislead to assumption of syphilis.

Treatment of Obliteration of Arteries.—Leriche and Policard commend resection of the obliterated segment of the artery after a traumatism, restoring the normal passage by a suture or graft. This does not apply to obliteration from ischemic retraction of the Volkmann type. This requires usually an operation on tendons or bone. In a third group the obliteration is a vasomotor disturbance from injury of nerves at the seat of the trauma. The proper treatment here is resection of the pathologic zone, restoring the course of the artery anew, in sound tissue.

Presse Médicale, Paris

July 9, 1921, 29, No. 55

*Stomach-Gallbladder Crises. Enriquez, M. E. Binet and Gaston-Durand.—p. 541.

*Anatomy of the Sympathetic Nervous System. P. Desfosses.—p. 543.

*Autoserotherapy in Gonococcus Epididymitis. G. Weill.—p. 544.

The Newer Derivatives of Quinin. L. Cheinisse.—p. 545.

Stomach-Gallbladder Crises.—Of all the viscera, the stomach is the one that participates most in the pathology of other viscera, and especially, of the biliary apparatus. A reflex cramp in the pylorus may be traceable to this cause. In the typical cases it develops from two to four hours after a meal, the pain coming on suddenly and severe, and lasting for a shorter or longer time. In such a case, the personal and the family history should be investigated for similar attacks, especially in the female line, for gout, gallstones, migraine, or jaundice. Families are known with such a history through four generations, while gastric ulcer is an individual, an autogenous affection. A history of diarrhea alternating with constipation, especially diarrhea after meals, suggests a biliary origin rather than ulcer. Nausea on waking and sen-

sations like those of seasickness are characteristic of irritation of the peritoneum around the inflamed gallbladder or appendix. The attack of pain in the stomach is usually accompanied by a slight rise of temperature, and there may even be slight chilliness to start with. The neglect to use the thermometer is the reason why fever is not noted more commonly with these gastric crises for which the inflamed gallbladder is responsible. Bile pigments may also be found in the urine. In about two thirds of the cases these attacks develop at night, and the pain is more severe than ulcer pains.

The nonrecognition of the true cause of the pains leads to treatment on a false basis, which does actual harm for various reasons and postpones the effectual treatment. This should be to promote the flow of bile, preferably with alkaline waters, or surgical measures. Pressure on the gallbladder may induce nausea. Pressure along a line upward from a point midway between the umbilicus and the ninth right costal cartilage is painful with gallbladder disease, while pressure along a line downward does not elicit pain. With duodenal ulcer, the reverse occurs. Hypo-acidity is the rule in the dyspepsia secondary to gallbladder disease. Riding in cars or carriage may shake up the body and start an attack, as also eating certain food rich in fat and cholesterol. Eggs seem to be the most noxious in this respect. A single egg or dish containing it is liable to bring on an attack. Menstruation and pregnancy are accompanied by cholesterinemia, and it is precisely during these periods of strain that these crises are liable to develop. In 1,286 cases of gallstone disease, the influence of menstruation on the development of the attacks was manifest in 1,037 cases. The pains in the stomach, the recurring "indigestion" during the menstrual period, had been ascribed to pelvic influences until jaundice or gallstone colic cleared up the diagnosis. In 50 per cent. of the cases the gastrovesical crises appeared two or three days before the menstrual period, and subsided as the latter became installed. Pain in the stomach preceding or accompanying the menstrual period always calls for investigation of the gallbladder and search for gallstones.

The Sympathetic System.—Desfosses analyzes the general anatomy of the sympathetic nervous system according to the latest research.

Autoserotherapy in Gonococcus Epididymitis.—Weill found that the symptoms subsided completely or nearly completely in three cases described in detail in which he reinjected the patient with the serous fluid from the hydrocele. There was no reaction, and the therapeutic effect seemed proportional to the amount injected. Injection of the fluid into other patients proved effectual also, although to a less extent. He calls this plasmotherapy.

Progrès Médical, Paris

July 2, 1921, 36, No. 27

*Action of Actinic Rays. T. Kagawa.—p. 311.

A Peptic Ferment in the Spinal Fluid. Loeper et al.—p. 318.

Nephrolithiasis and Mineral Waters. H. Paillard.—p. 320.

Action of Actinic Rays.—Kagawa discusses the mechanism responsible for the inactivation of complement by the ultraviolet rays.

July 9, 1921, 36, No. 28

*Traumatism of the Skull. H. Billet.—p. 323.

*Exhibitionism of Sentiment. Laignel-Lavastine.—p. 326.

Traumatism of the Skull.—When the skull has been fractured by the trauma, surgical measures are imperative, Billet explains. But when the lesion is a simple trauma, the skull not opened, the treatment differs with each case. The mild injuries heal of themselves, as also simple concussion of the brain. In the grave cases, the effects of lumbar puncture are often illuminating. If the condition then grows worse he advises to trephine without delay, but otherwise not.

Sentimental Exhibitionism.—Laignel-Lavastine applies this term to the adoration experienced by certain overemotional psychasthenic girls for their physician. They are like clinging vines in their weakness, and display actual exhibitionism in lavishing their sentiment on him. He describes some typical cases, saying that the instinct impelling thereto is that of self-preservation, not a genital impulse. The physician must aim to train the will and supply moral support. and

he must not let his pride or his vanity lead him to accept the expressions of devotion which in reality are merely a manifestation of the instinct for self-preservation. He quotes Janet to the effect that the patient's sentimental affection is only the expression of her weakness, and a change to ingratitude is the best evidence of her recovery. The physician is for her in her weakness like the banisters on a staircase.

Schweizer Archiv f. Neurol. u. Psychiatrie, Zurich

1921, 8, No. 2

- *Internal Secretion and the Nervous System. W. Löffler.—p. 163.
- *Posttraumatic Persisting Headache. R. Benon and B. Kerbrat.—p. 184.
- *Treatment of Schizophrenia. A. Repond.—p. 190.
- *Pathology of the Pituitary. P. v. Monakow.—p. 200.
- *Pathology of the Thymus. E. Bircher.—p. 208.
- *The Cerebrospinal Fluid. L. Stern.—p. 215. Idem. C. v. Monakow.—p. 233.
- *Epidemic Encephalitis. G. Piotrowski.—p. 235.
- Biology of Instincts. C. v. Monakow.—p. 257. Cont'd.

Internal Secretion and the Nervous System.—Löffler comments on the way in which study of the internal secretions has thrown light on the reciprocal dynamic relations between the nervous system and metabolism, and between the nervous system and the cardiovascular system. Even mental processes are conditioned in part by processes of internal secretion, and these in turn reflect the influence of psychic processes. The great unifying principle of the internal secretions, he says, forms a band uniting the various branches of medicine, and it is impossible to overestimate the value of such a band in these days when everything seems to tend to drive the various disciplines farther apart. One of the most convincing data cited is that stimulation of the splanchnic nerves in animals does not have much effect on blood pressure if the efferent veins from the suprarenals are clamped, while the blood pressure rapidly rises if the veins are left open. Puncture of the fourth ventricle has no action likewise if the efferent suprarenal veins are clamped. This hormone secreted by the suprarenal, he remarks, is the only organ-specific endocrine substance chemically isolated as yet. The low pressure common in Addison's disease and the extreme sensitiveness to epinephrin of patients with this disease are well established facts, as also the disappearance of the lipoids in the suprarenals in affections with much muscular strain, as in clonic convulsions, psychomotor agitation and in certain infections. Steinach's experiments have confirmed with even stronger testimony Brown-Séquard's assertions in regard to the potency of the internal secretion of the testicles. As Steinach ligates the vasa deferentia, or as a testicle is transplanted, the retention of the products of the secretion allows more of it to get into the blood and thus act on the nervous system. The sensation of rejuvenation is thus evoked by this erotization of the central nervous system.

Posttraumatic Headache.—Benon and Kerbrat describe the special features of this tenacious cephalalgic syndrome, and means to distinguish this psychoneuropathic syndrome from traumatic chronic asthenia, abortive traumatic dementia, etc. Three cases are described; the condition seems to be practically stationary in each.

Treatment of Schizophrenia.—Repond refers to institutional treatment, saying that the results of treatment are more direct and effectual in this than in any other mental disease. In the majority of cases, appropriate treatment will restore the patient to ordinary life. He adds that for this the physician must not shrink from combating certain prejudices and shouldering certain responsibilities which his skill will enable him to attenuate in large measure. This includes restoring the patient to his family. He has done this several times even against the wishes of the parents, but the success in a number of such cases has justified his action. An actual resurrection followed in some cases, the patient becoming capable of self-support, in part at least, under a little supervision and attention.

Pathology of the Pituitary.—Monakow's illustration shows the almost completely shriveled hypophysis in a man of 58 with obesity, of the pituitary insufficiency type, and tuberculosis, with extreme apathy and oliguria. Necropsy revealed further degeneration of the convoluted tubules in the kidney, the findings exactly similar to those in a previous case of injury of the pituitary. This confirms the relation between the pituitary and the kidneys.

Pathology of the Thymus.—Bircher describes eight cases in children in which thymectomy was followed by disturbances in growth. The ossification centers and the growth in height showed abnormal conditions. These experiences warn against thymectomy in children, and also against roentgen-ray treatment of the entire gland.

The Cerebrospinal Fluid.—Stern discusses it from the standpoint of its relations with the blood circulation and with the nervous elements of the cerebrospinal axis. Monakow analyzes the circulation of the cerebrospinal fluid.

Epidemic Encephalitis.—Piotrowski reviews 452 articles that have appeared on this subject.

Schweizerische medizinische Wochenschrift, Basel

July 7, 1921, 51, No. 27

- *Different Forms of Goiters at Basel and Bern. E. Woelz.—p. 625.
- Purulent Meningitis; Two Cases; Recovery. H. v. Schulthess.—p. 631.
- Mistletoe in Treatment of Hypertonia. J. Tobler.—p. 633.
- Teaching of Anatomy in Switzerland. H. Frey.—p. 635. Conc'n.

Different Forms of Goiter in Different Endemic Foci.—Woelz compares 600 operative cases at Basel with 400 at Bern, omitting the malignant cases. Cretinism is rare in Basel; men there are affected with goiter much less frequently than women, and the goiters are more of the diffuse type, and larger.

Annali d'Igiene, Rome

March, 1921, 31, No. 3

- *Pathogenesis of Cholera. IV. G. Sanarelli.—p. 137. Conc'n.
- Sero-Agglutination under Influence of Chemicals. M. Gulino.—p. 160.
- The Newer Antiseptics. Vittorio Calò.—p. 168.

Pathogenesis of Cholera.—In this fourth article in this series, Sanarelli discusses the peculiar way in which the cholera vibrios are attracted to the stomach and intestines. He further describes the transmission of human cholera to guinea-pigs. The vibrios injected into a vein pass to the mucosa lining the digestive tract and set up lesions there, as in man. But he never succeeded in inducing in the animals the algid phase of cholera.

Annali di Nevrologia, Naples

1921, 38, No. 1-2

- *Symptomatology of Epidemic Encephalitis. S. D'Antona.—p. 1.
- Recent Research on Sclerosis in Patches. T. Senise.—p. 65.

Symptomatology of Epidemic Encephalitis.—D'Antona emphasizes among other things the changes in the circulation in this disease, and urges study of the phenomena in the vegetative nervous system during the phase of somnolency.

Clinica Pediatrica, Modena

1921, 3, No. 3

- *Hemoconias in Children. F. Zibordi.—p. 79.
- Form of Epidemic Encephalitis. A. Sacchetto.—p. 91.

Hemoconias in Children.—Zibordi queries as to the significance of the hemoconias found inside blood corpuscles in the newly born. There were no further intracorpuseular hemoconias to be found by the twelfth to the twentieth day thereafter. The blood dust is particularly abundant during the period when milk is the only food.

Pediatria, Naples

June 15, 1921, 29, No. 12

- *Test Agglutination in Tuberculosis. R. Kharina-Marinucci.—p. 529.
- *Spontaneous Pneumothorax in Infant. E. Schoenstein.—p. 535.
- *Epinephrin Test in Children. F. de Angelis.—p. 542.
- *Pituitary Test in Children. S. Fabris.—p. 548.

Sero-Agglutination in Tuberculosis in Children.—Fully 95 per cent. of 235 tuberculous children gave a positive response when the test was applied to the avian variety of tubercle bacilli. Agglutination occurred at 1:25 to 1:100 in the majority, but in five at 1:200. The negative responses were in the most incipient or the farthest advanced cases. The titer sometimes grew higher as the child improved, and lower as the disease progressed. The findings confirm those of Di Cristina who first suggested the use of the avian variety for the purpose. The special localization of the tuberculous process did not seem to affect the response.

Spontaneous Pneumothorax in Infant.—The pneumothorax occurred during the course of pneumonia.

Response of Young Children to Epinephrin Test.—Injection of epinephrin in forty-five young children sent the blood pressure up in all except in the three with cardiovascular disease or temporary derangement. The rise averaged 1 to 3 cm. in the systolic pressure and 1 to 2 cm. in the diastolic. The effect became evident in ten minutes and reached its height in thirty minutes, lasting from two and a half to three and a half hours before its gradual disappearance.

Response of Children to Pituitary Test.—Fabris found that injection of pituitary extract (hypophysin) in children from a few months to 12 years old sent the blood pressure up or down in ten or fifteen minutes. The variation was never more than 1 cm. and the effect did not last for more than seventy-five minutes on an average. The diastolic pressure usually returned to its former state before the systolic. The pressure dropped regularly and constantly in the 22 with mitral stenosis, polyuria, pneumonia, kala-azar, tuberculous peritonitis, pleuroperitonitis or lymphatism. The response was invariably a rise in the 15 with scrofula, the exudative diathesis or tuberculous tracheobronchial glands or brain tumor. In the 13 with latent tuberculosis, nephritis or diabetes insipidus, the pressure rose after a preliminary drop.

Archivos de Cardiología y Hematología, Madrid

May, 1921, 2, No. 5

*Phagocytosis in Pathologic Processes. P. del Río-Hortega and F. Jiménez de Asúa.—p. 161.

Phagocytosis in Pathologic Processes.—Del Río-Hortega and Jiménez de Asúa reproduce eighteen photomicrograms and a colored plate showing phagocytosis in tumors and other pathologic processes. Sometimes the phagocytosis is peculiarly intense in the parenchyma of diseased organs, as also in normal and pathologic lymphoid organs. These macrophages take well the ammoniacal silver carbonate stain, which shows up their varied shapes. No connection between their number and the malignancy of the process could be detected.

Revista Española de Medicina y Cirugía, Barcelona

April, 1921, 4, No. 34

*Surgical Treatment of Pulmonary Tuberculosis. C. Jaeger.—p. 191.

*Transvesical Prostatectomy. J. M. Reverter.—p. 200.

Diagnosis of Neurosyphilis. B. Rodríguez Arias.—p. 202.

Surgical Treatment of Pulmonary Tuberculosis.—Jaeger describes his impressions from observation of Sauerbruch's surgical cases of pulmonary tuberculosis. Illustrations are given before and after thoracoplasty, the good condition of some of the patients five or six years later confirming that the progressive process had undoubtedly been arrested by the sinking in of the chest wall. Sauerbruch resects only the eleventh to the fifth ribs at first, waiting a month before resecting the fourth to the first, removing from 8 to 10 cm. of each rib. He rejects decidedly all half-way measures of the kind. The whole lung has to collapse to insure the desired effect; otherwise secretions are liable to be aspirated into still sound portions of the lung. The other lung must be intact. He reports 35 per cent. cured of his 381 cases of the kind. The immediate mortality was 2 per cent. and 2 per cent. died within a few weeks. The later series give much more favorable figures than the older ones.

Transvesical Prostatectomy at Two Sitzings.—Reverter insists that by operating in two sittings the indications for this treatment can be materially enlarged. Thus we are able to give patients the benefit of this operation when their condition is too grave for a single operation of the kind. A number of minor points to facilitate it are enumerated.

Revista Médica del Uruguay, Montevideo

June, 1921, 24, No. 6

*The Asthenia Sets of Symptoms. G. N. Martínez.—p. 241.

*Osteomyelitis and Syphilis. F. Rodríguez Gómez.—p. 254.

*Measles at Montevideo. V. Zerbino.—p. 258.

The Asthenias.—Martínez remarks that this group of cases by the insubstantiality of its symptomatology and the invariable failure of ordinary methods of treatment is the heaviest

burden of our whole practice. The group includes the cases of neurasthenia, psychasthenia, hysteria and visceral neuroses, all showing more or less disturbance in the functioning of the vegetative nervous system. This is what links them all, and explains their kaleidoscopic occurrence, and gives a hope of effectual treatment by regulating the vegetative nervous system by influencing the endocrine glands. In this condition of neurotonia, the sympathetic or the vagus may predominate transiently or permanently, but the main feature of the whole is the asthenia, asthenia of the nerves and of the muscles. In one case in his practice the youth of 16 was too weak to keep up, and had to stay in bed, as also two other young men. An inherited taint or toxic relics of infectious diseases are common in the etiology, but puberty seems to be the determining factor. Treatment should include general tonic measures and organotherapy. The latter has to be tentative as in this we are at the stage of development corresponding to the era in respect to plant drugs before the discovery of their alkaloids.

Osteomyelitis and Syphilis.—In three cases the acute osteomyelitis developed in a bone already the seat of a syphilitic bone and periosteum process. Rodríguez Gómez in describing the cases says that he has not found this combination mentioned in the literature. Treatment for the syphilis must supplement the usual measures to cure the osteomyelitis, the combination keeping up a vicious circle.

Measles in 1920.—Zerbino relates that the epidemic of measles in 1920 spread rapidly throughout the whole of Uruguay. These epidemics seem to occur there at intervals of three or four years. No breast fed infants under 3 months old were known to develop the disease, and in the older infants it was always mild, while in the artificially fed it was grave and septicemia was common.

Semana Médica, Buenos Aires

May 5, 1921, 28, No. 18

*Invisible Phases of Protozoa. R. Kraus, R. Dios and J. Oyarzábal.—p. 509.

*Classification of Kidney Disease. H. L. Caretti.—p. 511.

*Two Cases of Cesarean Section. T. J. González.—p. 520.

Topography of the Brain. E. Amato.—p. 523.

*Puerperal Psychoses. J. Giménez Zapiola.—p. 524.

Invisible States of Pathogenic Protozoa.—Kraus and his co-workers report the results of research which confirm Schaudinn's statement that, in certain phases of their development, spirochetes may be so thin that it is impossible to see one alone, and that in this extremely slender form they may pass through porcelain filters. The Buenos Aires experiences confirm this. They experimented with piroplasms and found that sheep injected with blood from cattle containing piroplasms of the species causing the so-called Texas cattle fever did not develop the disease, and the piroplasms could not be detected in their blood. But cattle inoculated with the blood, even months later, became infected, and anaplasms were found in the blood but no piroplasms. Similar experiments with the trypanosomes causing mal de cadera in horses yielded similar results. Sheep inoculated with blood from a horse with this disease showed no trypanosomes in their blood, but guinea-pigs injected with blood from these sheep had trypanosomes in their blood when examined from two weeks to a month later. The trypanosome of surra and the trypanosome of sleeping sickness behaved the same, none of the parasites being discoverable in the blood of the sheep inoculated with blood containing the trypanosomes. At the same time, in the blood of guinea-pigs inoculated with blood from these sheep, the trypanosomes appeared once more. The sheep infested with the invisible form presented no signs of infection, although they transmitted the infection to others. This suggests that certain pathogenic protozoa may be in the habit of infecting other animals besides those with which they are usually linked, but as the invisible form does not induce appreciable symptoms, we overlook these animals in our prophylactic measures. Lignières has recently reported similar experiences encountered in his search for an effectual vaccine.

Classification of Kidney Diseases.—Caretti compares the German classification in the three forms: nephrosis; glomerular nephritis, diffuse or in foci, and arteriosclerosis, with the two forms of kidney disease accepted by the French, namely, the three types of acute nephritis and the four types

of chronic nephritis, the type with albuminuria, with dropsy, with high blood pressure or with uremia. This is simpler, but less exact, as he explains. The nephrosis of the German writers includes some of the French acute nephritis cases, simple albuminuria and dropsical nephritis. The glomerular nephritis of the Germans includes others of the French acute nephritis cases, those with uremia and some of the high blood pressure cases. The renal arteriosclerosis group of the Germans corresponds to the hypertensive, uremigenic nephritis of the French school. The treatment and the prognosis depend on the type of the anatomic lesion and its cause. Specimen cases of each type are described and analyzed.

Cesarean Section.—In one case the fibromatous uterus, the transverse presentation, the scar of a former cesarean section, and the age of the woman, 37, were disturbing features, but she was safely delivered of a living child by a second cesarean section. In the second case, González ascribes the recovery from severe eclampsia to his prompt vaginal cesarean section.

Etiology of Puerperal Psychoses.—Besides the predisposing taint or auto-intoxication, insufficiency of the liver or of some ductless gland is evidently a factor, and this should be borne in mind in treatment. Thyroid or ovarian treatment should be given a trial; as also in the vomiting of pregnancy.

Grèce Médicale, Athens

May-June, 1921, 23, No. 5-6

- *Recurring Paralysis of the Motor Oculi. J. Bistis.—p. 57.
Deformity of Thumb in Median Paralysis. Condargyris.—p. 58.
Medical Treatment of Gastric Ulcer. P. J. Rondopoulos.—p. 60.

Paralysis of the Motor Oculi Nerve.—The recurring paralysis was preceded by local pains each time. The first attack had been at the age of 12; the young woman seems otherwise healthy. The ptosis lasts from one to several days. The intervals average only a week or two. The pain begins in the temporal region, extends to the brow and the back of the neck, and is generally accompanied with nausea and malaise but has no neuralgic character. In the cases compiled by Mingazzini, the first onset occurred between 10 and 20 in seventeen, between 20 and 30 in eight, and in one case in the sixties.

Mitteilungen a. d. Path. Inst. Univ., Sendai, Japan

May 11, 1921, 1, No. 2

- *The Suprarenal Cortex. Y. Tokumitsu.—p. 161 and p. 211.
*Experimental Toxic Nephritis. T. Suzuki.—p. 225 and p. 243.
*Polynuclear Ganglion Cells. M. Shimoda and M. Kondo.—p. 293.
*Abortive Cerebral Sclerosis. M. Shimoda.—p. 309.
*Giant Cells in Gliomas. O. Kimura.—p. 321.
*Lung Fluke in Brain. O. Kimura.—p. 375.
*Paget's Disease of the Nipple. S. Sekiguchi.—p. 385 and p. 393.

The Suprarenal Cortex.—Tokumitsu describes what he calls a new function of the suprarenal cortex, which becomes manifest when a ligature is thrown around the pancreatic duct. The cortex proliferates and hypertrophies, evidently as a compensating process. The medulla of the suprarenal, on the other hand, seems to have an antagonistic action to that of the pancreas. The medulla and the cortex are separate organs. His research has confirmed that diabetes develops even with slight changes in the pancreas if the suprarenal cortex shows degenerative changes, while otherwise the diabetes develops only with pronounced changes in the pancreas. The article is in German, but is followed by a report, in English, of experimental research on the suprarenal cortex which demonstrated that it is indispensable to life, while the medulla can be removed without comparative harm.

The first four articles are in German. Others are in English.

Experimental Toxic Nephritis.—Suzuki reports success in inducing glomerular nephritis in rabbits by intravenous injection of dilute venom from a crotaline snake. In a second article he describes the transformation of the acute nephritis thus induced into a chronic form.

Pathologic Import of Polynuclear Ganglion Cells.—From study of 178 cadavers of the insane and the noninsane, it seems evident that numerous polynuclear cells in the ganglia must be regarded as an imprint left by some fetal developmental disturbance.

Abortive Sclerosis of the Brain.—Shimoda describes a case which seemed from both the clinical and the anatomic stand-

point to be one of genuine epilepsy until the discovery of a small focus of sclerosis in the brain.

Giant Cells in Gliomas.—Kimura's two cases show the different types of giant-cell neuroglioma, neuro-epithelioma and tuberous cerebral sclerosis, alone or associated. He gives four pages of bibliography with tabulated details of thirty-eight cases and six fine plates. (In German.)

Lung Fluke Cyst in Brain.—Kimura states that the echinococcus and cysticercus have never been found in the brain in Japan. But there are fifteen cases on record there in which the blood fluke or lung fluke was responsible for the cerebral disease. He describes another case and the differential diagnosis.

Paget's Disease of the Nipple.—Sekiguchi reports another case of mamnectomy for this disease, with photomicrograms, and gives ten pages of bibliography and a huge folding table giving the details of all the cases he could find on record.

Mitteil. a. d. Med. Fak. Univ., Tokyo

Dec. 28, 1920, 25, No. 2

- *Tar Sarcoma in Rabbit. K. Yamagiwa, S. Suzuki and K. Murayama.—p. 189.
*Electrocardiography of Heart of Dying Dog and Rabbit. S. Yamada.—p. 197. Cont'd.

Tar Sarcoma.—The fibromyxosarcomatous tumor developed in the mamma of a rabbit twenty-three months after the beginning of the course of thirty-one injections of tar in the mamma. A recurrence developed with metastases after excision of the tumor, and scraps of it proliferated when injected in other rabbits. This was the only positive cancer produced among the 200 rabbits in the tests. (In German.)

Electrocardiography of Dying Heart.—In Yamada's experiments on dogs and rabbits, paralysis of the heart was induced by a wide variety of mechanical causes, by the action of chemicals, drugs, gases, etc., and also by anaphylaxis. The article is in German, and this instalment consists of nearly 200 pages with ten pages of electrocardiograms.

Archiv für Verdauungs-Krankheiten, Berlin

June, 1921, 28, No. 1-2

- *Postoperative Peptic Ulcer. H. Haberer.—p. 1.
*Operative Treatment of Benign Stomach Lesions. L. Schüller.—p. 29.
*Relations Between Cholelithiasis and Duodenal Ulcer. G. Kelling.—p. 63.
*Hyperchlorhydria-Peptic Ulcer. J. González Campo.—p. 69.
*Tenderness to Percussion in Abdominal Disease. W. Bakowski.—p. 103.

Postoperative Peptic Ulcer.—Haberer presents a long array of arguments in favor of applying the principle of the Billroth I method in treatment of gastric and duodenal ulcer, as this alone protects best against peptic ulcer. He says that he has never known or heard of but one case in which it developed after the Billroth I, and this one case is not certain. It is very important further to avoid the use of unabsorbable suture material, and to refrain from unnecessary manipulation and damage of tissues. But even more important is the necessity for care in the diet for long after the operation. The operation does not do away with the predisposition to ulcer production that caused the ulcer in the first place. Disregard of this fact is often solely responsible for peptic ulcer. Among the facts confirming this is the almost invariable site of the peptic ulcer opposite the gastro-enterostomy opening.

He has usually found it possible to train his patients to guide their diet in this way. If a peptic ulcer develops, resection is the only treatment. He thus cured 14 of 17 patients with peptic ulcer, and the operation was not a factor in the fatal outcome in the others. In 5 other cases of peptic ulcer only a palliative, if any, operation was possible. Haberer has operated on the stomach in 1,035 cases, including 699 resections and 71 operations with exclusion of the pylorus according to von Eiselsberg. Not less than 14 of his own 17 peptic ulcer cases were in patients who had been treated by this latter exclusion method. The other 3 were in gastro-enterostomy cases. That is, peptic ulcer developed in 20 per cent. of the 71 exclusion cases and in 1 per cent. of his 265 gastro-enterostomies.

Operative Treatment of Benign Disease of the Stomach.—Schüller warns that tests of the motor function of the stom-

ach are the most important of the indications for operative treatment. Only when the stomach does not empty itself properly will a gastro-enterostomy prove of benefit. The overlooking of this fact is responsible for unsatisfactory results of operative treatment in many cases. Tests of 50 stomachs showed that although the contrast meal was evacuated normally, there was retention of ordinary food, especially when gastric secretion was low and the food imperfectly masticated. He found further that with an ulcer the evacuation often proceeded very differently on different days. The test breakfast does not make enough demands on the stomach for it to be decisive. The cases in which gastro-enterostomy failed to relieve were always those in which the ulcer was not located at the pylorus or not complicated with spasm of the pylorus. For these and other reasons presented, he urges systematic and protracted internal treatment for all forms of nonmalignant disease of the stomach, leaving to the internist the decision as to whether treatment shall be internal or operative. The decision must not be based on the patient's complaints nor on the roentgen picture alone; the progress realized with the roentgen rays is that they reveal hard ulcer, and show when the ulcer is at the pylorus—either of which tends to turn the scale in favor of an operation. Otherwise, clinical observation and deductions are the only criteria now as ever. The only vital indication is with complete stenosis of the pylorus, and recurring small hemorrhages. He protests against the assumption that the mortality from excision and resection is counterbalanced by the mortality from hemorrhage and perforation. The mortality of gastric ulcer under internal measures alone is only 1 per cent. and only 2 per cent. including the cases with grave hemorrhages.

Relations Between Cholelithiasis and Duodenal Ulcer.—Kelling remarks that the passage of infectious agents from the bowel to the liver by way of the venous and lymphatic systems and their elimination through the bile explain the frequent association of cholelithiasis, duodenal ulcer and appendicitis. As the bacteria pass into the intestine in the bile, the peristalsis of the pylorus and duodenum may force the bacteria into the follicles and an abscess develops in consequence, and the action of the hydrochloric acid may transform this abscess into a duodenal ulcer. There are more follicles just below the pylorus than elsewhere in the duodenum, which explains the location of the ulcer at this point, whether the bacteria come from the liver or the stomach. Gastroparesis and cholecystitic adhesion of the duodenum favor the duodenal ulcer as this part of the duodenum is drawn up to the right, a frequent finding with duodenal ulcer and gall-bladder disease. With inflammatory processes in the gall-bladder, the passage through the duodenum should be facilitated by reclining on the back during digestion; indigestible food, such as chunks of meat and vegetables, should be avoided, and the bile should be rendered fluid with liquid foods, frequent meals, and disinfected with sodium salicylate. Possibly a lack of mineral salt may be a factor. This can be combated best perhaps by ingestion of milk. He found anacidity in 33 per cent. of his gallstone cases, and Rydgaard in 66 per cent. of the bile duct occlusion cases.

Hyperchlorhydria and Peptic Ulcer.—González Campo declares that hyperchlorhydria is identical with ulcer, and that every one with it should be treated as for ulcer. Among the thousands who have consulted him for disease of the digestive tract in his twenty years of specialist practice at Madrid, 66.25 per cent. had hyperchlorhydria. The pains with it are due in fact to a peptic ulceration. The only difference he admits between the clinical picture of hyperchlorhydria and that of true gastric ulcer is that the latter bleeds. He devotes thirty-four pages to arguments sustaining this view.

Tenderness on Tapping with Gastric and Duodenal Ulcer.—There was no pain from percussion in 7 of Bakowski's 16 cases of duodenal ulcer but pressure elicited pain in all but one. In 20.83 per cent. of 72 cases of gastric ulcer there was no percussion pain. In all the others with positive findings there was pain on pressure likewise. In 11 cases of nervous dyspepsia percussion elicited pain just as in the ulcer cases. The outlines of the positive zone were irregular and inconstant.

Deutsche Zeitschrift für Chirurgie, Leipzig

June, 1921, 163, No. 5-6

- *Operative Treatment of Gastric Ulcer. H. Gross.—p. 289.
- *Volar Luxation of Distal End of Ulna. H. Neuberger.—p. 365.
- Isolated Fracture of Scaphoid Bone. A. Rosenberg.—p. 394.
- Close Roentgen-Ray Treatment of Mammary Cancer. F. M. Groedel.—p. 405.
- *Abdominal Adhesions. T. Naegeli.—p. 408.
- Atresia of Bowel with Prolapse. M. Ichenhäuser.—p. 417.
- Fracture of Anterior Superior Iliac Spine. F. Brandenburg.—p. 422.

Operative Treatment of Ulcer in Body of Stomach.—Gross says that the ultimate outcome in 199 cases has shown that gastro-enterostomy alone may give surprisingly good results, and also that the danger of hemorrhage, of perforation, and of malignant degeneration of ulcers is liable to be overestimated. In one case permanently cured by what he calls enlarged excision, that is, cutting off the pylorus as the first step and slitting the lesser curvature lengthwise, the excised ulcer showed cancer under the microscope. By cutting the stomach loose from the pylorus and making a new and ample outlet, mechanical conditions favor the emptying of the stomach, and we do away with the stiff and narrow portions which invite pathologic conditions. He has had no recurrences after his enlarged excision technic. It leaves the stomach shaped something like a moccasin or shoe.

Dislocation of Lower Radio-Ulnar Articulation.—Among the thirty-four cases of volar luxation of the distal end of the ulna reviewed by Neuberger, is one published in THE JOURNAL, Sept. 6, 1913, p. 767. The mechanism and means for reduction are described.

Abdominal Adhesions.—Naegeli investigated for cicatricial bands at a later operation in 148 old laparotomy cases. They were found in all but thirty cases. Sometimes they caused no disturbance, and in the cases with disturbances attributed to the cicatricial bands, insufflating air for pneumoperitoneum put an end to the disturbances, although the bands had not been broken up thereby. We must not be misled, he adds, into ascribing symptoms merely to bands or superficial adhesion when there may be some grave cause elsewhere.

Jahrbuch für Kinderheilkunde, Berlin

1921, 95, No. 3-4

- *Acute Dyspepsia in Infants. G. Bessau, S. Rosenbaum and B. Leichtentritt.—p. 123.
- *Paradoxical Reaction to Diphtheria Vaccine. H. Opitz.—p. 139.
- *Cirrhosis of Liver in Infants. E. Lindemann.—p. 155.
- *Coryza in Infants. P. Ivens and G. Stern.—p. 165.
- *Scarlatinal Arthritis. P. J. de B. P. van Amstel.—p. 186.
- *Index of State of Nourishment. J. Peiser.—p. 195.
- *Rachitic Disturbance in Growth. H. Maass.—p. 207.
- *Recurring Attacks Suggesting Minor Epilepsy. J. Stærgardter.—p. 230.
- *The Breast-Fed Since the War. R. Hammann.—p. 242.

Prevention of Dyspepsia in Infants.—In this second article on acute dyspepsia in infants, the length of time the food stays in the stomach is incriminated as an important element in the clinical picture. In normal infants the stomach and small intestine are free from colon bacilli, and there is much evidence to sustain the assumption that this is due to the complete emptying of this part of the digestive tract in the intervals between the periods of digestion. When the food lingers unduly long in the stomach, or the intervals between feedings are too short, this normal mechanism is disturbed. Anything that prolongs the period of digestion and thus delays the emptying of the stomach and small intestine upsets the normal process and sequence. The rapid digestion and evacuation of breast milk is an important factor in keeping conditions normal in the digestive tract. Ten of the various mixtures for infant feeding were tested for the length of time each remained in the stomach. The fluid was introduced through a tube into the stomach after at least six hours of fasting, and the time it left the stomach was determined by fluoroscopy, sometimes corroborated by lavage. No contrast meal was given; the air bubble showed when the stomach emptied itself. Over 300 tests were made on thirty-two infants.

Among the important facts confirmed by this research is that when an amount of food is given below the actual nutritional requirements of the infant, the food is digested and passed along rapidly, regardless of its composition. In acute dyspepsia, therefore, the kind of food allowed is of less moment

than its quantity. The protein in cow's milk was discovered to be the element that retards digestion and the emptying of the stomach. After predigestion of the protein, even undiluted cow's milk leaves the stomach just as rapidly as breast milk. The infant stomach is relatively unable to digest the protein in cow's milk. This entails delay in passing it along, with resulting stagnation, fermentation and invasion of the upper bowel by the colon bacillus. Artificial feeding of infants should therefore aim to prevent stagnation in the stomach, by giving food that is rapidly passed along. This can be insured by keeping the quantity small and by predigesting the protein. This principle for artificial feeding, learned from roentgen examination of mainly healthy digesting infants, differs completely from the principle hitherto applied. The latter aimed not to prevent stagnation but to annul its evil effects. Albumin milk, for instance, lingers exceptionally long in the stomach, but it overcomes most of the evil effects from the stagnation.

Local Reaction to Injection of Diphtheria Vaccine.—Opitz ascribes to an endotoxin the paradoxical local response sometimes observed with injection of diphtheria vaccine.

Cirrhosis of Liver in Infant.—The liver was evidently substandard to begin with, and ascending infection from the bowel induced a defensive reaction in the liver which took the form of cirrhosis. The spleen was also enlarged and the spleen was removed, but the male infant of 5 months died the following day with symptoms of cholemia. The course of cirrhosis of the liver in children is generally acute, but among the 350 cases on record the range was from a few years to eighteen months and, in Vogel's case, eight years. Only three instances of secondary cirrhosis of the liver in infants are known aside from syphilis, tuberculosis and malformation of the liver.

Coryza in Infants.—Ivens and Stern tabulate the manifold and constantly variable bacteriologic findings in forty infants with coryza.

Arthritis in Scarlet Fever.—Van Amstal was called to a girl of 10 with what seemed to be acute articular rheumatism. But inquiry elicited that the child had had unrecognized scarlet fever five weeks before, a few days of pain in the throat, red skin and desquamation. The polyarthritis was evidently of scarlatinal origin, and his review of the literature confirms the possibility of sepsis in scarlet fever as well as in typhoid and pneumonia, with the resulting complications and after-affections. Even scarlatinal peritonitis is possible. Treatment of scarlatinal arthritis aims mainly to ward off permanent injury; repose is absolutely indispensable. He gave in addition in the case described a polyvalent anti-pyogenic vaccine, and relates that the fever and pain subsided after the first injection, and conditions improved so rapidly that only three injections in all were required.

Index of State of Nourishment.—Peiser compares the different standards that have been proposed as an index of the state of nourishment at the moment. The thickness of a fold taken up in the abdominal wall gives an excellent idea of whether the subject is normal or undernourished. He takes up a lengthwise fold, to the left of the navel, and on a line with it, and measures the base of the fold with a slide gage. The findings in 500 children were compared with their clinical history.

Pathogenesis of Rachitic Deformity.—Maass explains that the lack of calcium weakens the bone, and it yields more readily to the strain of weight bearing or other mechanical injury. The lack of calcium impedes normal endochondral ossification. The zone of apposition of the spongiosa bone suffers particularly from the pathologic pressure. Bone growth continues, but it is along the lines of lesser resistance, as a river dammed up seeks a new channel.

Pyknolepsy.—Stargardter reports four cases of repeated minor attacks in children which resemble epilepsy in some respects and not in others. Children of this type are usually intelligent beyond the average. He describes the clinical picture in his four cases. Mental processes can occur during the seizure but for some reason they do not reach the consciousness. Caffein was the only drug that bridged this gap: By its efficacy in rousing the attention, caffein succeeded in arresting the seizures completely in one boy of 8, and in reducing their number from eight to one a day in a girl of 7.

One girl now 8 has had the attacks for two years, sometimes as many as fifty a day. The family refuse to allow any medication. The fourth patient has had these repeated minor attacks since the age of 2. At 14½ severe epileptic seizures developed and have recurred often during the year and a half since. The pyknolepsy therefore may develop on the soil of epilepsy; in this case the seizures continue after puberty and they are not so numerous. In the majority of cases, however, the soil is merely simple endogenous nervousness or a psychopathic constitution with or without a tendency to hysteria. On this soil the numerous simple and uniform attacks develop with other signs of the neuropathic constitution, and the attacks usually cease as puberty comes on. Stargardter applied various tests in his cases with epinephrin, pilocarpin, atropin and other drugs but with conflicting findings with all except caffein.

Progress of Breast-Fed Infants Since the War.—Hamman has noticed that breast-fed children in the last few years do not seem to thrive as they used to, and he theorizes to explain this.

Therapeutische Halbmonatshefte, Berlin

April 15, 1921, 35, No. 8

Indications for Surgical Treatment of Nephritis. H. Eppinger.—p. 225.
Vegetable Extracts for Therapeutic Purposes. H. Aron.—p. 233.

*Treatment of Febrile Pulmonary Tuberculosis. Gerty and K. Cori.—p. 236.

Transduodenal Lavage. M. E. Jutte (New York).—p. 239.

Treatment of Infantile Syphilis. S. Engel and Martha Türk.—p. 242.

Relation to Vaccinotherapy of Baths in Rheumatism. E. Weiss.—p. 246.

Treatment of Feverish Patients with Pulmonary Tuberculosis with Injections of Menthol-Eucalyptus Oil.—Gerty and Cori report the results in 168 cases in which they combated fever in tuberculous patients with the following preparation, which is a modification of that recommended by Berliner: pure iodine, 0.1 gm.; camphor, 0.5 gm.; menthol, 10.0 gm.; eucalyptus oil, 10.0 gm., and castor oil, 20.0 gm. They inject from 0.5 to 1.0 c.c. intramuscularly between the spina iliaca ant. sup. and the trochanter, two or three times weekly. The injections cause occasionally pain in the leg, which may last twenty-four hours or so. Irritative effects on the kidneys were not observed. On the appearance of albumin in the urine the injections must be discontinued. Of 50 patients in the second stage (Turban system) there were only 2 whose fever did not yield to this treatment. From one to twenty-four injections were given. Of 85 patients of the third stage (Turban), 44, or 51.8 per cent., were relieved of their fever after from one to twenty-four injections.

Zeitschrift für urologische Chirurgie, Berlin

July 18, 1921, 7, No. 1-3

*Carcinoma of Male Urethra. W. Rizzi.—p. 1.

*Sarcoma-Carcinoma of Bladder. S. Kraft.—p. 12.

*Disinfection of Catheters. S. Hadda.—p. 20.

*Localization of Ureter Fistula. A. v. Lichtenberg.—p. 40.

*Ischiorectal Prostatectomy. O. Orth.—p. 42.

*Diagnosis of Disease in Urinary Apparatus. W. Baensch and H. Boeminghaus.—p. 48.

Carcinoma of Male Urethra.—Rizzi adds another to the fifty-two cases of primary carcinoma of the male urethra he has found on record. The primary lesion was in the bulb of the meatus. The patient was a public official of 49 with a healthy child. The stenosis without present gonorrhea, the pain during micturition, and the bleeding from the urethra were explained by the tough infiltration palpated in the urethra. Extirpation of the penis and inguinal glands was facilitated by slitting the scrotum along the raphe. The patient has been free from disturbances since, but now seven months later, a small tumor can be felt in the perineal scar, presumably a recurrence.

Sarcocarcinoma of the Bladder.—Kraft removed the malignant tumor in the bladder of the man of 78 through the peritoneum, but recurrence developed of such malignancy that in forty days the tumor was larger than a child's head.

Disinfection of Rubber Catheters.—Hadda tabulates the findings in long series of tests which have demonstrated, he says, that elastic catheters can be absolutely reliably sterilized with mercuric oxycyanid. The catheter is left for twenty-four hours in a mixture of 0.5 gm. mercuric oxycyanid; 50 gm. glycerin, and 50 gm. distilled water. This

mixture does not deteriorate the catheter material nor irritate the urethra, while the catheter does not require any further lubrication. The catheter is kept in this solution in a horizontal glass vial curved like the catheter, with two short legs at the bend to keep it from rolling, and a rubber stopper.

To Locate a Ureter Fistula.—Lichtenberg introduces an opaque graduated catheter into the ureter, and an opaque sound is passed up through the fistula opening into the genital organs. The roentgen shadow of the point where the two meet locates the fistula.

Ischio-rectal Prostatectomy.—Orth declaims further on the advantages of Voelcker's ischio-rectal prostatectomy, and reports ten more cases in which it was applied. There was no postoperative orchitis or epididymitis in any instance. The technic was described in *THE JOURNAL*, Feb. 12, 1921, p. 487. He enumerates certain minor points to be observed, especially restriction of fluids after the operation. The kidneys seem to recuperate the more rapidly, the less the task imposed on them.

Roentgen-Ray Diagnosis of Disease of Urinary Apparatus.—This extensive article is accompanied with twenty-seven diagrams or roentgenograms, and 513 bibliographic references.

Zentralblatt für Gynäkologie, Leipzig

June 25, 1921, 45, No. 25

Combined Roentgen and Radium Therapy in Hemorrhagic Uterine Affections. W. Weibel.—p. 885.

*Stone Formation in the Uterus. G. Hahn.—p. 888.

*A Symptom of Extra-Uterine Pregnancy. H. Hellendall.—p. 890.

Central Rupture of Perineum in Child-Birth. E. Weinzierl.—p. 891.

Supravaginal Removal of the Unopened Uterus in Premature Detachment of the Placenta. L. Heidenhain.—p. 895.

*Hot Sand Baths in Gynecologic Cases. R. Aschenbach.—p. 896.

Urinary Calculus in the Uterus.—Hahn reports the case of a woman of 65 who for many years had suffered from colicky pains in the lower abdomen. Various physicians consulted had diagnosed gallstones, cramps in the stomach, renal stones, nervous symptoms, etc. When Hahn was called to the patient she complained of pains resembling birth pains, in the abdomen and in the back. In her forty-fifth year the patient had been delivered of a child, on which occasion the forceps had been used. Examination revealed two large-sized stones within the uterus. The forceps, twenty years before, had caused a vesico-uterine fistula, since which time incontinence of urine had persisted. The urine flowed not only through the urethra from the bladder, but also into the uterus and through the vagina. In the course of the twenty years the urinary calculi had formed in the uterus. On account of her age the woman would not submit to an operation to cure the fistula. After the removal of the stone, she had no further pains and recovered her health, but died later.

Discoloration in Region of Umbilicus with Internal Hemorrhage.—The suspicion of tubal pregnancy with extravasation of blood was confirmed in Hellendall's case by the bluish green discoloration of the navel, the seat of a small umbilical hernia. This bluish green sheen grew more pronounced in the erect position. The laparotomy revealed a left tubal pregnancy, the ovum apparently intact, with fresh and old blood clots.

Hot Sand Baths in Parametric Exudates and in Pyosalpinx.—Aschenbach discusses the advantages of sand baths, and more particularly partial sand baths, over hot air baths and mud baths in certain gynecologic cases. By means of the intense heat locally applied and remaining constant for hours, as brought about by partial sand baths, a marked flow of blood to the genital organs takes place, whereby the rapid resorption of exudates is effected. The heat imparted by sand baths is better borne than that of hot air baths and mud baths, for which reason sand baths may be given at a temperature of 62 C., which would be impossible with hot air and mud baths. The perspiration is readily absorbed by the sand.

Mededeel. v. d. Burg. Geneesk. Dienst, Java

1920, No. 9. Parallel Dutch-English Edition

*Public Health Service at Sourabaya.—p. 2.

*Infant Mortality in Java. S. D. Habich-Veenhuijzen.—p. 82.

Public Health Service in Dutch East Indies.—Fifteen photographs accompany this report, showing the model arrangements at many points for quarantine, transportation of contagious disease, ambulance, antimosquito work, etc.

Infant Mortality in Java.—As infants are often given rice with banana in Java when they are a week old, the frequency of intestinal derangement is not surprising, and the writer adds that occasionally an infant chokes to death on the rice. The infant death rate in four districts investigated was from 400 to 800 per thousand. In one district the birth rate was 4.8 per cent. of the total inhabitants—the infant death rate 351 per thousand.

Norsk Magazin for Lægevidenskaben, Christiania

July, 1921, 82, No. 7

*Bandl's Ring During Opening Period. C. Lange-Nielsen.—p. 481.

*Diagnosis of Spinal Cord Tumors. Sofus Widerøe.—p. 491.

*Strychnin Poisoning from Therapeutic Dose. A. Arnesen.—p. 495.

Amyloid Tumor in Larynx. V. Uchermann and F. Harbitz.—p. 497.

*Disease in the Sudan. H. Engelsen.—p. 501.

The Moving Upward of Bandl's Ring.—Lang-Nielsen found that the contraction ring was evident in 4 per cent. of 1,564 childbirths during the opening period, and that it rose higher and higher until it had nearly reached the umbilicus. As this occurred almost exclusively in primiparae and with contracted pelvis, and no special cause could be discovered, he regards it as a functional anomaly, a warning that the uterus is inclined to be functionally substandard.

Intraspinal Injection of Air in Diagnosis of Tumors.—Widerøe injects by lumbar puncture from 3 to 5 c.c. of air after allowing twice this amount of spinal fluid to drip out. In four of his ten cases there were no subjective symptoms thereafter; these were mostly hydrocephalus cases. In two instances, headache and tinnitus followed; these were brain tumor cases. In a third group the pressure of the air on its way up to the brain induced transient symptoms from the spinal cord, pains in the legs or spreading upward. This occurred in a patient with cerebral syphilis, and in an epileptic. A fourth group included the spinal cord tumors and there were no symptoms at once. But a few hours later paroxysmal pain developed, always at the same point, the spot where the tumor was found. The pain spread thence into the thorax. As this pain subsided, headache developed. The pain can be explained only by the air working its way past the tumor, as the neoplasm was found exactly at this point. A case is described in a woman of 39 who for eighteen months had had pains between the scapula and in the legs, and had been treated for "gout." Finally she had to strain to urinate, and the pains and spastic condition in the legs suggested a tumor in the spinal cord. An operation at the supposed site, the sixth thoracic vertebra, failed to reveal any tumor. The symptoms after the transient improvement suggested that the tumor was at the eighth cervical segment, but injection of 50 c.c. of air, after allowing 67 c.c. of spinal fluid to escape (without aspirating), located the tumor at the vertebra prominens. No symptoms followed the injection, but the seventh hour severe pain developed at this vertebra, spreading to the chest but not to the arms, and headache followed. There was considerable bleeding at the removal of the psammo-epithelioma, 3.5 cm. long, found at the seventh cervical vertebra as expected, but there was no reaction to the operation and the patient began to improve at once, free from pains. He remarks that Dandy's air insufflation proved of vital importance in this case.

Strychnin Poisoning Under Therapeutic Dosage.—Arnesen gave the strychnin during collapse in diphtheria. It answered its purpose, reviving the child, but he says it was "driving the devil out with Beelzebub," as the child died the third day from circulatory failure.

Disease in the Sudan.—Engelsen describes his study of the pathology of central Africa during a stay in the Sudan. Cancer is rare; only one case of carcinoma and three of sarcoma had been known in ten years. The Sudan is a rich field for the bacteriologist as it gathers the Asiatic diseases and the diseases peculiar to Egypt and Africa as well as the cosmopolitan diseases. He says that yaws realizes the ideal of treatment, as a single injection of arsphenamin seems to cure it completely, with no recurrence in the cases treated up to seven years ago.

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IMPERATIVE NEED OF UNION OF THE MEDICAL PROFESSION AND THE HEALTH AUTHORITIES *

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One of the big medical problems at the present time is the securing of a closer union between the physician and the legally constituted health authorities. Actions of the past have brought out prominently the fact that too many physicians look on the health officials as police officers, rather than as aids to the service the profession is rendering.

All laws for the regulation of health give a rather positive control—positive only, however, because of exceptional conditions which may exist.

Much has been accomplished, the evidence of which is on record in the morbidity and mortality reports of the vital statistics bureaus of both state and nation; but in no community have the accomplishments been such as the medical profession or the health officers would desire.

The success of the future depends, as our title states, on a closer union between the physicians and the duly constituted health authorities. We might solve this problem very easily if we had in the United States a 100 per cent. efficient medical profession. Both you and I appreciate when this statement is made that it is true. Until that time does come, however, those doing their best must strive to accomplish more. If the medical practitioner could disabuse his mind of the idea that health authorities *order* anything done, the two bodies would come much closer together.

Rather than the health department giving orders to the medical profession, it would be more seemly for the physicians to give instructions to the health department. A combination of that enormous power enjoyed by the physician in his own community (that power being public opinion) and the lesser power of legal authority enjoyed by the health officer can accomplish almost anything. A union, therefore, could be very easily effected if the medical profession appreciated these facts. The operation of this union would be a specific recommendation. For instance, the county medical society with problems in the community could solve them in a definite way, the county medical society to outline the way. These directions, forwarded by the society to the health officials, would call for either an acceptance or an explicit reason for rejection.

Too many problems are inadequately solved from a central office point of view, not because the central office wishes to exercise undue authority in so doing, but because of a lack of authentic field information. Many of the differences of opinion which exist between the physicians and the legal medical body could be easily solved by a personal interview. It would be wise, therefore, if more physicians would visit those whom they regard as dictators and discuss with them these differences.

Too often pamphlets, bulletins, circulars, textbooks and moving picture films are the only means of communication between these two agencies. As a result of this imperfect means of supplying information, different points of view are engendered and contrary actions defined.

The medical profession has too long permitted the laws dealing with health to be interpreted entirely by a public health executive. This should be changed and we, the physicians of the country, must see that it is done. I would recommend that the Executive Committee of this section present to the House of Delegates a resolution seeing to the proper supervision of all legislation introduced into state or federal law-enacting bodies.

It is the duty of the physician to treat sick people and to keep people well. It is the duty of the health official to aid the profession in the control of all those suffering with some disease which might be communicated to another—two separate and distinct duties, both, however, looking to the same end: that is, a healthy people.

UNRECOGNIZED INFECTIONS IN PRODUCTION OF CARRIERS OF PATHOGENIC ORGANISMS *

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There are no problems of greater interest and importance to the student and practitioner of preventive medicine than those concerning the so-called "carriers" of the specific parasites causing contagious and infectious diseases. It has been only within the last decade that the enormous importance in the transmission of this class of diseases by apparently healthy individuals who are carrying the causative organisms, be they bacterial or protozoal in nature, has been fully recognized, and the major portion of what has been accomplished in

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* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Chairman's address, read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

the elucidation of this subject we owe to the laboratory. The fact that it is not the patient suffering from certain infections who is the greatest danger to the community, as regards the spread of the infection, but those who have been in contact with him and who present no appreciable symptoms of disease, although generally admitted by well informed physicians today, would have been laughed into temporary oblivion twenty years ago; and even today it is doubtful whether the great mass of the medical profession realizes the vital part "contact carriers" play in the transmission of some of the most important contagious and infectious diseases.

Carriers of the various bacterial and protozoan parasites causing disease are usually divided into two great classes: "convalescent carriers," or those who have recovered from an attack of the disease but who continue to carry the causative parasite, and "contact carriers," or those who have never suffered from a recognized attack but who carry the specific parasite, derived through more or less intimate contact with those suffering from the disease. As there is no reason why a contact carrier should not transmit the parasite to other individuals who do not afterward develop the disease, but thus, in turn, become carriers of the infection, it is necessary to include a third class of carriers: those who have never had the disease or been in contact with patients suffering from the disease, but who have become infected through contact with contact carriers of the parasite.

It is now a generally accepted belief that contact carriers are the most important agents in the transmission of many infections. Being more numerous than are convalescent carriers, and moving freely about in the community, they are the great causes of the endemic presence of these infections in the community, and the origin of most of the epidemics which occur from time to time when conditions are favorable. Not only are these contact carriers the most important source of endemic and epidemic infections; they are also the origin of other carriers, and this fact, very often overlooked or forgotten, is probably of the greatest importance in the etiology of epidemics.

While it is generally believed that contact carriers have never suffered from the diseases due to the parasites they are carrying, it is the purpose of this contribution to call attention to the fact that a very considerable proportion of them have presented, at one time or another, symptoms which were undoubtedly due to the parasite they carry. While there is no question that many individuals who have never shown any appreciable symptoms of infection become carriers of pathogenic organisms, it is equally true that many so-called contact carriers have, in reality, suffered from symptoms of infection, and are, in effect, convalescent carriers rather than contact carriers of the specific parasite. This class of carriers originates from unrecognized cases of contagious or infectious disease, cases in which the symptoms of the infection were so slight or atypical as to mislead the physician, or cases that have caused the patient so little inconvenience that medical advice was not sought. A considerable proportion of contact carriers belong to this category, and the recognition of this fact is of value to the physician, as it should lead him to a more careful consideration of apparently trivial symptoms and to the greater utilization of laboratory aids in the diagnosis of their cause.

Many authorities on preventive medicine have called attention to the importance of "missed" or unrecognized cases of contagious and infectious disease, and have recognized that they present one of the most difficult problems in the control of infections. Because of the mild character of the symptoms the patient generally pursues his vocation, and thus comes in contact with many susceptible individuals who may develop the disease. However, his pernicious activity does not stop here, for he often becomes a carrier of the infection and may transmit it for long periods of time, giving rise, through contact, to other "carriers." If, as the result of laboratory examinations, the carrier condition is discovered, he is generally classed as a "contact carrier," although in reality he is a convalescent carrier of the infection.

The importance of diagnosing these mild infections is obvious if we would prevent the transmission of infection to others; and because I believe that most of them would be recognized if physicians were on the lookout for them, I have thought that it might be of interest and value to consider briefly a few of the more important infectious diseases from this standpoint. For this purpose I have selected diphtheria, typhoid fever, malaria and amebiasis, both because these diseases occur commonly throughout the United States and because they illustrate very well the relation of unrecognized infections, both bacterial and protozoal, to the production of "carriers."

DIPHTHERIA

The fact that apparently healthy individuals may harbor virulent diphtheria bacilli in their throats was recognized by Loeffler,¹ as early as 1884, for in his original description of this organism he stated that one of the most virulent strains of the bacillus with which he worked was isolated from the throat of a perfectly healthy individual. In 1890, Escherich² announced that the diphtheria bacillus was frequently found in the throats of persons convalescent from the disease, after the disappearance of the membrane, and this observation originated many investigations as to how long the bacilli persisted, investigations that have proved beyond all doubt that the convalescent carrier of the diphtheria bacillus is a common and most important source of the disease. The results of these studies have been ably summarized by Ledingham and Arkwright,³ Simon,⁴ Weaver⁵ and others, but space forbids their consideration at this time, though it may be stated that the bacillus may persist in the throats of convalescents for periods of several weeks or months. The recent studies of Weaver⁵ show that approximately two thirds of the convalescents become negative within two weeks after the disappearance of the membrane, about 70 per cent. within three weeks after the onset of the disease, and nearly 84 per cent. within four weeks of the onset. Simon⁴ states that the results of the best investigators show that 85 per cent. of diphtheria convalescents are negative for the bacillus by the end of the fifth week, and 98 per cent. by the end of the ninth week. However, the bacilli may per-

1. Loeffler: *Arb. a. d. k. Gsndhtsamte* 2: 439, 1884.

2. Escherich: *Centralbl. f. Bakteriol.* 7: 472, 1890.

3. Ledingham and Arkwright: *The Carrier Problem in Infectious Diseases*, New York, 1912, p. 163.

4. Simon: *Human Infection Carriers*, Philadelphia, 1919, p. 38.

5. Weaver, G. H.: *Diphtheria Carriers*, J. A. M. A. 76: 831 (March 26) 1921.

sist for much longer periods of time, and Prip⁶ records a case in which they were present for four years.

While the data regarding convalescent carriers of diphtheria were being collected and studied, it became evident that in the transmission of the disease the contact carrier was of far greater importance than the former, as the observations demonstrated that a considerable proportion of apparently healthy individuals, in more or less close contact with diphtheria patients, became infected and carried the bacilli in their throats, although appreciable symptoms of the infection were lacking.

As regards the frequency of these contact carriers, it may be stated that the percentage varies in different localities and under different conditions. Much of the data has been critically reviewed by Graham-Smith,⁷ and he concludes that when there was very close contact, as in families in which no precautions were taken against infection, the proportion of carriers among healthy individuals might run as high as 36 per cent.; in hospital wards and institutions as high as 14 per cent., and among pupils of infected schools as high as 8.7 per cent. Weaver,⁸ as the result of biweekly cultures extending over two years in a hospital for contagious diseases, found that 15.2 per cent. of the nurses became contact carriers of diphtheria. Cultures of 800 apparently healthy schoolchildren were taken in Baltimore by Gelion, Moss and Guthrie.⁹ Of these, 10.6 per cent. were found positive for the bacillus, while only 3.6 per cent. of the cultures taken in a study of 2,507 apparently healthy individuals of varying age and social position in the same city were found positive.

The observations noted, and many others of like character, prove that a considerable proportion of apparently healthy individuals become contact carriers of the diphtheria bacillus; but it is important to remember that they do not all carry virulent bacilli, and hence only a certain proportion are a serious menace as regards the transmission of the disease.

The question arises as to how many of these so-called contact carriers are really convalescent carriers, having suffered from an attack of diphtheria so mild as to escape recognition. It is well known to every physician that many mild cases of this disease occur in which the symptoms are so slight as to mislead the physician or be neglected by the patient, and it is reasonable to believe that many of these cases become carriers of the infection. While the physician is not consulted by a certain proportion of patients suffering from these mild diphtheritic infections, many do consult a physician, complaining of general malaise and sore throat; but unless a false membrane is present it is seldom that the physician suspects diphtheria and requests a bacteriologic examination. In my own experience, covering the bacteriologic examination of hundreds of soldiers suffering from sore throat without the presence of a false membrane, a considerable proportion of cultures taken proved positive for the diphtheria bacillus, and many of the men examined became carriers. Had it not been the routine practice to make a bacteriologic examination of the throats of all men complaining of throat symptoms accompanied by signs of inflammation, their cases would have remained

unrecognized, and if the carrier condition had been discovered later, they would have been regarded as contact carriers, whereas they were really convalescent carriers of the bacillus.

A careful inquiry into the history of many contact carriers of the diphtheria bacillus will result in the information that soreness and inflammation of the throat occurred at some previous time, but the symptoms were so slight that the physician consulted did not suspect diphtheria and no bacteriologic examination was made. Weaver⁵ has recently confirmed the importance of these unrecognized infections in producing carriers, and he states that of fifty-two patients entering the Durand Hospital as carriers no less than twelve gave a history of recent sore throat. The bacteriologic examination of the throat has been much neglected in these mild infections because of the belief, still too prevalent, that diphtheria is always accompanied by the formation of a false membrane, although every physician of wide experience frequently observes cases of the disease in which the membrane is absent, and it is more than probable that such cases form a considerable proportion of all diphtheritic infections.

It is obvious that a bacteriologic examination of the throat of every patient complaining of soreness in that region accompanied by signs of inflammation would result in the discovery of these mild infections and their isolation and treatment, thus greatly reducing the incidence of the disease and preventing the carrier state. While I have no doubt that perfectly healthy individuals may become carriers of the bacillus, I am of the firm opinion that the great majority of the "carriers" of virulent diphtheria bacilli have suffered from some symptoms, however mild, of the infection, and are actually convalescent carriers of the organisms.

Other factors of great importance in the production of "carriers" of diphtheria are unrecognized diseased conditions of the throat and nasal passages caused by other pathogenic organisms; for it is now well recognized that secondary infections resulting in inflammatory conditions of the nose and throat favor the production of carriers of the diphtheria bacillus. Hypertrophied and diseased tonsils, adenoids, ulcerative and chronically inflamed mucous membranes form ideal breeding places for the diphtheria bacillus, and in almost every instance a careful examination of a carrier of this parasite will result in the demonstration of some pathologic condition of the mucous membrane of the respiratory tract.

Many observers have demonstrated the diphtheria bacillus in the crypts of the tonsils in carriers of diphtheria, and Nichols, at the Army Medical School, has demonstrated them in the walls of the tonsillar crypts, in a tonsil which had been removed from a carrier. That the tonsils furnish a focus of infection in these carriers is proved by the fact that their removal cures the carrier condition, as shown by the results obtained by Keefer, Friedberg and Aronson,¹⁰ Hartley and Martin,¹¹ Weaver¹² and many others. The presence of adenoids is another often unrecognized condition favoring the production of diphtheria carriers, and their removal is almost invariably followed by the disappearance of the bacilli, while in many diphtheria carriers

10. Keefer, F. R.; Friedberg, S. A., and Aronson, J. D.: A Study of Diphtheria Carriers in a Military Camp, *J. A. M. A.* **71**: 1206 (Oct. 12) 1918.

11. Hartley and Martin: *Proc. Roy. Soc. Med. (Sect. Epidemiology and State Med.)* **13**: 277 (July) 1920.

12. Weaver, G. H.: Diphtheria Carriers, *J. A. M. A.* **76**: 831 (March 26) 1921.

6. Prip: *Ztschr. f. Hyg. u. Infektionskrankh.* **36**: 283, 1901.

7. Graham-Smith: *Bacteriology of Diphtheria*, London, 1908, p. 187.

8. Weaver: *J. Infect. Dis.* **20**: 125, 1917.

9. Gelion, Moss and Guthrie: *Bull. Johns Hopkins Hosp.* **31**: 381, 1920.

there exists a streptococcal infection of the throat which has undoubtedly helped in the production of the carrier state.

From this brief review of the subject, it is evident that unrecognized diphtheria, as well as unrecognized infections with other pathogenic organisms, leads to the production of diphtheria carriers, and that greater care in the diagnosis of the apparently trivial inflammations of the throat and nose should be employed if we desire to reduce the number of carriers and, thus, the incidence of the disease. As the true etiologic nature of these mild infections can be determined only by a bacteriologic examination, this measure should be insisted on in every case in which it can be employed, and fortunately, with our municipal and other laboratories, it is now possible to have cultures examined in the vast majority of patients presenting symptoms suggestive of diphtheritic infection of the throat or nose.

TYPHOID FEVER

Patients recovering from typhoid fever may harbor virulent typhoid bacilli for weeks, months or even years, and these convalescent carriers are of the greatest importance in the transmission of this infection. Robert Koch,¹³ in an address delivered in November, 1902, was the first to call attention to this method of transmission of the disease, stating that patients who had recovered from typhoid sometimes excreted the bacillus in the feces for long periods of time, thus becoming carriers of the infection. However, prior to Koch's discovery, Horton Smith,¹⁴ in his Goulstonian Lectures of 1900, had mentioned the importance of the most dangerous type of typhoid carrier, the so-called "urinary carrier," in whom the bacilli were excreted in the urine from some focus of infection in the urinary tract.

It would be but a repetition of well known facts to discuss here the data that have proved that a certain proportion of convalescents from typhoid fever become chronic carriers of the typhoid bacillus, this proportion varying somewhat in different localities and among different races. Miller¹⁵ states that about 6 per cent. of typhoid patients become "intestinal carriers," and of these about two thirds become chronic carriers of the bacillus, one third of the cases clearing up within three months after convalescence begins.

In addition to the convalescent carrier of typhoid, we now know that approximately 0.5 to 1 per cent. of apparently healthy individuals harbor the bacillus and are classed as contact carriers of the infection. Gay¹⁶ has collected the data concerning the examination of 32,000 persons not suffering from the disease, of whom 194, or 0.6 per cent., were found to present typhoid bacilli in their feces, while Klinger¹⁷ found that about 2 per cent. of 431 healthy individuals he examined showed the bacilli in the feces.

Perhaps there is no other infectious fever in which so many atypical and mild attacks occur as in typhoid, and it is common knowledge, or should be, that many cases of this disease occur in which the symptoms are so slight as to be unrecognized by the physician or even to cause the sufferer to seek medical advice.

It is my belief that the vast majority of the so-called contact carriers of the typhoid bacillus are in reality convalescent carriers; for, if a history of symptoms that might be referable to this disease is carefully sought, it will be found that most healthy carriers have at some time presented such symptoms. It is impossible to believe otherwise when one considers the small percentage of such carriers as compared with the large number of mild and atypical cases of typhoid that are observed by physicians, to say nothing of the many that never come under medical observation.

My own experience at Chickamauga Park, in 1898, during the greatest epidemic of typhoid that this country has ever witnessed, early convinced me that many individuals suffer from this disease who do not, at any time during the progress of the infection, consider themselves sick enough to give up their vocation, or, in military service in times of stress, to go on sick-report. Of the physicians and nurses attending the hundreds of cases at the Sternberg General Hospital, at that place, I believe from personal observation that fully one half of those who did not develop well marked typhoid suffered from mild and atypical attacks, during which they continued to perform their duties. These attacks were marked by more or less malaise, diarrhea, slight fever, headache and muscular soreness and pain, and extended over periods varying from three or four days to a week or more. As this was at a period prior to the discovery of carriers of this disease, bacteriologic examinations of the stools were not made in these cases; but most of them developed strong Widal reactions, thus proving that they had suffered from typhoid infection. A certain proportion of these individuals must have become convalescent carriers of the bacillus, but practically all of them would have denied that they had ever had typhoid fever.

How mild the symptoms may be in these atypical cases is well illustrated in the study of an epidemic of typhoid among French soldiers of the Seventy-first Infantry Regiment at the Saint Brieuc garrison published by Billet¹⁸ and his co-workers. A careful bacteriologic examination was made of all suspects, and many gave either positive Widal reactions or typhoid bacilli were recovered from the feces; and in some of these cases the symptoms were so mild that no attention would have been paid to them under ordinary conditions. In fifty-seven such cases, only fourteen patients had a fever, and this lasted only from three to five days; seven had a slight fever lasting two days; while in thirty-four the temperature remained normal. In eight cases the only symptom was constipation, and in fifteen headache, loss of appetite, a furred tongue, and a feeling of malaise were the prominent symptoms. Of other symptoms noted, diarrhea, stiff neck, anginal pains and muscular rheumatism may be mentioned. Of these patients, 20.3 per cent. were discharging typhoid bacilli in the stools; while in seven of the cases blood cultures were positive for the typhoid bacillus. When it is remembered that under ordinary conditions none of these cases would have been recognized as typhoid fever, it is evident that such unrecognized infections must be very common and a prolific cause of carriers of the disease. Indeed, while such an opinion may sound very radical, I am convinced, from my own experience and that of others recorded in the literature of the subject, that an individual rarely becomes a "carrier"

13. Koch: Sitzungsber. Kaiser Wilhelms Akad., Nov. 28, 1902.

14. Smith, Horton: Brit. M. J. 1:827, 1900.

15. Miller: Typhoid Fever, Oxford Medicine, New York, Oxford University Press 4:674, 1921.

16. Gay, F. P.: Typhoid Fever Considered as a Problem of Scientific Medicine, New York, the Macmillan Company, 1918, p. 124.

17. Klinger: Arb. a. d. k. Gsundtsamte 24:90, 1906.

18. Billet: Arch. de méd. et pharm. mil. 55:259, 1910.

of the typhoid bacillus without suffering from symptoms of the infection, and that the vast majority of carriers are convalescent carriers rather than contact carriers.

In view of the relation of these mild and atypical typhoid infections in the production of carriers, the physician should be constantly on the lookout for them, especially when the disease is epidemic in a locality. Patients complaining of malaise, loss of appetite, headache, muscular soreness and attacks of diarrhea, and showing a furred tongue and slight rises in temperature, should have blood cultures, and bacteriologic examinations of the feces and urine, as well as a Widal test. Only in this way can these mild typhoid infections be recognized and the proper steps taken to prevent the transmission of the disease to others.

THE MALARIAL FEVERS

While unrecognized infections are of great importance in the production of carriers of the bacterial parasites causing disease, they are of even greater importance in the production of carriers of certain protozoa that cause disease in man. Perhaps the best illustration of this is in the instance of the malarial fevers. The plasmodia causing these fevers develop in the blood of man certain forms, called gametes, which transmit the infection to the mosquito, and which later develop into forms infecting man. It is well known that the gametes do not usually appear in the blood of man until from ten to fourteen days have elapsed after the appearance of symptoms, and until they appear man is not infective to the mosquito. Individuals whose blood contains the gametes are carriers of the malarial plasmodia, but only about 50 per cent. of individuals infected with the plasmodia develop gametes and thus become carriers.

It is well known that in every malarial locality a certain proportion of apparently healthy individuals harbor the plasmodia, and that approximately 50 per cent. of these have gametes in their blood and are "carriers" of the infection. The proportion of latent infection varies in different localities and for different ages, but the accompanying table, compiled from the observations of numerous investigators, gives a good general idea of the amount of latent malarial infection in the average malarial locality in the tropics and subtropics.

LATENT MALARIAL INFECTION AT DIFFERENT AGES

Age	No. of Cases	Positive	Per Cent.
From 1 to 5 years.....	6,288	1,407	22.3
From 5 to 10 years.....	5,305	1,279	24.1
From 10 to 15 years.....	3,480	966	27.7
Adults	15,440	3,164	20.4
Totals	30,513	6,816	22.3

From the figures given in the table, it is evident that over 20 per cent. of apparently healthy natives in most malarial regions harbor the plasmodia, and it is roughly estimated that of this percentage about 50 per cent. are carriers of the infection by reason of showing gametes in their blood. In very badly infected districts as high as from 60 to 70 per cent. of apparently healthy children have been found infected, and at Camp Stotsenburg, in the Philippines, I¹⁹ found over 70 per cent. of the children and over 60 per cent. of apparently healthy adult natives infected, one or more of the species of malaria plasmodia being found in their blood.

Of this number over 50 per cent. showed gametes and were carriers of the infection. In localities less severely infected the number of latent infections and carriers may be much smaller. Thus Bass,²⁰ in Sunflower County, Miss., found that 18.3 per cent. of 2,176 individuals who claimed they had not suffered from malaria for one year showed plasmodia in their blood, while in Bolivar County, Miss., of 2,993 individuals who gave negative histories of malaria, 15.9 per cent showed plasmodia in their blood. Bass²¹ aptly says: "This does not mean that none of these had attacks or clinical manifestations of malaria that could have been recognized by proper examination by a competent physician, but it means that they were not recognized by themselves or by physicians."

It is impossible to state how many of these carriers of malaria have actually had mild attacks of the disease, owing to the almost absolute lack of accurate data on the subject; but it is well known to all students of malarial infection that the symptoms produced by the plasmodia are often so atypical as to simulate other infections, thus frequently misleading the physician as regards diagnosis. Many carriers of malaria will state that they have never had the disease because they believe that malaria means a paroxysm of chill, fever and sweating; but if they are questioned as to the occurrence of atypical malarial symptoms, they will generally admit that they have suffered from them.

From personal observation, I believe that the vast majority of carriers of malaria have had symptoms of the infection that could have been recognized by a trained physician, and I am sure that the infected individual often consults the physician for the relief of symptoms actually due to the plasmodia but which he believes to be due to some other cause. I have often found a slightly elevated temperature in carriers of malaria who stated that they were perfectly well, and in almost every instance a careful examination will reveal other evidences of malarial infection, as slight anemia, a feeling of weakness and malaise, loss of appetite, digestive disturbances, and perhaps an enlarged spleen. Inquiry into the history of these "carriers" will generally result in the information that there have been periods of ill health, characterized by chilliness, headache, disinclination to exertion, loss of appetite and other symptoms, which, while not those of the typical malarial paroxysm, would have been regarded as suspicious by the trained physician, and would have led to an examination of the blood. The truth of these statements is corroborated by the physical appearance of the vast majority of carriers of the malarial plasmodia. Almost without exception they appear, and are, below par physically, as shown by the sallow complexion, lack-luster eye and pale mucous membranes, and the reduced vitality, evidenced by lack of ambition and inability to comfortably perform the usual duties of life.

Owing to the peculiar life history of the malaria plasmodia the condition of every carrier of the infection must have resulted from an unrecognized clinical attack, as the gametes, which mark the infective stage of the plasmodia, do not develop until the plasmodia have become numerous enough to produce symptoms and usually are not observed in the blood until from ten to fourteen days have elapsed after the occurrence

19. Craig: Philippine J. Sc. (Sec. B) 5: 523, 1906.

20. Bass: South. M. J. 12: 190 (April) 1919.
21. Bass: South. M. J. 12: 460 (Aug.) 1919.

of appreciable symptoms, so far as our clinical observation extends. The presence of gametes, then, is a proof that there must have been some clinical symptoms of the infection, the true nature of which was unrecognized by either patient or physician because of their mild or atypical character. Had malaria been suspected at this time a blood examination would have shown the presence of the plasmodia, and proper treatment would have prevented the development of gametes, and thus prevented the carrier state and the consequent transmission of the disease. Therefore, it is evident that in this very important group of infections, unrecognized infections are practically alone responsible for the production of carriers among individuals who are apparently free from infection and who consider that they have never suffered from malaria.

In malarial regions an examination of the blood of every patient should be a routine practice; for malaria, like syphilis, is a protean disease, capable of causing symptoms varying in severity from the most trivial to those endangering life. Unrecognized malarial infection leads to the production of carriers of malaria; and, as most of the mild infections are impossible of recognition except through a blood examination, the latter procedure should be as much a matter of routine in a malarial region as is the use of the clinical thermometer. If such examinations were made, the number of carriers would be greatly reduced, as proper treatment with quinin will prevent their development, or if the carrier state is already present, will result in its disappearance.

AMEBIASIS

Infection with *Endameba histolytica*, the cause of amebic dysentery, is widespread in the tropics and the subtropics and is fast becoming a serious problem in the United States, owing to the enormous number of carriers of this parasite among the soldiers returning from overseas service since the conclusion of the World War. It should be understood that the term "amebic dysentery" is a most unfortunate one if it be used as synonymous with "amebiasis"; for while dysenteric symptoms are the most serious evidences of infection with *Endameba histolytica*, the vast majority of infections with this parasite are not accompanied by these symptoms but with much milder symptoms, such as indigestion, tenderness of the abdomen, slight diarrhea, and a general lack of vitality. Where one case of amebic dysentery occurs, there occur many cases of amebic diarrhea, characterized by short periods of mild diarrhea alternating with periods of slight constipation, symptoms which are not likely to be considered as due to amebas owing to the nonrecognition, by the mass of the medical profession, of the widespread extent of this infection in the United States.

Walker and Sellards,²² in 1913, were the first to call attention to the importance of "carriers" of amebiasis, proving that the cysts of the parasite are the infective agents and that these cysts may occur in apparently healthy individuals who give no history of ever having suffered from dysentery. In 1916, I²³ investigated a small epidemic of amebic dysentery occurring among our soldiers on the Mexican border, at El Paso, and found that, of fifty-five apparently healthy men in one of the truck companies, five, or 9 per cent., were carriers of the dysentery ameba. Wenyon and O'Connor²⁴ examined the stools of 1,979 healthy British

soldiers in Egypt and found that 106 were positive for the cysts of *Endameba histolytica*, the men, therefore, being carriers of the parasite; while of 534 healthy native soldiers, 13.5 per cent. were found to be carriers. Mathews and Smith²⁵ made 23,924 examinations of 4,968 convalescent dysenteric patients from the Western Front, most of them recovering from bacillary dysentery (?) and found that over 12 per cent. of them were carriers of the dysentery ameba. They estimate that at least 25 per cent. would have been found to be "carriers" had a greater number of examinations been made. In this country, Kofoed²⁶ examined 2,300 soldiers returning from overseas service and 576 home service men and found that 12.8 per cent. of the overseas men and 4.3 per cent. of the home-service men were carriers of *Endameba histolytica*. He has recently published the results of an investigation of ex-service men attending the University of California,²⁶ examining ninety-one men who had been overseas, thirty-four who had been on home service, and twenty-nine as yet undetermined. Sixty-seven per cent. of the overseas men, 26.5 per cent. of the home service men, and 41 per cent. of the undetermined were found to be carriers of this parasite. Kofoed calls attention to the very important fact that if this percentage holds good for the 3,000,000 soldiers we had overseas, there must have returned to this country at least 500,000 men who were carriers of the cause of amebic dysentery and potential agents for scattering the infection throughout the United States.

In view of these observations it is needless to urge the importance of recognizing symptoms of infection with this parasite, and the first fact to be appreciated is that most of these carriers have had symptoms due to their infection. A well defined history of dysentery can be obtained in a few of them, but usually a history of dysentery is denied. However, if questioned regarding the occurrence of slight attacks of diarrhea, generally lasting only a few hours, the vast majority of them will admit the occurrence of this symptom, stating that these attacks frequently occur at night and subside after the passage of one or more profuse stools accompanied by more or less abdominal pain.

These carriers also suffer from discomfort after eating, intestinal indigestion and a feeling of malaise, and periods of loss of weight, especially in hot weather; and though they frequently consult physicians for the relief of these symptoms it is but rarely that amebic infection is suspected and a microscopic examination of the feces requested. This unfortunate condition of affairs exists because the medical profession of this country has not yet realized that while amebic dysentery is a comparatively rare condition, amebic diarrhea is very common and is becoming more so; and that, while dysenteric symptoms are the most severe clinical manifestations of infection with *Endameba histolytica*, they are very rare manifestations when compared with the mild forms of diarrhea caused by this parasite, in which the true etiologic agent is not even suspected.

The recent observations on this subject have shown that the carrier of amebiasis is the only source of the infection, as the vegetative stages of the parasite which are present when acute symptoms occur are not infective, and that unrecognized infections are the chief

22. Walker and Sellards: Philippine J. Sc. (Sec. B) 8: 253, 1913.

23. Craig, C. F.: Mil. Surgeon 2: 286-423, 1917.

24. Wenyon and O'Connor: J. Roy. Army Med. Corps 28: 12, 1917.

25. Mathews and Smith: Ann. Trop. M. & Parasitol. 13: 83, 1919.

26. Kofoed: Am. J. Trop. Dis. (etc.) 1: 41, 1921.

cause of the production of these carriers. These facts are of the greatest importance to the practitioner of preventive medicine; for while we have no specific treatment which will prevent the development of carriers or cure them in 100 per cent. of the cases, we have good reason to believe that the prompt recognition and proper treatment of this infection will prevent a large proportion of patients from becoming carriers, and will cure a considerable proportion of those in whom the carrier state has developed.

CONCLUSION

The diseases that have been considered are by no means the only ones in which unrecognized infection leads to the production of carriers. A volume could be written on this very important problem; but if this brief and very inadequate discussion of the subject will result in greater attention being paid by physicians to the apparently trivial symptoms often complained of by their patients, and to the greater utilization of the aids to diagnosis offered by the laboratory, I shall feel that it has accomplished a useful purpose. If it will lead to a more frequent employment of blood cultures and microscopic examinations of the blood in cases of undetermined fevers; of throat cultures in the apparently mild inflammations of the throat and nose; and of microscopic examination of the feces in patients suffering from diarrhea and other intestinal symptoms, I feel sure that it will have, in some measure, aided in the prevention of infections that are transmitted by "carriers."

Surgeon-General's Office.

UROLOGY AND THE GENERAL PRACTITIONER *

E. O. SMITH, M.D.

CINCINNATI

The word urology is derived from two Greek words, *οὐρον* urine, and *λόγος* discourse. Urology in this limited sense is as old as medicine. Urology, as it now is, not only includes a study of the urine but also all pathologic conditions found in the urinary and genital organs. The urologists of centuries ago made ocular studies of the urine and in this way thought they were able to tell what was wrong with the patient. By looking at the urine in receptacles shaped to resemble a distended bladder these gifted men could determine not only kidney and bladder lesions, but more remote disturbances, such as pregnancy, hysteria and love sickness.

In the papyrus Ebers, medical manuscripts of the Egyptians, about 1550 B. C., are found several references to medical treatment of urinary disorders, but no mention is made of surgery of the urinary organs.

As early as 600 B. C. the Hindus performed perineal sections for vesical calculi. Many of the natives of India, then as now, were sufferers from urinary calculi. The old adage "Necessity is the mother of invention" aptly applies here, only in this case it was a matter of intervention. Strange to relate, the technic of perineal lithotomy of today does not differ much from that of our remote forefathers. The Hindus

also seemed to have suffered from urethral stricture, cause not mentioned, which they dilated every three to five days with instruments of increasing size: splendid common sense way of treating strictures today.

Hippocrates, 400 years B. C., in his writings, made many references to urologic subjects. He described the development of a bladder stone from a small nucleus. He recommended nephrotomy for abscess of the kidney. As far as I have been able to learn, Hippocrates was the first to admit that certain surgeons could do urologic surgery better than others. In the famous hippocratic oath is found a clause in which the person taking the oath promises to refer all lithotomy cases to "men who are practitioners of this work."

Catheterization for retention of urine, particularly in men of advanced years (prostatic hypertrophy) was described by Celsus about 20 A. D.

During the medieval period, practically no medical or surgical progress was made. Surgery was relegated to the barbers, and medicine to the monks. During this time and later, there were numerous lithotomists in Italy traveling from place to place.

During the fourteenth century there was founded in Paris the College of Saint Comé by Jean Pitard, and surgery took on new life. Movable kidneys were described. External urethrotomies were performed for stricture and impacted calculi.

Modern urology, urology as it is today, did not begin its real development until well into the nineteenth century. Among the factors that made progress possible were the development of the microscope; the discovery of anesthesia, both general and local; the discovery and classification of bacteria, such as the gonococcus, tubercle bacillus, streptococcus, staphylococcus and colon bacillus; urinalysis, chemical and microscopic; artificial illumination of the bladder—cystoscopy, and roentgenography.

Urologic diagnosis rests on a tripod of mechanical aids: the microscope, the cystoscope and the roentgen rays. With the proper application of these agents, used singly in pairs or all three, practically all pathologic conditions found in the urinary tract can be located, recognized and classified.

Bacterial and other pathologic content of the urine can be determined by careful use of the microscope.

Anything abnormal in the bladder can be seen through the cystoscope, as, for instance, inflamed mucosa, edema, ulcers, trabeculations, diverticular openings, tumors, cysts, calculi, foreign bodies and prostatic obstructions. With the catheterizing cystoscope, urine is collected from each kidney for chemical and microscopic study, renal function determined, and pelvis injected for pyelography.

The roentgenogram is particularly helpful in cases of suspected urinary calculus; yet the roentgen-ray findings are not 100 per cent. correct. Further than this, the roentgen ray gives us but little information until assisted by other agents. Suspected diverticulum of the bladder is demonstrated by the roentgen ray when the bladder is filled with thorium, sodium bromid or some chemical in solution that produces a shadow on the roentgen-ray plate or film. In this manner bladder tumors can be shown by roentgenogram when there is too much bleeding to make a satisfactory cystoscopic examination. Dilated ureters are frequently seen on the roentgenogram when a cystogram is made.

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

By the combined use of the cystoscope and roentgen ray, hydronephrosis, renal neoplasm, displaced kidneys, kinks and angulations of ureters, renal and ureteral calculi are very definitely diagnosed in a vast majority of cases. Illustrating this point, a patient having hematuria, with roentgen-ray examination negative, cystoscopic examination showing all the blood in the right kidney urine, and still no diagnosis, the pelvis of that kidney was filled with sodium bromid solution, a roentgenogram was made, and the contour of the pelvis was found to be abnormal; several of the calices were obliterated. The diagnosis, renal neoplasm, was verified surgically. This diagnosis could not have been made with either roentgen ray or cystoscope alone, but combined, the findings were quite accurate and correct.

Among the subjective symptoms that suggest a urologic examination are pain, dysuria and pollakiuria. The pain may be abdominal, lumbar, inguinal, genital, perineal or rectal. This seems to include considerable anatomic territory; but it should be borne in mind that a hasty diagnosis based largely on localized pain may lead to a gallbladder operation when the real cause of the pain is in the kidney, a calculus, a tumor or an abscess. A hasty diagnosis may lead to an appendectomy or an oophorectomy when the cause of the pain is due to a calculus in the ureter. A hasty diagnosis may lead to the removal of a few small hemorrhoids when the cause of the pain is in the seminal vesicles or prostate. A hasty diagnosis may lead to a gastroenterostomy when the seat of the trouble is in the spinal cord.

Dysuria—painful urination—if at all persistent demands a careful search for the cause. This cause may be found in the urethra, prostate, bladder, kidneys or in the pelvis extravesically. Dysuria is very often associated with pollakiuria—frequent urination—yet many patients who are troubled with frequent urination do not suffer pain. It would be somewhat disquieting, after having had a patient's ovaries and tubes removed for frequent, painful urination, to learn that all of her urinary troubles were due to the fact that she was a morphin habitué or, what would chagrin one even more, to discover that she had pinworms.

The objective symptoms that certainly justify urologic investigation are pyuria and hematuria. Pus and blood are not often found in an authentic specimen of urine unless there is some pathologic condition present in the urogenital tract. Occasionally the blood in the urine may be due to some abnormal condition outside the urogenital system. A large pancreatic cyst may cause left renal hemorrhage by pressure, and in the same way a pelvic tumor may cause hematuria. It must not be forgotten that some of the infectious diseases cause hematuria; malaria particularly may not only produce renal hematuria but the bleeding may be confined to one kidney. Certain drugs may also cause hematuria.

While blood in the urine may be the effect of some extra-urogenital disturbance, pus in the urine is more likely to be there because of some trouble within the urogenital tract. In the preliminary examination for the source of pus in urine, the urine should be voided in two receptacles. If the second portion is practically free from pus, it is reasonable to suppose that the trouble is not in the kidneys, ureters or bladder. If both portions of urine contain about the same

amount of pus, then the bladder, ureters and kidneys must be examined roentgenographically and cystoscopically.

With any or all of these symptoms present, how far can the general practitioner proceed with his examination and treatment? The first thing that he can do is to examine his patient. This is a good habit to acquire, no matter what symptoms the patient presents, whether they be cardiac, respiratory, gastric, mental or urologic. We should keep practicing the things we learned when we were taught physical diagnosis. The physician who examines his patient certainly is in a better position to diagnose and treat the case than the physician who accepts the patient's diagnosis and sometimes his suggestions for treatment. After having made a careful general examination, he should then direct his attention to the urinary tract. Every general practitioner should be prepared to make a careful microscopic examination of sedimented urine, including the ordinary bacteriologic stains.

When this is done, not once but many times for the same patient, much valuable information is obtained. Casts, epithelial cells, leukocytes, both mononuclear and polymorphonuclear, red cells and crystals are found in this manner. Simple bacterial stains will reveal the presence of ordinary infections found in the urinary tract. A careful microscopic study of the urine does not locate the pathologic lesion, but it is refreshing to the urologist when the family physician who brings a patient for examination has with him a report of such a careful study already completed. Such a family physician will not treat a patient complaining of frequent urination for several years, not even for several months, before he wants to know something more definite. He will not administer belladonna, alkalis and hexamethylenamin empirically for years to a patient who has a vesical calculus as large as a goose egg before he passes a metal sound into the bladder or has some one do it for him. Nor will he order sweet spirit of niter and epinephrin solution for hematuria over a long period of time, before asking for special examination. Some hematurias are intermittent in spite of internal medication, not because of it.

Every graduate of medicine should know how to pass a sound without doing damage to the urethra. If any urethral instrument cannot be coaxed into the bladder by means of gentle manipulation, it certainly cannot be safely forced through. There is probably no other part of the human anatomy requiring treatment that demands more gentleness and patience than the male urethra. If this fact is not observed, irreparable damage can be done in a very short time. When there is an indication for the passage of urethral instruments and the physician cannot easily introduce what he has at hand, he owes it to his patient to seek the aid of some one who possesses the equipment and is sufficiently skilful to give the patient relief and proper treatment without permanent or even temporary injury.

When the cause of urinary disturbance is being sought, one should not forget the central nervous system. Tabes is not infrequent. Syphilis is not to be denied even if the patient denies it. In case of doubt, a Wassermann test should be made, and if negative an examination of the spinal fluid may be very helpful.

No case of urogenital disorder should be treated symptomatically or empirically. For every symptom

there is a cause, and it is only justice to the patient to have that cause located as early as possible. If the cause cannot readily be determined after ordinary examinations in a few days, the patient is entitled to as careful and thorough urologic examination as is available.

19 West Seventh Street.

ABSTRACT OF DISCUSSION

DR. W. C. QUINBY, Boston: It is my habit to teach that the general practitioner, and especially the student, shall make his examination in what I term a "crescendo" fashion, doing that thing which is most obvious and easiest first, which in all diseases is a carefully made general physical examination. The next thing should be a careful microscopic examination of the urine. Third in degree of importance, I feel that every general practitioner should be able to make the ordinary total phenolsulphonephthalein test, the injection of 0.6 mg. and collection of the urine by allowing the patient to pass it two hours and ten minutes afterward, and then be able to read that result against a solution of known intensity. In this way he can get an excellent idea of the total functional ability of the kidneys, so far as the excretion of the dye is concerned. The fourth step is to make what the roentgenologist calls the "K U B" plates—examination of the kidneys, ureters and bladder by roentgen ray. Such examination will give much information. Then, having done these various things, if still more elaborate examination is necessary for a diagnosis, some one with a definite urologic training must enter the field. In a large number of cases it will not be necessary to go so far as to make an injection of the renal pelvis with an opaque substance in order to come to a perfectly satisfactory diagnosis as to what the cause of the patient's illness may be. As urologists, we should urge emphatically the immediate investigation of any patient who has pus or blood in the urine. We see in hospitals only too constantly patients coming for relief, especially those complaining of hematuria, in which it would have been possible to make a diagnosis a year earlier, but coming too late for a successful surgical result. Such cases, as you know, are pathetic and they are very common; but if we continue to preach to all our patients the vast importance, especially in women, of investigating accurately the source of any abnormal bleeding of any sort, or of any pyuria, we shall make progress much more rapidly than we are doing now in controlling malignancy and renal infections.

DR. A. E. GOLDSTEIN, Baltimore: I agree with Dr. Quinby's remarks, but he forgot to make mention of one or two things which I am certain both he and Dr. Smith carry out. One is the important teaching that a negative plain roentgenogram does not necessarily mean that a pathologic lesion of the urinary tract is not present. A plain roentgenogram will frequently be negative for calculus and for renal tumor, when very frequently you will find one on the pyelogram. In renal tumors a patient may be seen just at a time when the bleeding has ceased; it may be negative on a plain roentgenogram, and yet on a pyelogram it will be brought out. In the cases of calculi it is the same way. We all know that a large number of cases are negative to the roentgen ray, and we must depend on the pyelogram or the wax bulb very frequently. Another important thing that should be taught the general practitioner is the importance of microscopic blood. Macroscopic blood is not so important, for by the time we see the patient in this condition it is probably too late to do anything for him, but the microscopic blood is very important. Often a patient will be referred and in questioning the family physician about the urinary findings he will say that there are a few red blood cells, he claiming that it does not amount to anything. To the urologist that always means something; but to the average general practitioner it does not, and he should be educated as to its importance.

DR. E. O. SMITH, Cincinnati: I have tried to keep in mind the point of view of the general practitioner. The patients go to him first, and the general practitioner should bear in

mind the importance and significance of urinary symptoms. He may suspect something pathologic, and if he cannot clear up the condition within a few days, or within a week or so at the most, he should call to his aid some one who is competent in this particular line. I did not mention the finer methods of precision, the wax tipped catheter and so on, because that does not concern the general practitioner. Dr. Quinby emphasized what the general practitioner can do. He can make a microscopic examination of the urine; he can make a phenolsulphonephthalein test of the kidney function; and if he has a roentgenographer at hand, he can have roentgenograms made of the urinary tract. When he has done these things he will at least have done something, and if he has not been able to locate the trouble by these ordinary means then he owes it to the patient to have a special urologic examination made. I have mentioned in the paper that syphilis is the cause of many urinary symptoms. Urologists often see patients who have been treated empirically for a long time for frequency of urination when they have pronounced spinal cord trouble. The family physician can, at least, make a simple examination and determine whether the patient has such trouble. He can have a Wassermann test made, either in a local laboratory or in a state laboratory. If necessary, he can have both a blood Wassermann and a spinal fluid examination made. The thought I wish to bring out especially is not to treat these patients empirically over a long period of time, but to get busy early and make some definite examination, in order to determine the location and cause of the symptoms, thereby making it possible to apply proper treatment.

DIPHTHERIA PREVENTION WORK IN THE PUBLIC SCHOOLS OF NEW YORK CITY*

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The very successful results obtained by us and by other workers in the active immunization of large numbers of children with diphtheria toxin-antitoxin has stimulated the Department of Health of New York City to begin an active campaign in diphtheria preventive work in the public and parochial schools of this city. Permission was obtained from the department of education to carry out the Schick test and the necessary active immunization in about 250 public schools. Beginning in 1916, a number of schools were Schick tested in the boroughs of Manhattan, the Bronx and Brooklyn. During my absence in war service, the work was continued by Dr. Schroeder and other associates, but it remained limited in extent on account of lack of necessary personnel.

Through the cooperation of the Manhattan Chapter of the American Red Cross, Dr. Park obtained the financial aid necessary to start this work on a more extensive scale. A number of physicians, nurses and assistants were employed and divided into groups. In Manhattan and the Bronx, two groups were working under my direction. Between the end of February, 1921, and the end of the school year we have applied the Schick test in forty-four of the larger schools in these two boroughs, and have tested over 52,000. Those children who gave a positive or a positive combined

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

reaction were injected with toxin-antitoxin. In the first twenty-two schools the injected children were retested with the Schick reaction before the end of the school year, in order to determine which ones had developed an active immunity against diphtheria. The following was the method followed in the schools:

PREPARATION OF A SCHOOL FOR APPLICATION OF SCHICK TEST

An interview was first obtained with the principal or assistant principal, the Schick test and toxin-antitoxin immunization were explained, and the cooperation of the school authorities was invited. Consent blanks and circulars of information¹ to parents were left at the school to be distributed to all the children. Through conference meetings the teachers were addressed by the principal or a physician, and their cooperation also requested. Each child was required to return the consent blank, signed by the parent, with an affirmative or negative statement. The teachers later made out alphabetical lists of the names of those children whose parents had given their consent. Special sheets, called class sheets, were used for this purpose, and also for recording the results of the Schick test and of the injections of toxin-antitoxin.

THE DAY OF THE SCHICK TEST

On the day of the test the children were brought to a classroom, where the physicians and nurses were doing the work. By good cooperation on the part of the principal and the teachers we were able to apply the Schick test and the control test to as many as 500 or 600 children each hour. In one school we tested on one day during school hours 2,400 children, in another double school over 2,700 children. The needles were thoroughly cleaned and sterilized between the tests by wiping them off with a cotton sponge which was placed in a Petri dish and saturated with 95 per cent. ethyl alcohol. A 1 c.c. "Original Record" syringe and a 26 gage one-fourth inch steel needle were found very serviceable for the test.

THE DILUTIONS FOR THE SCHICK TEST AND FOR THE CONTROL TEST

The Schick outfits,² so generally used at the present time and so well adapted to the work where small numbers are to be tested, are not very suitable for the testing of large numbers of children. The dilutions for our work were therefore prepared from bulk toxin, as I suggested in a previous communication.³ The dilutions were made according to the minimal lethal dose strength of the toxin. Our toxin had a minimal lethal dose of 0.01 c.c. A dilution of 1 c.c. of toxin in 1,000 c.c. of saline gave a strength of toxin of which 0.2 c.c. equaled 1/50 minimal lethal dose. To make the reactions more distinct we added 25 per cent. excess of toxin and diluted 1.25 c.c. of toxin in 1,000 c.c. of saline. The dilution thus prepared represented in each 0.2 c.c. 1/40 minimal lethal dose.

For the control test we used instead of 1.25 c.c. 1.5 c.c. of toxin, heated to 75 C. for ten minutes, diluted with 1,000 c.c. of saline. The 20 per cent. excess of

heated toxin in the control dilution, as compared with the unheated toxin used in the Schick dilution, was added for the purpose of allowing for any deterioration that might have taken place in the bacillus protein during the process of heating. By observing this precaution we found that children showing a negative pseudoreaction would have an area of redness and later pigmentation equal in size and appearance on both forearms. In consequence there was less danger of mistaking a vegetable pseudoreaction for a combined positive reaction.

The dilutions were freshly prepared each day for the day's work. No diluted toxin was kept over from one day to another.

The rule was adopted always to make the Schick test on the right forearm about 2 or 3 inches below the bend of the elbow, and the control test on the left forearm in a corresponding location. One knew then exactly where to look for the reactions and could thus avoid confusion in the readings.

THE READING OF THE SCHICK REACTIONS AND THE FIRST INJECTION OF TOXIN-ANTITOXIN

From three to seven days after the Schick tests, the reactions were read. By reading the tests before three days have elapsed, the interpretation of the reactions is not as accurate. Readings made on the third and fourth day showed somewhat better the fading pseudoreactions, but a few doubtful reactions still remained, especially of the positive combined type. These were more accurately interpreted at the later readings. Very faintly positive Schick reactions, however, were likely to show no redness and only a slight brownish pigmentation on the seventh day.

Negative pseudoreactions appear at their greatest intensity at the end of twenty-four hours. By the fourth day, many of these reactions show only a moderate or a faint brownish pigmentation. With some, the shade of redness persists. Others often show a bluish brown discoloration at the site of the test end of the control. Invariably, however, the reactions are quite equal in appearance on the two forearms. Slight differences between the test and control reaction may have no significance. Variations in the bacillus protein content of the test and control solutions, or variation in the technic where different individuals make the Schick test and the control test, may account for these slight differences on the two sides. Marked differences, however, in which the area of redness at the site of the Schick test is always more pronounced and has the other characteristic appearance of a positive reaction, should lead one to interpret the Schick reaction as positive combined. Children who have these positive combined reactions almost always show the more severe local and constitutional reactions after the injection of toxin-antitoxin.

Occasionally we see a small, sharply circumscribed bluish discoloration on one or both forearms. This is produced by slight hemorrhage into the skin at the time of the test, and such reactions are seen quite frequently in children with a hemorrhagic tendency.

The Schick reactions are read as (a) positive, (b), positive combined, (c) negative and (d) negative pseudo. The first and second reactions indicate susceptibility to diphtheria, and the children showing these reactions are given the toxin-antitoxin

1. These are standard forms, copies of which may be obtained on application to the author.

2. Zingher, Abraham: A Simple Outfit for the Distribution of Diphtheria Toxin for the Schick Test, *J. A. M. A.* 65: 329 (July 24) 1915.

3. Zingher, Abraham: Methods of Using Diphtheria Toxin in the Schick Test and of Controlling the Reaction, *Am. J. Dis. Child.* 11: 269 (April) 1916.

injections. The third and fourth reactions indicates immunity to diphtheria.

The term "positive combined" reaction is used to indicate more clearly the reaction previously known as "combined," and the term "negative pseudoreaction" to indicate the reaction generally known as "pseudoreaction." These new terms will help in representing more accurately to the reader the susceptibility or immunity, respectively, of the individual who has been Schick tested.

MIXTURES OF TOXIN-ANTITOXIN AND DOSAGE

In a previous communication⁴ I have emphasized the importance of using a mixture which was slightly underneutralized and yet perfectly safe for the human being. In some of our earliest work, we found that the best results were obtained with a mixture of such toxicity that 5 c.c., representing five times the amount injected into a person, would produce a pronounced local induration and late paralysis in the guinea-pig, but not acute death of the animal. Various mixtures were prepared by Dr. Banzhaf of the Research Laboratory and used in the different schools. In some of the schools the mixture used represented about 3 L plus doses of toxin to 3.5 units of antitoxin, in other schools about 5 L plus doses of toxin and a corresponding amount of antitoxin. The different mixtures have given us variable results, which will be stated farther on.

The dose of toxin-antitoxin was 1.5 c.c. instead of 1 c.c., the amount usually given. The number of doses with the larger amount was two, however, instead of three. The two injections were given to simplify the work in the schools if possible and to eliminate many children, who were found to be immune at the time of the Schick retest, from getting the third injection of toxin-antitoxin. The results in the schools, however, point to the advisability of giving three doses rather than two.

The local and constitutional reactions after the injections of toxin-antitoxin varied considerably in different children. As a rule, those children who had given a simple positive Schick reaction showed very little local disturbance. On the other hand, children who had had a positive combined reaction presented considerable local redness, swelling and tenderness of the arm at the site of injection and varying degrees of constitutional disturbance. Some of these children had a temperature varying from 100 to 103.5 F., which persisted for from one to three days. In all children, however, the local and constitutional symptoms subsided without any after-effects. One of the interesting features was the practical absence of even a moderate local reaction among the young children of the kindergarten and Grade 1 A classes.

THE SECOND INJECTION OF TOXIN-ANTITOXIN

One week later, the positive and positive combined reactors received the second injection in the opposite arm. Occasionally a parent objected to the second injection owing to the painful reaction following the first one, but as a rule the two injections were given to most of the children. Children who were absent were seen a few days later and given the second injection.

RECORD OF SCHICK REACTIONS AND INJECTIONS OF TOXIN-ANTITOXIN

These records were entered on the children's class record cards and on the large class sheets on which the names of the tested children were arranged in alphabetical order. A strict checking up system was used to avoid recording children who had not received the test as giving negative Schick reactions.

SCHICK RETEST OF CHILDREN RECEIVING TOXIN-ANTITOXIN INJECTIONS

A Schick retest was made in twenty-two schools to note the efficiency of the toxin-antitoxin immunization. The late start of the work and the approaching vacations prompted us to retest these schools at an earlier date than we should have otherwise done. These retests were made in most of the schools from two to two and one-half months after the final injection of toxin-antitoxin. One school was retested five months after the injections of toxin-antitoxin.

CERTIFICATES OF DIPHTHERIA IMMUNITY

Two forms of these certificates were issued to the children. One form was given to those who were found to be naturally immune with the original Schick test, and the other form to those who had become immune after toxin-antitoxin injections, as was shown by the Schick retest.

PUBLIC SCHOOLS IN WHICH THE SCHICK TEST WAS CARRIED OUT

Of the forty-four schools in Manhattan and the Bronx in which the Schick test was done, thirty-four were tested by the group of which I had direct charge and the reactions were read by me. Ten schools were tested and read by the second group, of which Dr. O. I. Bloom had charge. The personal equation of many observers reading and interpreting the Schick reactions can therefore be eliminated and the results accepted as being quite uniform. Each child received not only the Schick test but also the control test with heated toxin. The reading of the tests was thus greatly facilitated and rendered quite accurate.

Table 1 shows the schools in which the Schick test was performed, and gives in a tabulated form the total number of positive, negative, negative pseudo and positive combined reactions, and the percentages of these reactions. The schools are arranged in the order in which the susceptible children were found, those having the largest number being placed first in the table.

It is interesting in connection with this table to analyze the density of the population of the different neighborhoods in which the schools are located. It will also be of interest to know the nationality and the race of the children attending the various schools.

(a) Public School 11, Bronx, showing the highest proportion of positive Schick reactions, is located in an old established and rather sparsely settled neighborhood. Most of the children attending this school are of American parentage.

(b) Public School 77 is also located in a fairly old established but more densely populated neighborhood. Many of the children attending this school are of German extraction.

(c) Public Schools 186, 46, 132, 169, 157 and 43 Manhattan are located in the upper west side of the city above One Hundred and Twenty-Fifth Street, in a section including Washington Heights. The children attending most of these schools come from a fairly well-to-do part of the population. The families live as a rule in large and expensive apartment

4. Zingher, Abraham: Preparation and Method of Using Toxin-Antitoxin Mixtures for Active Immunization Against Diphtheria, *J. Infect. Dis.* 21: 493 (Nov.) 1917.

houses, and the children are kept fairly segregated. Public School 54 is attended by a similar class of children from the Broadway and West End Avenue section of the city.

(d) Public Schools 89, 68 and 5 have a large proportion of colored children. In Public School 89 more than 95 per cent. of the children are colored.

(e) Public Schools 54, Bronx, and 40, Bronx, are attended by children of the middle class of our population. The neighborhoods in which these schools are located are well populated, but not densely crowded. These schools are attended to a large extent by children of the Hebrew race.

The following schools are located in congested neighborhoods:

(f) Public Schools 90, 84 and 29 are on the west side of the city. The children attending these schools are mostly of American parentage. Many of the children are of Irish extraction.

as many as 67 per cent. of the children were found to give a positive reaction. The percentage diminishes as we follow the schools down on the table until we reach the schools located in the densely congested sections of the east side, where not more than 16 to 20 per cent. gave positive reactions.

2. Contact immunity seems to be an important element in the establishment of the so-called "natural immunity." Repeated exposure to the diphtheria bacillus in the congested districts not only causes actual clinical cases of diphtheria to develop but also produces mild infections of the mucous membranes which are not recognized as diphtheria, but which may lead to the gradual development of an antitoxic immunity. This theory has received striking support from the

TABLE 1.—THE SCHICK TEST IN THE PUBLIC SCHOOLS OF MANHATTAN AND THE BRONX, NEW YORK CITY

Public School	Location	Total Tested	Schick Positive *	Schick Negative †	Per Cent. Positive	Per Cent. Pseudo		Per Cent. Combined		
						Pseudo	On Total	On Neg.	Combined On	On Total On Pos.
11-Bx	169th St. and Ogden Ave.	297	200	97	67.0	25	8.4	25.7	3	1.0 1.5
77	1st Ave. and 85th St.	667	420	247	62.9	69	10.3	28.0	58	8.7 13.8
186	145th St. and Broadway.....	824	460	364	55.8	102	12.3	28.0	6	0.7 1.3
46	St. Nicholas Ave. and 156th St.	900	498	402	55.3	72	8.0	17.9	1	0.11 0.2
132	182d St. and Wadsworth Ave.	708	356	352	50.2	79	11.1	22.4	4	0.6 1.1
89**	Lenox Ave. and 135th St.	856	411	445	47.9	34	3.9	7.6	6	0.7 1.4
68**	128th St. and Lenox Ave.	896	423	473	47.2	62	6.9	13.1	14	1.5 3.3
54	104th St. and Amsterdam Ave.	433	202	231	46.6	36	6.9	15.5	4	0.9 1.9
90	148th St. and 8th Ave.	953	443	510	46.5	89	9.3	17.4	13	1.4 3.0
169	169th St. and Audubon Ave.	825	379	446	45.9	200	24.2	44.8	28	3.4 7.4
5**	Edgecombe Ave. and 140th St.	1,222	519	703	42.4	147	12.0	20.9	34	2.8 6.5
40-Bx	Prospect Ave. and Jennings St.	1,895	792	1,103	41.8	330	17.4	30.0	57	3.0 7.2
157	St. Nicholas Ave. and 126th St.	961	369	592	38.3	157	16.3	26.5	15	1.5 4.0
54-Bx	Intervale Ave. and Freeman St.	1,243	477	766	38.3	318	25.6	41.5	65	5.2 13.8
52-Bx	Kelly St. and Avenue St. John.....	1,583	603	980	38.0	75	4.8	7.6	9	0.6 1.4
43-Man	129th St. and Amsterdam Ave.	763	285	478	37.6		Not recorded			
84	50th St. and 10th Ave.	612	224	388	36.6	56	9.1	14.4	32	5.2 14.3
29	16 Albany St.	258	91	167	35.2	19	7.3	11.4	12	4.7 13.2
19	14th St. and 1st Ave.	1,485	507	978	34.1	180	12.1	18.4	89	6.0 17.5
61	12th St. and Avenue B.....	1,387	481	906	34.7	109	7.8	12.0	57	4.1 11.8
14	27th St. and 3d Ave.	1,242	431	811	34.6	82	6.6	10.1	74	6.0 17.1
96	Avenue A and 81st St.	1,065	346	719	32.5	213	20.0	29.6	47	4.4 13.6
101	111th St. and Lexington Ave.	968	285	683	29.7		Not recorded			
15	4th St. and Avenue D.....	1,192	346	846	29.0	108	9.0	12.7	19	1.7 5.4
188G	Houston St. and Lewis St.	1,216	347	869	28.5	307	25.2	35.3	42	3.4 12.1
158	77th St. and Avenue A.....	953	263	690	27.5	155	16.2	22.4	20	2.0 7.6
103	119th St. and Madison Ave.	1,363	387	976	28.3	169	12.3	17.3	13	0.8 3.3
43-Bx	135th St. and Brown Place.....	1,966	521	1,445	26.5	344	17.5	23.8	28	1.4 5.3
39G	125th St. and 2d Ave.	931	243	688	26.1	162	17.4	25.0	23	2.4 9.4
57	115th St. and 3d Ave.	1,368	355	1,013	25.9		Not recorded			
85	1st Ave. and 115th St.	971	252	719	25.9	37	3.8	5.1	29	3.0 11.5
42-Bx	Washington Ave. and Claremont Park.	1,284	309	975	24.1	239	18.6	24.5	27	2.1 8.7
188B	Houston and Lewis Sts.	1,460	325	1,135	22.3	228	15.6	20.0	29	2.0 9.0
171	103d St. and Madison Ave.	1,866	414	1,452	22.2	415	22.2	28.5	64	3.4 15.4
78	119th St. and Pleasant Ave.	1,987	440	1,547	22.1	296	14.8	19.1	40	2.0 9.0
20	Rivington and Eldridge Sts.	1,540	321	1,219	20.8	252	16.3	20.6	19	1.2 5.9
159	119th St. and 3d Ave.	1,301	256	1,045	19.6	313	24.0	30.0	47	3.6 18.3
62	Hester and Essex Sts.	1,261	246	1,015	19.5	176	13.9	17.3	25	2.0 10.0
64	9th St. and Avenue B.....	1,035	197	838	19.0	175	17.0	20.9	16	1.5 8.0
39B	126th St. and 2d Ave.	847	157	690	18.5	139	16.4	20.1	27	3.1 17.2
102	113th St. and 2d Ave.	1,687	296	1,391	17.5	105	6.2	7.5	36	2.1 12.1
168	104th St. and 2d Ave.	1,569	278	1,291	17.7	335	21.3	26.0	27	1.7 10.0
172	108th St. and 2d Ave.	1,540	253	1,287	16.4	101	6.5	7.8	17	1.1 6.7
83	109th St. and 3d Ave.	2,349	320	2,029	13.6	552	23.4	27.2	67	2.8 2.0

* Schick positive includes positive and combined reactions.
† Schick negative includes negative and pseudoreactions.
** A large proportion of the children attending these schools is colored.

(g) Public Schools 61, 101, 15, 188 G, 188 B, 103, 57 and 64 are largely attended by children of the Hebrew race. The schools are located in densely congested neighborhoods of the lower and upper east side of the city.

(h) Public School 158 is attended largely by children of Bohemian and Italian extraction.

(i) Public Schools 19, 96, 78, 38 B, 39 G, 102, 168 and 172 show a large attendance of children of Italian extraction.

RESULTS OF SCHICK TEST

The results with the Schick test in the forty-four schools given in Table 1 are interesting and significant. They show that:

1. Children from the homes of the more well-to-do have a much higher percentage of positive Schick reactions than those from the homes of the poorer classes of the population, who live in closely crowded neighborhoods. The table shows that in some schools

results of the Schick testing of two private schools and one rural school. I am indebted to Mr. Bowen, secretary of the New Jersey State Department of Health, for the figures at the Lawrenceville School, near Trenton, N. J., where 79 per cent. of boys varying in age from 12 to 21 years gave positive reactions. At the George School, Georgetown, Pa., Dr. D. F. Weeks found that 75 per cent. of the children gave positive reactions. In a rural school at Shilo, Cumberland County, N. J., Dr. Knight of the New Jersey State Department of Health found that 85 per cent. of the children gave positive Schick reactions. These are striking figures and indicate that segregation of the children either among the well-to-do or in rural and sparsely settled sections plays an important factor in retarding the development of the natural immunity to diphtheria.

3. A study of the racial types, as represented by the child population of the different schools, gives other interesting data and shows that the racial factor must also be considered as one of the influences in the development of natural immunity.

(a) Children of the colored race, living often in congested neighborhoods, showed, in spite of the crowded conditions, a high proportion of positive Schick reactions. I had had occasion to note this racial peculiarity seven years ago at the Howard Colored Orphan Asylum at Kings Park, L. I., and a year later at the Colored Orphan Asylum at Riverdale-on-the-Hudson.

(b) Children of Italian extraction, living in the crowded east Harlem section of New York City, gave the lowest percentage of positive reactions.

(c) Children of Bohemian and Irish extraction gave about one-third positive Schick reactions.

(d) Children of Hebrew parents varied considerably in the percentage of positive Schick reactions. Those living in the congested sections of the city showed a low percentage, while those living in the upper west side section of the city were among those who gave the highest percentage of positive reactions.

4. The family factor is also of importance in the development of natural immunity. This was brought

5. Natural antitoxin immunity in human beings can be interpreted, therefore, as a combination of factors, in which contact immunization seems to play the most important part. The racial and the hereditary family factors, however, must also be considered as important elements in the development of such natural immunity.

6. The table shows a fairly high proportion of negative pseudoreactions among children of school age. It is interesting to note that there is a much higher proportion of negative pseudoreactors among the immunes than there is of positive combined reactors among the nonimmunes. We can therefore assume that repeated exposures to infection with the diphtheria bacillus brings about not only an antitoxic immunity, but also a hypersensitiveness of certain predisposed individuals to the diphtheria bacillus protein. The development of this hypersensitiveness renders the cells of the epidermis of the pseudoreactor anaphylactic to the autolyzed protein of the diphtheria bacillus which is present in the test solution of toxin. The infrequent exposure of positive reactors to infection with the diphtheria bacillus accounts for the smaller number of positive combined reactions among them.

Among the colored children we noted a relatively low percentage of pseudoreactions. There seems to be a

TABLE 2.—RESULTS OF DIPHTHERIA TOXIN-ANTITOXIN IMMUNIZATION IN NEW YORK CITY PUBLIC SCHOOLS

Public School	Location	Time Elapsed, Mo.	Preparation of Toxin-Antitoxin	No. Doses of Toxin-Antitoxin	Dose, C.c.	Total Children Retested	Schick Positive	Schick Negative	Per Cent. Negative
90	148th St. and 8th Ave.	5	No. 24	3	1.0	160	20	148	87.5
101	111th St. and Lexington Ave.	2.5	No. 23	2	1.5	152	31	121	76.1
57	115th St. and 3d Ave.	2.5	No. 23	2	1.5	254	90	164	64.5
168	105th St. and 2d Ave.	2	No. 35	2	1.5	213	98	115	52.7
43 Man.	129th St. and Amsterdam Ave.	2.5	No. 23	2	1.5	183	103	80	43.8
43 Bx.	135th St. and Brown Place.....	2.5	No. 35	2	1.5	397	257	140	35.2
186	145th St. and Broadway.....	2	No. 23	2	1.5	291	206	85	29.9
132	182d St. and Wadsworth Ave.	2	No. 23	2	1.5	213	154	59	27.7
46	St. Nicholas Ave. and 157th St.	2	No. 35	2	1.5	302	226	76	25.1
157	127th St. and St. Nicholas Ave.	2	No. 35	2	1.5	253	199	54	21.3

out in some of our ⁵ earliest observations on the results of the Schick test in groups of children belonging to the same family. We found that there was a marked tendency for all the children of the same family to show a similar Schick reaction, whether it was positive or negative. Where variations were found in the reaction, the younger children as a rule gave the positive, the older children the negative Schick reactions. The reverse condition, where older children gave a positive and younger children a negative reaction, was very rare, except in families with young infants, who often gave a temporary negative reaction owing to maternal immunity. These observations were repeatedly confirmed in our more recent work in the public schools. While, as a rule, the living conditions and consequently exposure to diphtheria infection are very similar for all the children of the same family, yet we have seen that different families living under closely parallel conditions often show entirely different Schick reactions. There is probably an hereditary tendency on part of the children of one family to respond either readily or slowly and poorly with antitoxin production to repeated mild infections with the diphtheria bacillus. This organism is, as a rule, universally prevalent in larger communities. In New York City, for example, we always have on an average about 4 or 5 per cent. of bacillus carriers.

racial tendency in these children to respond poorly to the antigenic action not only of the diphtheria toxin, but also of the bacillus protein.

RESULTS WITH TOXIN-ANTITOXIN IMMUNIZATION

Table 2 shows a few of the schools in which the children receiving the toxin-antitoxin injections were retested. Public School 90 was the only school in which the children had received three injections of toxin-antitoxin and the retest was made after five months. Of the children, 87.5 per cent. were found to have become immune as shown by a negative Schick reaction. The other injected children gave reactions that were still positive, but were very much fainter than the original reactions. A fourth injection of toxin-antitoxin was given to these children.

In the other retested schools only two injections of toxin-antitoxin had been given from two to two and one-half months previously. Two of these schools (101 and 57), located in the more densely crowded sections of the city, showed 76.1 and 64.5 per cent. positive Schick reactions, respectively. These results compare favorably with those noted in the other schools given in the table, in three of which we had used the same preparation of toxin-antitoxin (Public School 43 Manhattan, 186 and 132). In the last two schools, however, the Schick retests were made after two months. In the remaining four schools noted in the table (Public

5. Park, W. H.; Zingher, Abraham, and Serota, H. M.: The Schick Reaction and Its Practical Applications, Arch. Pediat. 31: 481, 1914.

Schools 43 Bronx, 168, 157 and 46) a different mixture of toxin-antitoxin was used, but the results were about the same.

One feature of the Schick retests was noticeable. Most of the children who continued to give a positive reaction showed a much fainter area of redness than in the original test. In many instances the brownish pigmentation of the original positive reaction was still visible and was even at this time much larger in diameter than the area of redness of the retest. The fainter reactions in the retests stood out also in striking contrast to the strongly positive reactions of children who had received the Schick test for the first time.

Children who showed a positive reaction, even though it was very small in size and faint in appearance, received one or two additional injections of toxin-antitoxin. Schick retests will be made again next fall, and we expect from the results of our previous experience that most of these children will then give a negative reaction.

TABLE 3.—IMPORTANCE OF AGE IN ACTIVE IMMUNIZATION WITH TOXIN-ANTITOXIN

A. Infants Under 6 Months:	
(a) Under 3 mos.	Children mostly immune (maternal). Do not develop an active immunity after toxin-antitoxin
(b) 3 to 6 mos.	Generally found to be immune (maternal). Toxin-antitoxin may be used, but it is not as effective as when used in the following age-group. A negative Schick test cannot be depended on to indicate a permanent immunity
B. Preschool Age:	
(a) 6 mo. to 2 yrs.	Schick test can be omitted in this group, as the proportion of positive reactors is very high. A negative Schick reaction cannot be depended on to indicate a permanent immunity. Strongly advisable to give toxin-antitoxin to all these children
(b) 2 to 5 yrs.	Schick test may be used first. Positive reactions very high. Procedure can be greatly simplified by omitting Schick test and injecting all these children with toxin-antitoxin
C. Public School Age:	
(a) 5 to 6 yrs.	Incoming classes (kindergarten and 1 A). Schick test may be used first. Positive reactions over 65 per cent. Strongly advisable to inject all these children with toxin-antitoxin
(b) 6 to 15 yrs.	Schick test and control test should be used first. Many negative pseudoreactions must be excluded. Toxin-antitoxin for Schick positive and positive combined reactors
D. High School Age:	
(a) 15 to 19 yrs.	Schick test and control test should be used first. Many negative pseudoreactions must be excluded. Toxin-antitoxin for Schick positive and positive combined reactors
E. Adolescents and Adults:	
(a) 19 years up	Schick test and control test should be used first. Many negative pseudoreactions must be excluded. Toxin-antitoxin for Schick positive and positive combined reactors

AGE INCIDENCE IN RELATION TO ACTIVE IMMUNIZATION AGAINST DIPHTHERIA

The child population can be divided for purposes of active immunization into five distinct groups.

Table 3 gives in a condensed form the indications for the Schick test and toxin-antitoxin immunization.

A. Infants under 6 months are protected temporarily in fully 85 to 90 per cent. by an inherited maternal antitoxic immunity against diphtheria. The inherited antitoxin not only protects these young children, but it also interferes with the development of an active immunity, when they are injected with toxin-antitoxin.⁶ It is, therefore, important to wait until most of this antitoxin has been eliminated before

attempting to inject these children with the toxin-antitoxin.

B. Probably the most important period of life in which the toxin-antitoxin should be used is from 6 months to 2 years.⁷ A negative Schick reaction in this group cannot be entirely depended on as the reaction changes in many of these infants from negative to positive (loss of maternal immunity.) It is therefore strongly advisable to omit the Schick test and inject all children in this group with the three doses of toxin-antitoxin.

To make certain that we reach most of the susceptible children, it seems to be just as strongly advisable to inject also all children from 2 to 5 years of age. The negative Schick reaction in this age group is probably a permanent index of natural immunity. The proportion of susceptible children, however, is very high, and the omission of the Schick test would simplify this important immunizing procedure for many physicians and thereby make it more certain that a greater number of them would recommend and use it. The simple subcutaneous injection of three doses of toxin-antitoxin would appeal to many physicians who are not thoroughly acquainted with the technic or the interpretation of the Schick test.

The high proportion of positive Schick reactions in children from 6 months to 5 years and the corresponding high morbidity and mortality from diphtheria in this group (80 to 85 per cent. of all diphtheria cases) are strong indications for the active immunization of all children under 5 years of age. The injections of toxin-antitoxin produce very little pain and discomfort in these young children because only very few are hypersensitive to the bacillus protein, as shown by the small percentage of negative pseudoreactions among them. The rule may even be established that the younger the child the more tolerant it is to the injections of toxin-antitoxin.

At all ages it should be remembered that no child can be pronounced immune to diphtheria until he has been proved to be so by a negative Schick test. For this reason the test should always be applied six months or later after the injections of toxin-antitoxin as a final part of the procedure of active immunization against diphtheria.

The foregoing facts indicate that the solution of the diphtheria problem depends on just such a general active immunization of all children of preschool age. Compulsory immunization would be a great forward step in this direction, if public opinion could be enlisted by educational propaganda to the advisability of such a step.

C. The children of school age can be divided into two groups—the entering classes and the higher grades.

1. The entering classes comprise in the educational system of New York City the kindergarten and 1 A grades. This group is of special interest to the health official, as it is through these classes that he is enabled for the first time to exercise his influence more directly on the young children of the community. For the reasons stated above and until we shall have established the principle of actively immunizing against diphtheria all children of preschool age, it will be advisable to inject all children of the incoming classes in our public schools with toxin-antitoxin. The omission of the Schick test

6. Zingher, Abraham: Practical Applications and Uses of the Schick Test, *J. Lab. & Clin. Med.* 6: 117 (Dec.) 1920.

7. Zingher, Abraham: Active Immunization of Infants Against Diphtheria, *Am. J. Dis. Child.* 16: 83 (Aug.) 1918.

will simplify the work for the school physician or health officer, who will then be more apt to recommend and use to toxin-antitoxin. If this procedure is followed, there will be created within a few years a diphtheria-immune school population. Until we can do this as a routine, however, we shall have to take into account the many susceptible children, who are now in the higher grades.

2. In the second group, Grade 1 B and upward, the Schick test and control test should be first used for the two following reasons:

(a) In many schools the number of positive Schick reactions may not be more than 16 to 25 per cent. In such schools by a preliminary Schick test many children can be saved from getting unnecessary injections of toxin-antitoxin.

(b) From 10 to 25 per cent. of children of school age give a negative pseudoreaction (Table 1). These children are not only immune to diphtheria, but they are the very ones who would have severe local and constitutional reactions after injections of toxin-antitoxin.

Schoolchildren who give a positive or positive combined reaction should receive the three injections of toxin-antitoxin. Children who have a positive combined reaction will generally show moderate or fairly severe local and constitutional symptoms. Most of these symptoms subside, however, after from twenty-four to seventy-two hours. In over 50,000 injections of toxin-antitoxin, which we have given during the past four months, we have not seen a single serious result or a single infection. This statement must be emphasized, as the swelling of the arm at the site of injection leads some of the parents to think that the child has "blood poisoning."

D. and E. Children over 15 years of age and adults should always have the Schick test and control test applied before immunization to determine their susceptibility to diphtheria. It is in these individuals that we find the more marked forms of negative pseudoreaction which should be identified as such and not mistaken for positive or positive combined reactions. It may be left optional with the adult individual who has a positive combined reaction whether or not he should receive the toxin-antitoxin.

SUMMARY AND CONCLUSIONS

1. The Schick test and the control test have been applied during the past four months to more than 52,000 schoolchildren in forty-four public schools in the Boroughs of Manhattan and the Bronx. Those who gave a positive or a positive combined reaction were injected with toxin-antitoxin.

2. The results of the Schick test in these schools show that the so-called "natural immunity" depends to a large extent on contact immunity developing after repeated exposures and mild infections with the diphtheria bacillus.

3. The children of the more well-to-do classes of our population show a much higher proportion of positive Schick reactions than do the children of the poorer classes. Relative segregation of the first, crowding and close contact of the second, probably account for these results.

4. The factors of race and hereditary family tendency also seem to influence considerably the development of natural immunity to diphtheria.

5. Negative pseudoreactions were found in some schools in fully 20 to 25 per cent. of the children. These figures indicate that it is strongly advisable always to use the control test along with the Schick test in children over 5 years of age so as to identify accurately the children who show a negative pseudoreaction and thus avoid giving them the injections of toxin-antitoxin.

6. The results of the Schick retests which were made in the schools after two to five months indicate that it is better to wait at least six months before testing for the development of an active immunity after toxin-antitoxin injections.

7. Two injections of toxin-antitoxin, even of a larger amount, do not give as good results as three injections of a smaller amount. The mixture should be under-neutralized and yet perfectly safe for the human being.

8. Children under 6 months should not be injected with toxin-antitoxin. They are generally immune (from 85 to 90 per cent.) and do not respond to these injections, as is shown when they are Schick tested later.

9. All children from 6 months to 5 years should be injected with toxin-antitoxin. The omission of the Schick test is not of much consequence in this age group, as most of the children give a positive reaction. A majority of these children can be reached in the homes, in milk stations, day nurseries, children's dispensaries, infant and orphan asylums, etc.

10. To place the diphtheria preventive work in the public schools of a large city on a practical basis, it is advisable, for the present at least, to simplify it for the school physician by omitting the Schick test in the younger children and by immunizing all children of the incoming classes with toxin-antitoxin.

11. No child, however, should be pronounced as being immune to diphtheria until it gives a negative Schick reaction. The Schick test should not be made until at least six months have elapsed after the injections of toxin-antitoxin.

12. Schoolchildren in the grades above the incoming classes should have the Schick test and control test made before they are injected with toxin-antitoxin.

13. Only reliable outfits for the Schick test and carefully prepared mixtures of toxin-antitoxin are of value in such preventive diphtheria work.

ABSTRACT OF DISCUSSION

DR. CHARLES HERRMAN, New York: Owing to Dr. Zingher's repeated demonstrations before the larger medical societies, the majority of physicians in New York City are familiar with the value of the use of the toxin-antitoxin mixture in the immunization against diphtheria. He has demonstrated statistically that the children in crowded districts are less susceptible because they have been immunized by exposure. This principle has long been recognized in other diseases; for example, in the marked susceptibility of the Indian and Eskimo to tuberculous infection, when he migrates to large centers of population; in the rapid and progressive course of tuberculosis in infants; in the susceptibility of the recruits from rural districts to the communicable diseases of childhood. It is, therefore, not an unmixed blessing to protect the child against all exposure to infection. What we desire is immunity against disease, for the prevention of exposure to infection is impossible in large cities. In the control of the spread of the highly communicable diseases and those in which carriers play an important part,

early and universal immunization is essential. The control of smallpox is due to the fact that practically all infants have been vaccinated. The campaign has been begun with the immunization of schoolchildren because that was an easy and controllable point of attack. After physicians and laymen are convinced of its value, there will be less difficulty in immunizing all infants. Education is required. In my private practice I found that only 10 per cent. of the mothers immediately recognized its value and were glad to have their babies immunized. An additional 10 per cent. consented after a little explanation and persuasion, but there remained a large number who preferred to wait. Some told me frankly that they did not believe in vaccination, but they had had it done because the child could not be admitted to school without a vaccination certificate. There are still a large number of believers in the various cults, who are antivaccinationists, antivivisectionists and anti-immunizationists. Possibly some day a certificate of immunization against diphtheria will be necessary for admission into school, so that all the conscientious objectors to that will also be brought into the fold.

DR. EVERETT W. GOULD, New York: If Dr. Zingher's claims can be maintained, it is quite possible that in the near future diphtheria may be just as much under control as is smallpox. It depends, however, on the way in which the general profession accepts the contention that the Schick test is a reliable indication of the susceptibility to diphtheria, and, of course, whether toxin-antitoxin gives an extended immunity. In this connection it may be wise to state some of our experiences. During the last seven years all the children that have come to St. Luke's Hospital have been given the Schick test, and only those showing a positive Schick reaction have been immunized against diphtheria. During these seven years we have not had more than four cases of diphtheria developing in the children's ward of our hospital who have shown a negative Schick reaction. It was not possible to say whether they were actual cases of diphtheria developing in children who previously showed a negative Schick test, or whether they were cases of tonsillitis and diphtheria carriers, or instances in which the negative Schick test was due to errors in technic. Our subsequent experience, however, has led us to believe that one of the two latter conditions prevailed. It is not always easy to do a Schick test properly. The technic advised by Dr. Zingher should be very carefully followed. It is also necessary that the Schick test should be read on the first, second and especially on the fourth or fifth days. We have frequently made a negative reading on the first and second days and found a distinctly positive one on the fifth day. Several years ago a nurse who had a negative Schick reaction developed a sore throat. The culture was negative, and no antitoxin was given. Two days later she had a severe laryngeal diphtheria. We reported this case to Dr. Park and Dr. Zingher to show that the negative Schick test was not always reliable. Two years later we tested that nurse and found that she had a positive Schick reaction. That means that some error was made in the original Schick test. This brings out an important point that in the presence of a negative reaction and a suspicious tonsillitis, it is best to give a dose of antitoxin at once, not because we do not have faith in the Schick test but because we may have made a mistake in the Schick test or in the proper reading of it.

DR. JOHN M. DODSON, Chicago: One of the things which stand out most conspicuously with reference to diphtheria as brought out in this discussion is the rapidity with which the efficiency of toxin-antitoxin diminishes as the days go by. The importance, therefore, of seeing the case and of administering toxin-antitoxin the first day cannot be too strongly emphasized. To secure this is chiefly a matter of education of the parents. The medical profession, and particularly those who are interested in children, should be kept closely informed as to the movement inaugurated by the American Medical Association for cooperation with the teachers of the country with regard to the health program in the schools, seeking more effective education of schoolchildren in health matters. The response of the educational world to that program has been gratifying, and important results have

been accomplished. A year ago in New Orleans, the House of Delegates voted to instruct the Council on Health and Public Instruction to urge on the state medical societies the inauguration of such a movement in each state. Forty-two state medical societies have appointed committees, usually of five each, to attend the state teachers' associations, to bring this matter to the attention of the teachers and to ask for an appointment of a committee from the teachers' side to study the health problems of the schools and devise ways for their solution. If all the states respond we shall have an army of 400 or 500 teachers and physicians working to this end. All of these committees can do work in gathering information, but the movement must become localized in the several cities and rural communities if we are going to get results. I would urge on each of you, as you return to your states, that you interest yourselves in this matter and keep in touch with this movement and do everything you can to promote this earnest, effective cooperation between the two great professions which are most closely in touch with children, and hence can best bring about improvement in this matter, the medical and the teaching professions. If that movement is sustained as heartily in the states as it has been between the two national associations, another decade will see a great improvement and a great advance in the health of our schoolchildren and in their knowledge of health matters.

DR. EDWARD L. BAUER, Philadelphia: The figures which have been presented make a formidable mathematical array in support of this test, which has been or should be generally accepted at its face value. Independent observers, after acquiring a skill and expertness in performing the test, cannot do anything else except prove the consistency and accuracy of these data. When we hear of men testing 50,000 children, it requires considerable courage to tell you that we have personally tested 5,000 children; but in that 5,000 we can corroborate the statistics given by Dr. Zingher. Philadelphia does everything conservatively, but "gets there" in the end. We have taken up this work with the idea of finding out its value by assigning one man to do the work, first seeing that he has observed enough of it so that he can come back and say yes or no to its value, and then working it out with the idea of educating the medical inspectors, the school inspectors, and ultimately training the physicians and the public in the value of this work. Unless a community takes up a problem of this kind in this manner, there are going to be a great many drawbacks. One child that had had a previous negative Schick test developed what was diagnosed as laryngeal diphtheria. Positive cultures were obtained and guinea-pig inoculations proved fatal to the pigs. Antitoxin in large quantities did not help the child. Months later the child was referred to Dr. Chevalier Jackson, who cured it promptly by removing a safety pin from its larynx. In dealing with the problem of cases reported as diphtheria in which the Schick test is negative, I like to get a sample of the blood before giving the child antitoxin and perform Römer's test on the blood, so as to determine the actual blood antitoxin content. It has been a matter of great satisfaction to find that Römer's test and the Schick test have been consistent.

DR. EDWIN H. PLACE, Boston: Our experience agrees with Dr. Zingher's in regard to the value of the Schick test. One point has not been emphasized, and that is the value of the Schick test for diagnosis in clinical cases. In cases which are so mild that antitoxin can be postponed for twenty-four hours or less, you can add remarkably to your clinical knowledge by making the Schick test. In cases of laryngitis in which the cultures are positive from the throat and nose, diphtheria has been demonstrated by a positive Schick test, and such patients have been cured with the prompt administration of antitoxin.

DR. ABRAHAM ZINGHER, New York: I wish to warn you against using diphtheria toxin-antitoxin as a therapeutic agent. I have heard of instances in which physicians attempted to treat cases of diphtheria with toxin-antitoxin. Under such circumstances it is worse than useless in that it leads the physician away from using the only rational therapeutic measure at his disposal—diphtheria antitoxin.

Nor should toxin-antitoxin be used as a prophylactic agent, when there is immediate danger after exposure to a case of diphtheria. The antitoxin develops too slowly after the injections of toxin-antitoxin to be of value in acute emergencies. The indication is to give immediately a prophylactic dose of antitoxin to all those who have been exposed and show a positive Schick reaction. In the May, 1921, number of the *American Journal of Diseases of Children*, Dr. Blauner claims to have noted diphtheria in naturally immune children who gave a negative Schick reaction, and also in actively immunized children who showed a negative reaction after injections of toxin-antitoxin. These cases were carefully investigated by Dr. Park, and the results indicate that there was an outbreak of streptococcus tonsillitis in the institution in which over 40 per cent. of the children were diphtheria carriers. The author's conclusions seem to be erroneous. The fact that all the cases noted during the outbreak occurred only on one floor of the institution, whereas both floors were found to contain almost an equal number of diphtheria bacillus carriers, and also the fact that among the isolated virulent diphtheria strains there were three different agglutinative types of Klebs-Loeffler bacilli, point to the probability that we are dealing here with an acute outbreak of tonsillitis occurring in an institution in which a high proportion of the children were diphtheria bacillus carriers. Among the children who were ill during this outbreak, eight had positive cultures and two had negative cultures. We must assume rather that the high degree of immunization of the children in this institution prevented a serious outbreak of diphtheria, in spite of the fact that so many of them were carriers of virulent diphtheria bacilli. It is interesting and significant to note that the practice of applying the Schick test, and, when necessary, the toxin-antitoxin immunization, continues in that institution to the present day. The remarks of Dr. Place about children developing a negative Schick reaction after an attack of diphtheria are interesting, but they do not quite correspond to our own observations. We have found that only about one third of these children gave a negative Schick reaction. These results correspond with the clinical observations of many physicians who have noted repeated attacks of diphtheria in the same individuals. A negative Schick reaction, therefore, cannot indicate that a child has recovered from an attack of diphtheria. On the contrary, it seems to me that, given a suspicious throat exudate, plus a positive throat culture in an individual who has not been Schick tested previously but two or three months later shows a positive reaction, the diagnosis of diphtheria is rendered more than probable. Children, however, who remain in the diphtheria pavilion a long time, as for instance chronic tube cases, almost invariably develop a negative Schick reaction. Repeated exposure and mild infections explain this observation. Literature on the subject of the Schick test in the public schools of New York City can be obtained from the Research Laboratory by making such a request through the mail.

The Antivivisectionists.—Antivivisectionists, being one of the few groups of reformers who could make no particular capital out of the war, are hoping to advance their cause on the general wave of reform with which the country is flooded. They are welcome to their cause and they are privileged to agitate, but we beg that they will stick to the truth and not produce as authoritative the evidence of shyster doctors. Let them also cease perverting the testimony of eminent scientists. One such, we recall, had his revenge on them some twenty years ago in England. He haled them to court and got judgment against them for £5,000, which he promptly devoted to carrying on certain important experiments in vivisection. No one, it is true, can consider the whole question of animal experimentation, even under the control of the new anesthetics, without some misgivings. What is absolutely essential is the assurance of those qualified to speak both that the old brutalities have been done away with and that vivisection is truly leading to benevolent results in medicine. It is a question not outside the people's province, but one which they should never deal with in haphazard fashion.—*The Weekly Review*.

FACTORS WHICH INFLUENCE RESULTS AND MORTALITY RATE IN KIDNEY SURGERY

ANALYTIC STUDY OF TWO HUNDRED AND
SIXTY-THREE OPERATIONS *

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There has been a most gratifying progress in kidney surgery during the last twenty years with results that are steadily improving and a mortality constantly on the decline.

There are few organs in the body in which the physiology as well as the pathologic changes are so thoroughly understood. This gradual progress has been due to three developmental phases: the investigative, the interpretative and the manipulative.

INVESTIGATIVE PHASE OF DEVELOPMENT

Modern medicine has been particularly kind to urology in giving to it facilities for thoroughly studying its many phases of health and disease. No longer should urinary disorders be treated symptomatically. Our progress in this direction has been not only in the great advancement of special urologic investigation but also in the education of the general profession to the knowledge that a scientific understanding of kidney diseases is almost always possible, and we must not cease in our efforts to propagate this education.

There are five cardinal symptoms and findings of kidney diseases, namely, pus, blood, pain, tumor and bladder irritability; and if the medical profession could be made to realize their grave significance, results and mortality rate would be decidedly improved, since an early diagnosis means early lesions usually uncomplicated by deleterious consequences, and in patients who are fit subjects for surgery. Indeed, many such individuals could be protected from surgery, if they were seen early; this is particularly true of the infections.

Most of the kidney diseases are treated symptomatically, for long periods, for one or the other of these conditions; and a tumor, pyonephrosis, tuberculosis, stone or hydronephrosis, is allowed to develop into complicating conditions. In analyzing my series of kidney infections, the average duration of symptoms was found to be four and one-half years, and in many instances a urinalysis has not been made. Another probable reason for this delay is that there is a current belief that a few leukocytes in the urine are not significant of a pathologic condition. There is also a tendency to discriminate between a leukocyte and a pus cell in the urine. I have never yet been able to figure out the exact basis of this discrimination. At any rate, the disregard of the occasional pus cell has had a powerful influence in delaying early investigation of kidney lesions, and our mortality record shows that the late infections produce the highest death rate. The same holds true in tumors. The average duration of symptoms was three years; onset had been hematuria, and in most instances no attempt had been made to determine its source; 25 per cent. of our patients

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were inoperable when they presented themselves. There is a common belief that such intermittent bleedings are attributable to strains or ruptures of varicose veins and are treated with great levity; on the contrary, they should be interpreted seriously.

In my series of ninety-seven tuberculous kidneys, the average duration of symptoms was twenty-two months. During that time 29 per cent. had become bilateral, and practically all of these individuals had been suffering from progressively increasing cystitis with frequency, pain and occasional hematuria. If symptoms of cystitis do not clear up within a week or ten days of local treatment, there is some associated lesion, which should warrant investigation. In younger individuals, this type of bladder will be frequently secondary to renal tuberculosis. Of the unilateral, typically operable cases of renal tuberculosis, which have occurred in my series, 20 per cent. have gone without operation, because their physicians have advised medical treatment. It behooves us to make strenuous appeals against such advice, since there has never been a well authenticated case of complete spontaneous healing of active renal tuberculosis and, furthermore, the operative results are so good—mine show 70 per cent. cures with no mortality in fifty-six cases in which operation was performed.

Realizing this and faced with the almost assured invalidism from bladder involvement, and possible extension to the other kidney under medical treatment, we must not hesitate to appeal for an early nephrectomy.

Abdominal pain offers perpetual confusion; the proneness to incriminate the appendix as the cause of right side abdominal pain, without further study, is becoming less prevalent. Several years ago in looking over our renal calculi, it was found that 27 per cent. had had previous appendectomy; in the last few years it has been cut to 10 per cent. A urinalysis and roentgen-ray examination, in most of these cases, would have been of the greatest help. It is often difficult to discriminate between the different abdominal pains, particularly the right sided ones, and a thorough differentiation often entails considerable study. It is encouraging to see that much more accurate differentiation is being made, with fewer mistakes as a recompense; but there is one type of kidney disease which still presents great confusion, namely, intermittent hydronephrosis, due to a slight movability of the kidney, ureteral kinks, aberrant vessels, etc. Here the individual suffers with intermittent colics, often reflected along the ureter, in the region of the appendix. The roentgen-ray examination and urinalysis are usually negative. At least 20 per cent. of our patients have had previous appendectomy without relief. With such symptoms and negative findings, one should always investigate the kidney before doing an abdominal exploration; the ureter catheter and roentgen ray will always decide the problem. In the first place, there is usually found renal retention. Consequently, on filling the renal pelvis for pyelography, one can always, if it is a kidney pain, be able to reproduce this pain. The patient will say, "Doctor, that is my pain." This is the most important diagnostic point. In taking pyelograms in these individuals, it is wise to use two positions, lying and sitting. The condition may have not lasted sufficiently long to produce pyelographic change in the calices or pelvis. In such instances, one

may be able to show twists or kinks at the ureteropelvic juncture and change of position in the kidney pelvis. So with careful investigation, one can always show whether or not a kidney is responsible for the abdominal pain. This educational feature, with a responsive cooperation on the part of the medical profession, will do more to influence our results than any other factor.

INTERPRETATIVE PHASE

The interpretation of findings is more or less standard, but will of course vary, dependent on the individual's experience: the better one is trained and equipped, the fewer mistakes of interpretation will occur.

In unilateral renal tuberculosis, we are of one accord in suggesting the prompt removal of the tuberculous kidney, the earlier the better, in order to protect the other kidney from becoming involved, and also the lower urinary tract from advanced infection. If in a case of hematuria or of a tumor mass in the kidney region, one finds pyelographic evidence of tumor, here again, there is no dissension as to what is best to do. Many of the problems of renal calculi are uniformly regarded; others in this group, however, are not so thoroughly settled, but in our changes of interpretation of the calculus problem, conservatism is becoming more preached. The two diseases which have offered more difficulties of interpretation than any other have been renal infections and intermittent hydronephrosis. One must not lose sight of the fact that a kidney which is infected may show temporarily very low function, just as an individual will have low function when he is sick. The problem to determine is whether this function is permanently low, or one that is capable of being restored to normal; this can be done only by repeated analysis. Our present day conception of the surgical kidney is extremely at variance with that of former ideas. The acute coccal infections, causing multiple septic infarcts, the so-called brewer kidneys, which were formerly removed, have in my experience almost invariably been relieved without surgery. The acute bacillary infections, the most common ones, often create a wrong impression. If a kidney is acutely infected with the colon bacillus and has retention, it may show very low function. With the relief of retention and infection by means of ureteral catheter drainage, such a kidney will often promptly come back to normal function. I know of two recent instances in which an acutely infected kidney was removed without study, and in both instances a kidney, almost completely destroyed by a silent calculus pyelonephritis, was lying tucked away on the other side, this being the original focus. Both of these patients showed retention in their only kidney, and both were ultimately cured by a preliminary course of ureteral catheter drainage and cleansing the kidney pelvis, followed by a pyelotomy with a removal of the stone.

The interpretation of the phenolsulphonephthalein test is very important in these infections. In the acute infection, the phenolsulphonephthalein output of the opposite kidney will be about normal, and the infected kidney may show no function or a very low one. After catheter drainage, they both come within normal limits, naturally, depending on the amount of destruction the infection has caused in the kidney. In old infections, without obstruction or foreign body, the low function

will usually remain so and not fluctuate as in the acute, and the function of the other kidney is likely to be decidedly higher than normal. This estimate of compensation function of the sound kidney gives us our greatest index as to whether or not a kidney should be removed. It is repeated study of function that allows us to interpret the capacity of a kidney and enables us to save many kidneys, which otherwise might be sacrificed. I have passed through an interesting experience of an infected hydro-ureter:

This patient had been in poor health for many years and operated on several times for pain in her left side and bladder trouble, without relief. I saw her and found enormous dilatation of the left ureter, which measured about $1\frac{1}{2}$ inches in diameter from the bladder to the kidney pelvis. The kidney pelvis showed not the slightest dilatation. The ureterogram showed a complete constriction at the juxta-vesical ureter. The ureteral catheter recovered 8 ounces of infected urine from this ureter; the function of this kidney was impaired, that is, about one-third normal. Repeated drainage and dilatations were productive of no benefit to the patient. Four months ago, I slit the vesicle end of the ureter for a quarter inch; following this there was a gush of urine. The patient was immediately relieved, and in the meantime her infection has cleared up; ureteral peristalsis and her kidney function are both normal. This demonstrates that after such a long obstruction, ureteral peristalsis may be resumed and the function of the kidney restored.

MANIPULATIVE PHASE

In formulating the plan of procedure in the treatment of intermittent hydronephrosis, it is of course essential to determine the cause. Strictures or obstructions in the ureters must be relieved; stones, removed, either intra-ureterally or by open operation. In case the hydronephrosis is due to slight movability of the kidney, with productions of ureteral twists, the problem is somewhat variable. In some instances, the mere passage of the ureteral catheter into the pelvis, relieving the retention, will cure the individual. I have seen any number of cases of this kind. Some require several drainages to secure relief. Many, however, must be subjected to surgery, in order to correct the movability. In some instances, the cutting of an aberrant vessel will solve the problem. It is often difficult to decide just when to advise a patient that an operation is necessary for a right side pain, which we now know is due to a slight hydronephrosis without infection or often with infection. If relief of retention is secured by catheter drainage, they are put under observation. If the condition promptly recurs and is not relieved by such treatment, they are advised to have renal fixation, since my experience with a corset in this case has not been satisfactory. This operation, in my experience, has been one of the most satisfactory kidney operations. Out of thirty such operations, there has been one partial failure. The rest have been completely cured. Fixation operations have suffered a black eye, since the promiscuous fixing up of a loose kidney in the asthenic individual, in the presence of a diaphragm, frequently proved ineffective and usually harmful. In properly selected cases of renal movability, which are productive of hydronephrosis with symptoms, when the pain can be reproduced by pelvic distention and in which the pyelogram taken in two positions, lying and sitting, shows angulation and kinks, this operation is attended with gratifying results.

After one has made an accurate diagnosis and concluded that surgery is necessary, the next step having an important influence on results and mortality is the

proper preparation of the patient for surgery. It is just as important in an operation on the kidney to see that the kidneys are in good condition, as it is in prostatic surgery, in which the appreciation of the kidney function and capacity has been the one feature which had made this operation safe. One must always have a complete understanding of the individual as a whole; the heart, lungs, blood stream and nervous system must be accurately studied, and let me say that a kidney drainage operation done in the face of a nerve lesion is a very serious proposition. Two of my five deaths occurred from drainage abscesses of the kidney in patients with central nervous system diseases. Both died from hemorrhage, which started promptly after the opening of the kidney, and which could not be controlled.

Our efforts now are directed to putting the individuals in the best possible condition before the operation and never operating too hastily. Patients suffering with infections are treated by preparatory drainage. In cases of renal calculi, with infected hydronephrosis, the ureteral catheter is often left in place for drainage, until it can be determined whether or not the kidney should be removed, or until the condition of the kidney has so improved that the stones may be removed with greater safety. The same procedure is adopted in an infected hydronephrosis or pyonephrosis which requires removal, to improve the patient's general condition, and often to relieve a sound kidney of a toxic nephritis. A good illustration of this occurred to me within the last month:

I saw a patient who was extremely toxic, had lost a great deal in weight, was very thin and pale, and had been treated for intermittent chills and fever. On examination, I found he had an 8 ounce retention of infected urine in the right kidney. I put him in the hospital, kept a ureteral catheter in place, with several changes, for ten days, and it was remarkable to notice his improvement. The phenolsulphonphthalein output was always negligible on the diseased side. The sound kidney showed about normal on the first examination; ten days later it was putting out double the amount of a normal kidney. This patient was transformed from a poor to an excellent surgical risk.

The same procedure is done in most cases of renal infections, and I am confident has the greatest bearing on the result. I do not believe that any one should operate immediately on a kidney with an infected retention, if the patient is feeling poorly, when renal catheter drainage will put him in so much better shape. In stone cases, which require pyelotomy or nephrotomy, the kidneys are put in much healthier condition, and the postoperative course is much better. These patients are all given large amounts of water by mouth, urinary antiseptics, particularly acid sodium phosphate and hexamethylenamin, and the bowels are kept free. If their hemoglobin is low or if they are very septic, they should be transfused. Rectal tap is given as a routine the afternoon before the operation, and those who appear sick and seem to be bad surgical risks are given hypodermoclysis. They are not purged, but are given an enema the morning of the operation. In this way, most of them who come to surgery are in good condition and should not be brought to surgery before they are, unless it is urgent, in the same way as in the case of the prostatic. It is more or less routine with patients in whom we may expect trouble, such as large tumors or pyonephrosis, to give hypodermoclysis freely the night and morning before the operation, in order

that their tissues may be saturated. In this way, I am sure that shock is prevented or at least minimized. I recently removed a tumor 11 inches long by 7 inches wide, from a patient who was not in the best condition, without the slightest change in pulse and very little in blood pressure. One of our previous deaths had been from shock in just such a patient. As a routine, we give morphin and atropin, except for occasional cases, when I have used twilight sleep.

With thoroughness of diagnosis and careful preparation, the individual comes to the operating table as a much better surgical risk, offering the surgeon a decidedly better chance for a good result and a lower mortality. It is then that the manipulative qualities of the surgeon and surgical judgment will show their influence in the ultimate outcome of the patient. There are many features in the manipulative side of kidney surgery which have such an important influence on the final outcome that they will be taken up in more or less detail.

Kidney surgery, properly done, on subjects fitly prepared, should be attended with almost negligible mortality and with extremely few complications.

CHOICE OF ANESTHETIC

The choice of anesthetic depends more or less on the individual operator. My own experience is that gas and oxygen is unquestionably the best anesthetic, and almost invariably a kidney operation can be done under gas, except in some instances, when a little ether may be needed to give primary relaxation; in this way there is no added element of renal irritation such as occurs in ether, which is naturally a very important feature. Again, lung irritation is curtailed; and since 30 per cent. of all kidney operations are done for tuberculosis, it is extremely essential in this alone not to have a pulmonary irritant. In our fifty-six operations on the tuberculous kidney, there have been but three slight pulmonary complications. I feel sure that lung complications will be far less frequent following gas anesthesia. Furthermore, the patients are usually awake before leaving the operating room and are in much better condition generally.

POSITION OF PATIENT

The position of the patient is extremely important. Most operators agree on the lumbar route; but as one observes the different operators, there is noted great variance in the position of the patient and naturally great difference in exposure. In my hands, the best position is the lateral one, in which the patient's arm and leg on the side of operation are extended, the patient being elevated at the break of the rib, with the under arm through to the front, rather than back of him. In this way, the lumbar region is out under tension and one is able to get at least 2 inches more room than if the upper thigh is flexed and the under arm is back of the patient. With this position, a free incision should be made from below the twelfth rib at its juncture with the deep muscles of the back obliquely downward and forward between the rib and crest of the ilium, keeping away from the crest of the ilium and nearer the rib margin; in this way, exposure is better, closure is more satisfactory, and the results in wound healing are much more comfortable. The muscles and fascia should be cut through, attention

being paid to the twelfth dorsal ilio-inguinal and ilio-hypogastric nerves. It is important to sever the costovertebral ligament in order that the rib may be mobilized, and to extend the incision downward and forward so that free access may be had to the kidney. In this way, one will rarely ever have to resect a rib, and heavy retraction will never be necessary.

VARIOUS PROCEDURES

In 263 operations on the kidney, I have resected one rib—this was really out of curiosity. In the last 150 cases a retractor has never been used for pulling tissues—merely to hold back fat. Perirenal fat should be opened posteriorly, grasped with tee clamps, and the kidney freed by very gentle manipulation with fingers between the fatty and true capsule. One should be extremely careful, in going around the kidney, not to make undue pressure, but feel gently along in order not to tug on the pedicle and not to rupture an aberrant vessel, playing gently on the kidney, stripping away the surrounding tissues. The organ, which should be held steadily in the hand, can be freed of its surrounding attachments either by gauze or by sharp dissection until the organ is free and the pedicle exposed. Very gentle manipulation should be executed in the region of the pedicle; absolutely no tugging or pulling should be done. In this way shock can be reduced to a minimum. Should the peritoneum be opened, it should be promptly sutured. This complication seldom amounts to much. I opened the peritoneum eight times in 263 operations without any complications; this usually occurred in the calculus pyonephroses, tuberculosis or tumors.

Dependent on the type of operation, the rest of the steps vary with the condition. For nephrectomy, it is wise to free the ureter, ligate it, and cut it with the cautery. It is then lifted upward over the kidney; in this way the vessels are readily accessible. In handling the pedicle, I have great comfort in using a large, curved pedicle clamp, clamping the vessels *en masse*, relaxing the kidney during the clamping in order to have the vessels not on tension, and then cutting the kidney away from the pedicle far enough from the clamp to leave the tip of vessels exposed in order that they may be grasped with other clamps. In tying off the pedicle, I have used a No. 2 double catgut stitch on a needle, transfixing the pedicle between the vessels and tying with a figure-of-eight knot under the clamp, releasing the pedicle clamp while tying. In this way there is absolutely no chance of slipping. The pedicle is fortified in three ways and may be handled in this manner in several minutes.

In case of nephrotomy, it is wise to follow Cullen and Derge's method of opening with a blunt instrument. It has been customary to use a large kidney needle, threading it with silver wire. This is inserted into the part of the kidney to be opened; the capsule is cut between the two parts of the wire; and by sawing on the wire with an assistant holding the kidney steadily, the kidney is opened from below upward, and bleeding is very slight. Nephrotomies are usually done on a limited part of the kidneys, and seldom do we see the old necropsy incisions of the past. The kidney is sutured with mattress sutures of catgut by means of blunt needles. In order not to have too many stitches, it is often very satisfactory to basket the kid-

ney by starting the suture on opposite sides and tying the long ends over the kidney. In this way sufficient compression is made to stop any bleeding. In the usual stones cases, the kidney is seldom drained, but always closed and a drain put to the kidney. There has been but one leakage of urine from a nephrotomy for stone, and with this case there was a fragment of stone left in the ureter which was later removed.

In the severe pyonephroses, or calculous pyonephroses, in very sick individuals, particularly children, I have made it a practice to do a two stage operation, either for nephrectomy or nephrolithotomy, and I feel confident that several lives have been saved by this procedure. While it is supposed that secondary nephrectomy is much more difficult, in my experience it has offered no particular trouble, provided the second stage is done within three weeks. In children, particularly, this operation is advisable, since they are so ill that the least thing will break the balance. They are much worse after their first stage than after their second. The latter is usually tolerated without any difficulty, similarly to prostatic enucleation. At the first operation, while it is contrary to the accepted rules of surgical practice, I have found it wise to free the kidney posteriorly, to a certain extent, in order to have a cleavage line for the second operation. By so doing, the removal of the organ takes but a few minutes, since at this time it is contracted down to nothing but a nubbin. I have had no mortality in these very severe cases which have been done by the two stage method, and I feel sure that if an attempt had been made to remove the very large kidney, most of these patients would have died.

In pyelotomy, the chief points are the opening of the pelvis posteriorly, away from the posterior pelvic vessels, by clean and careful incision, keeping away from the ureteropelvic juncture, and being careful in entering the opening with the finger, in case the finger is used for stone, in order that it will not be torn. In stones in the calix, not easily grasped with forceps, I have found a very satisfactory method of inserting the little finger through the pelvis into the calix and tapping the kidney over the stone with the other hand, causing it to follow the little finger, using the little finger instead of the index, because it is more accessible to the pelvis on account of the position and on account of its size, insuring less damage to the pelvis. After removal of the stone by pyelotomy, the pelvis should be thoroughly irrigated, and the walls carefully stitched, reinforced by the so-called Mayo fatty fascial flap.

In twenty-three pyelotomies, I have had but one leak urine after operation. One of my cases was done for a stone in a tuberculous kidney, which healed primarily without leakage. To show how securely the pyelotomy holds: In one case, which was closed in the face of an acute infection, there developed a large pelvic retention—more than 2 ounces of infected urine drained by means of the ureteral catheter from the pelvis without its leaking. This operation should be used more and more for pelvic stones, except for the branches and extremely large ones. It is extremely important after stone operations, whether they be extracted through the kidney or its pelvis, promptly during convalescence to instil the pelvis with silver nitrate in order to eliminate infection and hurriedly

to heal any granulations. This very important part of stone surgery is much neglected; its practice, I feel confident, will prohibit much of the high stone recurrence. In my personal experience I have seen but two recurrences in seventy-one cases.

NEPHROPEXY

The fixing in position of a renal movability producing renal retention is the most important technical operation on the kidney. In many instances, the mere hooking up of a kidney will suffice to cure the movability; but in the movabilities with twists, kinks and torsion, one not only has to elevate the kidney, but also to place it in a position to prevent torsion. It is extremely important to pay keen attention to the insertion of the ureter and pelvis, being sure there are no aberrant vessels, kinks and no adhesions in this neighborhood. When this location is free, the perirenal fat is massed in a ball beneath the kidney, according to the technic of Bartlett. In this way the renal socket is obliterated so that the kidney has no room for oscillation. The fat is then sutured to the deep muscles of the back, after the kidney has been put in its proper position. In this way any downward movability is prevented. I have never been satisfied that this is sufficient, although I have seen cases done by this method alone in which the results were very satisfactory. Since many of such kidneys have twists and torsions, I have felt it important to fix it carefully in position by catgut sutures to the deep muscles and fascia of the back. Throughout this operation, one has to be extremely careful to have the insertion of the ureter into the pelvis perfectly straight and free. With care in technic, this operation should be highly successful.

COMPLICATIONS

In summarizing the operative and postoperative complications of my 263 cases, hemorrhage occurred eleven times; severe in two instances, both of these resulting in death. Seven other hemorrhages occurred following nephrotomy, but were very mild, and did not cause the patient any degree of shock. Hemorrhage occurred twice during nephrectomy, first, from tearing a small, aberrant vessel at the upper pole, and the second time from the slipping of the pedicle; and I am sure that this could not occur in the present way of dealing with it. There has been no injury to the bowel. Shock has occurred nine times, only twice in nephrectomy. The other seven cases of shock occurred in sick children and in the very toxic individuals, most of whom were suffering with pyonephrosis. In many of these individuals, I am sure death would have occurred if anything more had been attempted. The fact that shock has occurred but twice in 160 nephrectomies is an illustration of its rarity following clean kidney surgery. These patients almost invariably were up in the wheel chair on the tenth day. The majority of the clean cases left the hospital at the end of two weeks—very few remained in the hospital after three weeks.

In classifying the diseases which compose the operative list, there were seventy-one operations for stone; of these, 20 per cent. were by nephrectomy; 25.3 per cent., nephrolithotomy; 32.4 per cent., pyelotomy, and 22.3 per cent, combined pyelotomy and nephrolithotomy. The latter operation is much higher than I

had anticipated. It is done for sandy impactions, or multiple stones when their removal by pyelotomy is difficult or impossible. In the sandy deposits so common with us, a through and through irrigation is very important. In the stone operations, two deaths have occurred, both in patients with definite organic disease of the nervous system and one with diabetes. They both died following nephrotomy for calculus pyonephrosis with perinephritic abscess.

There were fifty-six operations on the tuberculous kidney: fourteen for tumor; thirty for movable kidneys with intermittent hydronephrosis; eight large hydronephroses; seventy-nine for kidney infections, that is, pyelonephritis, thirty-eight; pyonephrosis, thirty; perinephritic abscess, eleven; five decapsulations, making a total of 263 operations.

There have been five deaths in the 263 cases, a gross mortality of 1.9 per cent.; one patient died of shock following nephrectomy for tumor. The other four deaths occurred following nephrotomies: two for pyonephrosis and two for calculus pyonephrosis and perinephritic abscesses. One is immediately struck with the high mortality in these severe infections. Out of forty-three such operations, there were four deaths, or 9.3 per cent. There was but one death (from tumor) in the remaining 220, or 0.4 per cent. operations. Of 160 nephrectomies there was but one death. In other words, the mortality occurred where the least surgery was done. This is convincing proof that, if renal infections were investigated earlier and such late complications not allowed, the mortality in kidney surgery should be exceedingly low.

I am convinced, after analyzing my cases, that kidney surgery performed on proper subjects, at the proper time, gives better results with fewer complications and lower mortality than any of the other major operations.

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ABSTRACT OF DISCUSSION

DR. EDWARD L. KEYES, JR., New York: We always need to be encouraged in the detail of our work, and I am particularly pleased to agree with Dr. Caulk's remarks on nephropexy. Too much has been said about the failures of this operation, owing rather to the fact that the operation was performed in unsuitable cases in which pains did not arise from the kidney, or that the surgeon has made too much of an effort to jam the kidney under the ribs, where the compression would persist. I think I have seen two cases of failure from this cause. In one case the patient had been operated on by another man. I operated, placed the kidney where it was more comfortable, saw to it that there was no kinking, as Dr. Caulk insists, and the patient made a good recovery and has had no pain since.

DR. JAMES D. BARNEY, Boston: Dr. Caulk spoke of the importance of the anesthetic. A little more stress might be laid on the importance of local anesthesia in patients who are very ill with pyonephrosis. The patient is frequently in such a condition that it is difficult to give any anesthetic, and in these cases a local procain anesthesia will serve very well for opening the kidney and draining the pus. After a few days the patient will be in such condition that a more complete operation can be done under general anesthesia. In some cases it is possible to do the whole operation under spinal anesthesia. I have had two of those cases, and the patients have done very well when the condition of the chest did not allow the use of ether or nitrous oxid and oxygen.

DR. BENJAMIN S. BARRINGER, New York: Three facts determine a successful outcome to nephrectomy. The first is

gas-oxygen anesthesia. The second is the speed of the operation. I imagine the success Dr. Caulk has had is largely because he has operated rapidly. The operator who takes from three fourths to one and one-half hours in a case of tuberculous kidney I think causes the death of the patient in many cases. The third factor is infection, and this applies mainly to tuberculosis. In those cases in which tubercle bacilli and pus are spilled into the wound, the patients have much less opportunity to recover than when we are able to do a clean operation. I well remember a case in which the bacilli were spilled into the kidney wound. The patient did fairly well until the tenth day, when he had a sudden gush of blood and died immediately. The infection had ulcerated through the vena cava.

DR. E. G. CRABTREE, Boston: I wish to emphasize the fact Dr. Caulk brought out, that renal suspension has received and in some clinics now suffers unmerited disfavor. Suspension has been employed in improperly selected cases or has been improperly done. I believe that in properly selected cases the kidney can be suspended with lasting benefit. I now check these cases with pyelograms before the patients leave the hospital. I find that suspension operations are a big help in handling certain types of kidney cases which harbor persistent infections. If these kidneys are suspended in such a way as to remedy the drainage defect there is no question of the value of the procedure.

DR. ABRAHAM HYMAN, New York: Regarding the factors that are responsible for the lowered mortality rate in kidney surgery, I should like to call attention to what I consider an important point. A few years ago Dr. Thomas called attention to the fact that specialism has had more to do with lowering the mortality rate than any other factor. He quoted statistics which showed that the mortality rate for nephrectomy in the hands of general surgeons was 25 per cent., whereas in seven times the number of operations performed by eight noted urologists, the mortality was as low as 7 per cent. In 1912, Dr. Gerster reported a series of 112 nephrectomies, with 21 per cent. mortality. Last year Dr. Béer and I reported 207 nephrectomies with a mortality rate that was not quite 4 per cent. This marked improvement is undoubtedly due to two factors: the general advance in the study of urologic diseases, and the influence of specialism. There can be no question that the man who sees these cases frequently will do better work than the one who does so occasionally. Debatable points may force themselves, some for immediate discussion, on the surgeon: Is it advisable in a specific instance to do a two-stage nephrectomy or attempt removal of a kidney in one operation? Should the nephrectomy be subcapsular or not? Should a stone kidney be removed or drainage done? Is the diminished function of the opposite kidney due to a reflex inhibition, a toxic nephritis, or disease of the organ itself? These and many other questions will frequently arise and are more satisfactorily answered by the man who has had a wide experience in urology.

DR. JOHN R. CAULK, St. Louis: One trick in small pelvic stones is to put the little finger in the pelvis and tap the kidney with the other hand in order to bring the stones down. Another method of getting good results in certain sandy stones consists in doing a complete irrigation at the time of operation, following up with lavage of the pelvis within ten days after operation.

Carrying a Hospital by Caravan.—Dr. Arthur L. Piper five years ago set up a crude grass hut hospital at Kapanga near Musumba, capital of the Alunda tribes of Central Africa, and with the aid of a nurse has been treating the natives that each morning in a line of eighty or more sick and injured wait their turn to be helped. Dr. Piper recently visited America and purchased 101 different kinds of medicines together with all manner of test tubes and laboratory equipment for his hospital. From the end of the Cape-to-Cairo Railroad all luggage will have to be transported on the backs of native carriers for seventeen days in the scorching heat of a tropical sun and constantly surrounded by wild beasts of the jungles. Part of the journey will be through the country where the "sleeping sickness" has wiped out entire villages.

INTESTINAL AND HEPATIC REACTIONS
IN ANAPHYLAXIS *

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The anaphylactic reaction has never been adequately analyzed from the physiologic point of view. The picture of the acute shock in any one type of animal is usually dominated by symptoms arising from some one tissue or organ. The attention of serologists has been directed almost exclusively to a study of reactions in this particular tissue, while reactions in other tissues, conceivably of even more fundamental importance, have been largely overlooked.

For example, the picture of the acute anaphylactic reaction in guinea-pigs is dominated by symptoms arising from the pulmonary tissues. Prolonged spasms of the terminal bronchioles are responsible for the dominant respiratory distress. This has directed the attention of investigators almost exclusively to a study of anaphylactic phenomena in smooth-muscle structures. Yet, aside from its dramatic rôle in guinea-pig anaphylaxis, the smooth-muscle cell is probably a relatively unimportant factor in immunity. There is reason to believe that the really important immunity reactions take place in other tissues.

The first attempt to extend anaphylactic studies to the apparently inactive tissues was made in some of the earlier physiologic analyses of anaphylactic phenomena in dogs. The picture of the acute anaphylactic reaction in dogs differs markedly from the picture in guinea-pigs. In dogs there is an almost complete absence of respiratory distress, the dominant features being gastro-intestinal symptoms, followed by a loss of tone of the skeletal muscles, and a more or less complete loss of reflexes. In the fatal type of reaction, the dogs pass into coma, death usually resulting in from thirty minutes to two hours. In the nonfatal type, the animals usually recover from a semicomatose condition in from one to two hours, after which they show few symptoms, except the repeated passage of bloody stools. The bloody diarrhea may continue for several days.

The earliest physiologic analysis of this clinical complex was made in 1909, by Biedl and Kraus.¹ These investigators demonstrated, by kymographic methods, that the canine reaction is accompanied by a sudden and rapid fall in arterial blood pressure. The pressure usually falls within two minutes to less than a third of the normal arterial pressure. In the nonfatal type of the reaction which they studied, the arterial pressure usually remains at this low level for from thirty to sixty minutes, and then gradually increases, reaching approximately normal in from one to two hours. They further showed that this fall in pressure is caused by a general vasodilatation, most marked in the splanchnic area, and that, at the height of the reaction, the vasodilatation cannot be overcome

by electrical stimulation of vasoconstrictor nerves. From this observation they concluded that the fundamental cause of the fall in blood pressure is a peripheral vasomotor paralysis.

They attempted to determine the mechanism of this peripheral paralysis by pharmacologic methods. They showed that at the height of the reaction the blood vessels will not react to epinephrin, but will react to barium chlorid. From this they concluded that the vasomotor paralysis is not due to the direct action of an anaphylatoxic agent on the smooth-muscle cells of the blood vessels, but to its action on the peripheral vasoconstrictor nerve endings. They further found that if barium chlorid is administered immediately before the injection of the foreign protein, the resulting vasoconstriction not only prevents the subsequent anaphylactic fall in blood pressure, but also prevents all other manifestations of anaphylactic shock. From this they concluded that the peripheral vasomotor paralysis is the fundamental reaction in canine anaphylaxis, to which all other reactions are secondary.

In the autumn of 1909, I attempted a repetition and extension of this work, in Professor Starling's laboratory, University of London.² Our studies were made on adult dogs, sensitized by a single subcutaneous injection with horse serum. The nonfatal type of reaction was obtained. The findings of Biedl and Kraus were in the main confirmed, though we obtained certain variations from the reactions described by them which led us to believe that numerous tissues took part in the reaction, in addition to the single tissue they emphasized.

INTESTINAL REACTIONS IN DOGS

One of the outstanding features in canine anaphylaxis is the development of gastro-intestinal symptoms, especially the repeated passage of bloody stools. Necropsies performed from one to two hours after the shock invariably show the intestinal mucosa hemorrhagic. This hemorrhagic lesion is usually confined to the upper half or two thirds of the small intestine, but occasionally extends as far as the ileocecal valve. The lesion is always most marked in the duodenum. On account of the similarity between this lesion and the intestinal lesions produced by snake venom and certain bacterial toxins, the question arose as to whether or not the hemorrhagic lesion is a primary effect of a circulating anaphylatoxic agent, or is merely a secondary phenomenon of relatively little interest.

Plethysmographic tracings with isolated intestinal loops show a marked vasodilatation during the reaction, conceivably of the peripheral neuroparalytic type. This vasodilatation is accompanied by loss of tone of the intestinal musculature, and a cessation of peristaltic movements. We further found that if the intestinal contents are removed by perfusion with physiologic sodium chlorid solution immediately before the injection of the foreign protein, and if the subsequent entrance of bile, pancreatic juice and stomach contents is prevented by ligatures, the hemorrhagic intestinal lesion does not develop. From this we concluded that the intestinal lesion is not due to the direct action of a circulating anaphylatoxin, but is due to the local action of intestinal enzymes, favored by the reduced blood flow and reduced peristalsis.

* Presented before the Washington University Medical Society, St. Louis, March 15, 1921.

* Read before the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Biedl, A., and Kraus, R. Experimentelle Studien über Anaphylaxie, Wien. klin. Wchnschr. 22: 363, 1909; Die experimentelle Analyse der anaphylaktischen Vergiftung, Handb. d. Techn. u. Methodik d. Immunitätsforsch. Ergnzungab. 1: 259, 1911.

2. Manwaring, W. H.: Der physiologische Mechanismus der anaphylaktischen Shocks, Ztschr. f. Immunitätsforsch. u. exper. Therap. 1: 1911; abstr. Bull. Johns Hopkins Hosp. 21: 275, 1910.

Histologic study of the hemorrhagic areas shows erosions or loss of epithelium, particularly marked on the ends of the villi, with necrotic changes occasionally extending into the deeper tissues. This tends to confirm our conclusion that the lesion is due to the digestive action by the intestinal contents, and is of little or no theoretical interest.

HEPATIC REACTION IN DOGS

A second constant necropsy finding in dogs is a marked swelling and congestion of the liver. Our attention was therefore turned to possible reactions in hepatic tissues. That the liver is thrown into increased functional activity during the anaphylactic reaction is indicated by the increased flow and increased specific gravity of the lymph from the thoracic duct which accompanies and follows the reaction.

In order to study this increased hepatic activity it was necessary to devise methods for the rapid exclusion of the liver from the rest of the circulation. The time at our disposal was too short to resort to the Eck fistula. As a preliminary to this exclusion it was shown that the blood of sensitized dogs can be rendered non-coagulable, either by repeated defibrination of withdrawn samples, or by the intravenous injection of herudin, without apparent interference with the subsequent anaphylactic reaction. Our studies in liver exclusion were made on herudinized dogs. After herudinization, a T-cannula was placed in the portal vein, one end of which was connected by a clamped paraffined rubber tube to the external jugular vein. By means of ligature sticks, unclosed ligatures were then placed about the portal vein, hepatic artery and vena cava, immediately above and below the liver. The abdomen was then closed. By opening the jugular clamp and closing the hepatic ligatures, the liver could be excluded from the circulation. On reversing the process, the normal liver circulation could be restored.

It was found that complete exclusion of the liver by this method prevents the anaphylactic reaction in sensitized dogs. During the period of hepatic exclusion, the foreign protein can be injected intravenously, with the production of no changes in arterial blood pressure. From this we concluded that the extrahepatic tissues of sensitized dogs do not differ in their reactions to specific foreign proteins from the extrahepatic tissues of normal dogs. The fact should be emphasized, however, that we were working with mildly sensitized adult dogs, giving the nonfatal type of reaction. Our work, of course, does not rule out the possibility of recognizable extrahepatic reactions taking place in more highly sensitized young dogs or puppies. On releasing the ligatures, allowing the blood once more to pass through the liver, a prompt typical anaphylactic fall in blood pressure is produced. It is evident from these tests that the cooperation of the liver is in some way essential to the production of the nonfatal type of anaphylactic reaction in dogs.

Our conclusion that the liver is an essential organ in canine anaphylaxis was received at the time with considerable skepticism. The conclusion, however, has been fully confirmed by subsequent workers. Thus, in 1911, Voegtlin and Bernheim,³ and in 1914, Denecke⁴

obtained identical results with Eck fistula dogs. Confirmatory evidence was also furnished by Weil and Eggleston⁵ in 1916. This latter confirmation is of particular interest, since Weil and Eggleston were working with the fatal type of anaphylactic reaction, the type that kills dogs in as short a time as thirty minutes.

NATURE OF THE HEPATIC COOPERATION

Two hypotheses have been put forward to account for this necessary hepatic cooperation in canine anaphylaxis. One hypothesis, recently suggested by Simons⁶ and championed by Wells,⁷ assumes that the initial cellular reaction is an anaphylactic spasm of the hepatic veins. Such a local vascular spasm would readily account for the hepatic engorgement, splanchnic congestion and low systemic blood pressure. Simon's hypothesis, however, has not yet been supported by experimental evidence. No data are as yet available indicating that mechanical occlusion of the hepatic veins does take place. Moreover, the hypothesis is contrary to our observations, since we were unable to detect primary vasomotor changes in extrahepatic blood vessels. The hypothesis would necessitate the assumption that the hepatic blood vessels acquire properties during sensitization that are not acquired by the blood vessels of other tissues. It appears to me that this assumption is contrary to the probabilities.

The only hypothesis thus far supported by experimental evidence is the hypothesis we originally put forward in 1910. According to this conception, the initial cellular reaction in canine anaphylaxis is a biochemical reaction in the hepatic parenchyma. This parenchymatous reaction presumably consists of an explosive formation or liberation of vasodilator substances. These vasodilator substances would readily account for the local dilatation of the hepatic artery, with the resulting increased intrahepatic tissue pressure and passive congestion of the splanchnic area. The vasodilator substances might also conceivably account for the systemic vasodilation, loss of reflexes, and relaxation and loss of peristalsis in the intestine.

Our hypothesis of the explosive formation or liberation of vasodilator substances by the hepatic parenchyma as the initial cellular reaction in canine anaphylaxis has received support from subsequent workers. Thus, in 1911, Nolf⁸ studied the changes in the coagulation of blood in canine anaphylaxis. He showed that mixtures of normal blood and 2 per cent. foreign serum can be perfused through the liver of a normal dog without showing a decrease in the promptness and firmness of its subsequent coagulation. If, however, a mixture of anaphylactic blood and 2 per cent. foreign serum is perfused through an anaphylactic liver, the blood mixture completely loses its coagulating power. This observation was subsequently confirmed by Weil and Eggleston.⁹ Nolf showed this loss of coagulation due to the explosive formation or liberation of antithrombic substances by the anaphylactic liver.

5. Weil, R., and Eggleston, C.: Anaphylaxis in Dogs, a Study of the Liver in Shock and Peptone Poisoning, *J. Immunol.* **2**: 525, 1916.

6. Simons, J. P.: The Fundamental Physiologic Reaction in Anaphylactic and Peptone Shock, *J. A. M. A.* **73**: 1437 (Nov. 8) 1919.

7. Wells, W. G.: The Present Status of the Problems of Anaphylaxis, *Phys. Rev.* **1**: 44, 1921.

8. Nolf, P.: La composition proteique du milieu humoral. Troisième mémoire. De l'anaphylaxie, *Arch. internat. de physiol.* **10**: 37, 1910.

9. Weil, R., and Eggleston, C.: Anaphylactic Reactions in Isolated Dogs' Liver, *J. Immunol.* **2**: 571, 1916.

3. Voegtlin, C., and Bernheim, B. N.: The Liver in Its Relation to Anaphylaxis, *J. Pharmacol. & Exper. Therap.* **2**: 507, 1911.

4. Denecke, G.: Ueber die Bedeutung der Leber für die anaphylaktische Reaktion beim Hunde, *Ztschr. f. Immunitätsforsch. u. exper. Therap.* **22**: 501, 1914.

In 1916, Weil and Eggleston⁹ attempted to test our hypothesis by withdrawing blood from dogs dying from anaphylactic shock and introducing this blood intravenously into anesthetized normal dogs. They obtained nontoxic symptoms, however, that were evident half an hour later, after the normal dogs had recovered from the anesthetic. Unfortunately, they did not use kymographic methods, and so could not have detected a nonfatal type of anaphylactic reaction the symptoms of which might be readily masked by the anesthetic. Their negative result, therefore, cannot be taken as an argument against our view.

HEPATIC REACTIONS IN GUINEA-PIGS

This line of work was interrupted at this stage for a number of years, during which time my attention was directed to problems of quite a different nature. The investigation was resumed, however, in 1915, in the Laboratory of Experimental Pathology, Stanford University, Calif. Our attention was first directed to a possible confirmation of these results on guinea-pigs. To study possible hepatic reactions in guinea-pigs, it was necessary to select some smooth-muscle structure as a test tissue. The isolated lungs were finally selected as the most satisfactory reacting index for this purpose. These lungs were studied by perfusion methods.¹⁰

If a cannula is placed in the pulmonary artery, and the isolated anaphylactic lungs are perfused with specific foreign protein, or with foreign protein-blood mixtures, a typical anaphylactic pulmonary response is produced. This reaction consists of two factors. First, there is a spasmodic contraction of the bronchioles, preventing expansion and collapse of the lungs under artificial respiration. Second, there is usually a distinct spasmodic constriction of the pulmonary blood vessels,¹¹ indicated by a reduction in the rate of flow of the perfusion fluid. That this reduction is due to a real vasoconstriction, and is not merely an apparent vasoconstriction secondary to the bronchial spasm, is indicated by the fact that similar vasoconstrictions can be demonstrated in extrapulmonary tissues.

If a mixture of defibrinated anaphylactic blood and specific foreign protein is repeatedly passed, by perfusion methods, through the isolated normal guinea-pig liver, and then tested on isolated anaphylactic lungs, a prompt, typical, anaphylactic response is produced. The normal liver, therefore, does not appreciably decrease the anaphylactogenic power of the specific protein-blood mixture. If, however, a similar mixture is repeatedly perfused through an anaphylactic liver, the mixture not only completely loses its power to call forth the anaphylactic response in isolated lungs, but acquires a new power, that of producing the opposite phenomena; a bronchial relaxation and vasodilation.¹²

Just what changes are produced in the protein-blood mixture by the hepatic tissues, we are not as yet prepared to state. The mere removal or neutralization of an anaphylatoxin, however, would not account for our observed results. There is evidently, besides this possible removal, the addition to the blood mixture of an antianaphylactic, or smooth-muscle relaxing substance.

The hepatic reaction in guinea-pigs, therefore, is apparently identical with the hepatic reaction in dogs. In both animals there is evidence of an explosive formation or liberation of smooth-muscle relaxing substances by the hepatic parenchyma. The reactions in the two animals differ, however, in that the explosive formation or liberation of smooth-muscle relaxing substances is the underlying cause of the clinical symptoms in dogs. In guinea-pigs these substances act as an antianaphylactic mechanism. They hasten recovery from the initial bronchial and vascular spasms, or tend to prevent the spasms, if the protein injections are made by way of the mesenteric veins. This conclusion is in line with the well-known fact that unusually large doses of foreign protein are necessary to produce the anaphylactic shock in sensitized guinea-pigs, if the injections are made by way of the mesenteric veins.

Confirmatory evidence of this biochemical hepatic reaction is furnished by the observations of Pick and Hashimoto¹³ on variations in autolysis of normal and anaphylactic liver emulsions. If a small amount of specific foreign protein is added to a living emulsion of normal guinea-pig liver cells, the protein brings about no appreciable change in the rate and degree of subsequent autolysis. The addition of a similar amount of specific foreign protein to a living emulsion of anaphylactic liver cells, however, reduces or even completely abolishes subsequent autolysis. Conceivably, there is an explosive formation or liberation of anti-enzymic substances by the anaphylactic liver cells.

NATURE OF THE SMOOTH-MUSCLE RELAXING SUBSTANCES

Just what these smooth-muscle relaxing substances are, we are not yet prepared to state. We have no evidence that the substances are at all related to antibodies. Furthermore, we have evidence that the substances do not consist of cleavage products of the foreign protein. Parallel quantitative titrations of protein-blood mixtures by precipitation methods, before and after repeated perfusions through the isolated anaphylactic liver, show no decrease in the amount of foreign protein as a result of the liver passage, and no qualitative change in the protein that can be detected by precipitative tests.¹⁴

PRIMARY HUMORAL REACTION

A question of interest to immunologists is whether or not this hepatic reaction is a primary reaction to the specific foreign protein, or is secondary to a preceding serum reaction. There is evidence in canine anaphylaxis that a serum reaction precedes the hepatic reaction. Thus, in the liver exclusion experiments, if the protein-blood mixture is allowed to circulate for five minutes through the extrahepatic tissues, the blood completely loses its power to call forth the hepatic reaction on subsequent release of the hepatic ligatures. There is no demonstrable qualitative or quantitative change in the foreign protein during this extrahepatic circulation. One of the easiest explanations of this observation would be to assume a preliminary serum

10. Manwaring, W. H., and Kusama, Y.: Analysis of the Anaphylactic and Immune Reactions by Means of Isolated Guinea-Pig Lungs, *J. Immunol.* **2**: 157, 1917.

11. Manwaring, W. H., and Crowe, H. E.: Types of Anaphylactic Reaction, *Proc. Soc. Exper. Biol. & Med.* **14**: 173, 1916.

12. Manwaring, W. H., and Crowe, H. E.: Role of Hepatic Tissues in the Acute Anaphylactic Reaction, *J. Immunol.* **2**: 517, 1916.

13. Pick, E. P., and Hashimoto, M.: Sensibilisierung und anaphylaktischer Shock der überlebenden meerschweinchen Leber, *Ztschr. f. Immunitätsforsch. u. exper. Therap.* **21**: 237, 1914.

14. Manwaring, W. H.; Kusama, Y., and Crowe, H. E.: Fate of Foreign Protein in the Acute Anaphylactic Reaction, *J. Immunol.* **2**: 511, 1916.

reaction, with the production of substances (anaphylatoxins) easily destroyed, neutralized, removed or otherwise rendered inoperative by the extrahepatic tissues.

SUMMARY AND CONCLUSIONS

1. The anaphylactic reaction in guinea-pigs and dogs is characterized by the explosive formation or liberation of smooth-muscle relaxing substances by the hepatic parenchyma.

2. These substances are directly responsible for the hepatic vasodilation in dogs, and either directly or indirectly responsible for the general vasodilatation,

3. In guinea-pigs, these substances act as an anti-anaphylactic mechanism, tending to overcome the initial bronchial and vascular spasms or to prevent these spasms if the protein injections are made by way of the mesenteric veins.

4. The chemical nature of these smooth-muscle relaxing substances is unknown. There is no reason at present to believe that they are antibodies. There is evidence that they are not cleavage products of the specific foreign protein.

5. In dogs there is evidence that the hepatic reaction is secondary to a preliminary serum reaction.

6. The hemorrhagic intestinal lesion in dogs is a secondary phenomenon, due to the local action of intestinal enzymes.

ABSTRACT OF DISCUSSION

DR. HOWARD T. KARSNER, Cleveland: It appears to be true that the anaphylactic liver has some influence on the fluid that passes through it. Dr. Manwaring said he has no evidence that it is specific for the liver as such. It appears to me that Dr. Manwaring's comments concerning the work of Simons are not borne out by what he said subsequently. Manwaring brings out the fact that the portal vein of the dog is extremely well supplied with smooth muscle; he follows that by saying that if this smooth muscle operates during anaphylactic shock, it does so as an isolated example. It is not in harmony with the activities of smooth muscle otherwise, whereas, subsequently he points out, at least primarily, that the smooth muscle of the pulmonary vessels and small bronchi acts in the same way. I think that the main point in Simon's theory is interconstriction of bronchi and pulmonary vessels. The vascular reaction appears particularly well in the rabbit. We know that it appears in the excised uterus and excised intestine. Even though it be evanescent, nevertheless it does operate. It might very well operate in regard to the tissue of the hepatic vein. The thing that disturbed me most in regard to Simon's demonstration is the work of Jackson and a collaborator in Cincinnati, who observed in the dog, through a window in the chest, that there is pulmonary constriction. Of course, even though that be true, it does not exclude the possibility of constriction of the hepatic vessels.

DR. W. H. MANWARING, Stanford University, Calif.: The main confusion that has arisen in regard to the anaphylactic reaction in dogs is due to the fact that in dogs there are two types of this phenomenon. First, there is the mild or non-fatal type originally studied by Biedl and Kraus, from which the dogs invariably recover in from one to two hours. Second, there is the fatal type, the type studied by Richard Weil, requiring a special method of sensitization. In the nonfatal type of the shock we have thus far been unable to demonstrate primary vasoconstriction in the extrahepatic blood vessels. This conclusion, of course, does not rule out the probability that in more highly sensitized dogs giving the fatal type of reaction we may have primary extrahepatic reactions. For that reason we do not believe in the existence of primary vasoconstrictive blood vessels, since there is no reason at present to believe that the hepatic blood vessels

acquire properties during sensitization not acquired by the blood vessels in extrahepatic tissues. It is probable that in the highly sensitized dogs we have a combination of several primary reactions, the same as we have a combination of at least two primary reactions in the guinea-pig.

A NEW NONOPERATIVE TECHNIC FOR REMOVAL OF IMPACTED CALCULUS IN URETHRA *

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Impacted calculus in the urethra is a comparatively rare condition. The frequency of its occurrence is not known on account of insufficient statistical data.

The presence of calculus in the urethra produces inflammation, edema and proliferation of the adjacent structures; this tissue reaction locks the stone in place and makes dislodging it impossible except by mechanical manipulations (Fig. 1).

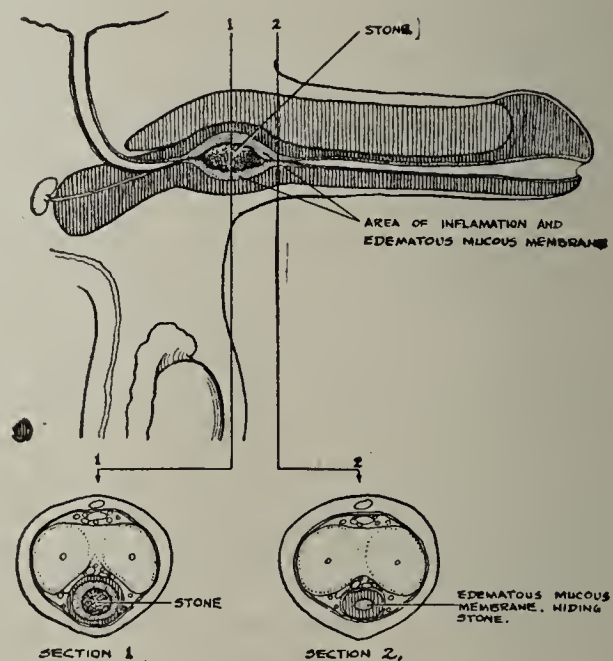


Fig. 1.—Calculus in urethra, producing inflammation, edema and proliferation of adjacent structures.

In order that urinary complications and sequelae may be avoided, calculus in the urethra calls for immediate removal. Many methods have been advocated, the most important of which are: inserting forceps into the urethra and attempting to extract or crush the stone; the use of spoon shaped instruments for the purpose of lifting the stone out; pushing the stone into the bladder and performing a cystotomy; urethrotomy and removal of the stone through the incision.

It can readily be seen that any of these methods traumatize the urethra to the extent that infection, scar formation and urinary fistula may result. The technic here described does not injure the urethra, is easily performed, either with or without the aid of an endoscopic tube, and does not require an anesthetic.

From the standpoint of urethral obstruction, impacted calculus presents the same mechanical problem as a filiform stricture. Therefore (Fig. 2), a number of olive tip whalebone bougies are inserted into the urethra up to the point of obstruction. The same preparatory technic as in all urethral instrumentations having been observed, one by one the

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

bougies are manipulated so that they pass a little beyond the stone and surround it (Fig. 3). When the bougies are in the described position, they are all grasped together and pulled out rather firmly and quickly. From fifteen to twenty bougies are necessary to surround the stone properly.

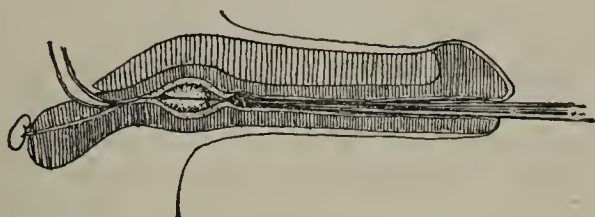


Fig. 2.—Bougies inserted into urethra up to the point of obstruction.

The mechanics of this technic is rather simple when one considers the fact that the lumen of the bougies in position is practically obliterated at the olive tip end; and when they are pulled in the manner described, the calculus is caught as if in a cradle and comes along when the bougies are withdrawn (Fig. 4). Moreover, the calculus is surrounded with bougies which act as a covering to the rough surface, and prevent injury to the mucosa during the procedure.

REPORT OF CASE

A man, aged 39, admitted to the clinic, March 9, 1920, complained of urethral discharge, burning pain during micturition, hematuria and marked frequency. The past history was unimportant except for an attack of severe pain in the right lower abdomen about ten months before, which came on suddenly and lasted about two days. This condition was diagnosed appendicitis by his physician. No operation was performed, and no stones were passed.

Physical examination was negative except for some tenderness on deep pressure above the pubes, and a seropurulent discharge at the meatus. Smears were negative for gonococci; two glass test showed both urines containing an enormous amount of pus and many red blood cells.

The urethra was irrigated with permanganate solution 1:5,000; diagnosis was not made at this time.

March 11, there was no urethral discharge or hematuria; frequency was diminished. The patient stated that very often the urinary stream suddenly became smaller and stopped

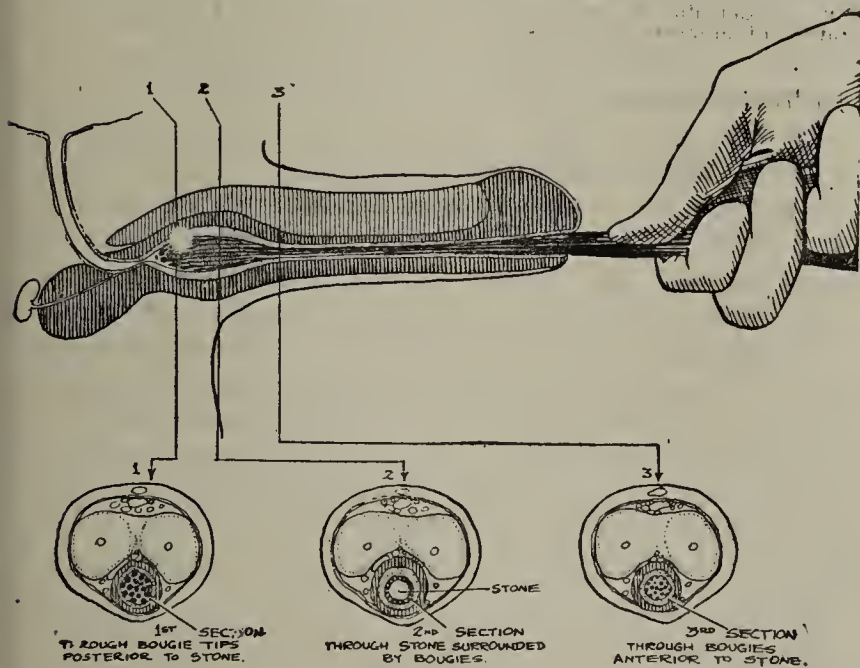


Fig. 3.—Manipulation of bougies so that they pass a little beyond the stone and surround it.

before he had finished. A provisional diagnosis of vesical calculus, vesical tumor was made.

An attempt at cystoscopy was unsuccessful on account of obstruction at the penoscrotal junction. Sounds and bougies met the same obstruction. A urethroscope was then inserted as far as the obstruction; no scar tissue or lumen could be

seen on account of the marked edema and inflammation of the mucosa at this point. The presence of stone was then made out by palpation, a little beyond the penoscrotal junction, and was removed by the method described above, with practically no discomfort to the patient. Only a few drops of blood were noticed after the stone was removed.

March 16, the patient was very much improved; had had no pain or frequency, and urinated freely. The urine still contained a large amount of pus. Permanganate irrigation was given, and he was told to return for cystoscopy. He did not return, however, for further observation.

Being somewhat skeptical about the ease with which the calculus was removed in this case, I proceeded to check up the technic on the cadaver. Three male cadavers were used for the experiments; three different stones were inserted into each urethra at different times, making nine experiments in all; and in each one the stone was brought out with the bougies.

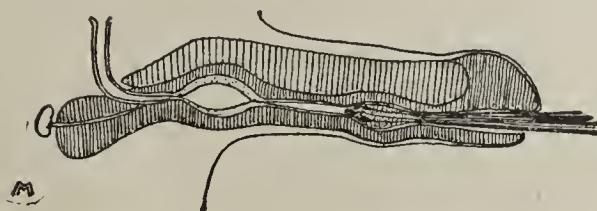


Fig. 4.—Withdrawal of bougies with calculus.

If calculus in the urethra is complicated by the presence of organic stricture, the efficacy of this procedure would depend on the caliber and resilience of the stricture; however, the method should at least be tried.

802 Rose Building.

ABSTRACT OF DISCUSSION

DR. EDWIN BEER, New York: Dr. Jacobs is to be congratulated on giving us this ingenious method. As he says himself, he was a little skeptical as to whether it would work with regularity. I am still a little skeptical as to whether it will work regularly, but I think it should be tried rather than the cutting operation. Whether one has twelve or fifteen presents himself will determine largely how many cases are so treated; but I think this very simple operation should be of great help. I have been interested in trying to do the same thing in ureteral stones. In the ureter I have never been able to pass more than six of the whalebone bougies, and have never been able to grasp the stone in the ureter so that it could be delivered through the ureteral meatus into the bladder. While I believe the problem is far from simple, I think if this method can succeed in the urethra it should also in the ureter. The difficulty will be to get a complete encirclement of the stone in either case. I have been using these bougies for several years.

DR. A. L. WOLBARST, New York: The procedure described by Dr. Jacobs is an excellent one if it can be carried out. Some months ago a well known general surgeon had attempted to extract a stone from the urethra. He passed a long pair of forceps down into the urethra for a distance of about 5 inches, grasped the stone and yanked it out with all the force he could muster. The stone was rough and jagged. The mucous membrane naturally was torn into shreds. Some weeks later this patient came to my clinic with a urethra full of scar tissue that made urination almost impossible. If the stone is a small one, the method proposed by Dr. Jacobs ought to be successful in forming a sort of track or groove along which the stone can move without doing damage to the urethral mucosa.

DR. A. J. CROWELL, Charlotte, N. C.: Some time ago I removed a very large ureteral stone and left the patient in my office while I went to lunch. When I returned I found the stone impacted in the urethra and the patient in great

pain, endeavoring to pass his urine. One of my associates had been trying to remove it under local anesthesia and failed. I bent the points of two metallic letter openers and, slipping one on each side of the stone in the urethra, I pulled it out very easily, under general anesthesia.

DR. PHILIP A. JACOBS, Cleveland: The technic of this procedure is very simple, for reasons which have been described. Moreover, you have one hand free to guide you in surrounding the stone with the bougies, thereby overcoming the difficulties which Dr. Beer meets in his ureteral work. Dr. Wolbarst's suggestion that one might get the filiforms around the stone and then try to get an instrument in is, I think, a bad procedure as it defeats the purpose of the technic. If you pass the filiforms as I have described, there is no necessity for an instrument, and what is more, there is no room for it. In the case described by Dr. Crowell, it is very probable that the stone would have passed as most of them no doubt do. There is one type of case in which this technic will not be successful, and that is when the stone is lodged in a diverticulum, making it impossible to surround the stone with the filiforms.

THE ILIOSACRAL JOINT*

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Some years ago, while working in comparative anatomy, I carefully observed iliosacral joints in a wide range of quadrupeds. The purpose of the observation was to become more familiar with the mechanical significance involved in the evolution and development of these joints, with special reference to their form and function. The early suggestions in primitive evolution may not interest us as much as the completely developed joints: joints in creatures whose habits, like our own, necessitated extensive traveling over hard, dry land. So by excluding all amphibious creatures and all quadrupedal birds and reptiles and mammals that fly as well as walk over land, we have left among living and fossilized creatures several thousand examples with direct bearing on our own iliosacral joints.

If we look backward, from the last born child of today into those primitive days when the ancient dimetrodon trod the earth, we shall find in common with all of these creatures a pelvic girdle composed of three osseous segments, each of which has three articulating areas.¹ The sacrum is always broader ventrally than dorsally, resembling an inverted key-stone. It never rests on the ilia, as one bone on another bone, but is always suspended from the ilia by dense fibrous tissues. So when heavy burdens are imposed upon the spine, the sacral wedge tends to descend between the ilia, thus permitting the entire pelvic girdle to tighten up to its limit of endurance.

The iliosacral joints are too nearly vertical to be construed as weight-bearing areas. In fact, they never bear weight unless the animal lies on its side. These joints are at all times subjected to lateral compression. They are composed of two zones. The central or articulating zone is a smooth, though wavelike, area surrounded by a zone of rough bone for fibrous tissue attachments. The two zones are not concentric. The normal range of motion may be compared with the

motion existing between the external and middle cuneiform bones of the tarsus. The relative direction of movement for the sacrum is backward if the ilium is forward, or downward if the other is upward, and always equal and opposite in direction for rotation, which movement is more likely to be about a traveling center than about a fixed point. The separation of sacrum from ilium occurs only during the process of dislocation and is not a true joint motion. The sacrum is always the base of the spine, and the iliosacral joints are always the bases of the two ilia.

The ilia start from the iliosacral joints as their bases, and proceed on their curved course until they converge at the pubes. They are powerful and rigid levers and have much to do with the stability and instability of the joints at their bases. For example, if the right abdominal rectus and the left gracilis and adductors contract violently at the same time, the pubes will be pulled out of symmetry. The right side of the pubes will be pulled up and the left side will be pulled down, which means that the long lever arms of the ilia have created motion in one or both iliosacral joints commensurate with that exhibited at the pubes. Conversely, if a roentgenogram reveals lack of pubic symmetry, it also suggests manipulation of these levers as an aid toward reduction. These powerful levers are also accurate indicators for both kind and degree of dislocation or subluxation, since they multiply or magnify, at the pubes, very slight displacements at their bases.

Ages ago, when our early ancestors decided in favor of bipedism as opposed to quadrupedism, they were so well pleased with the horizontoid axis of the sacrum that they let it remain almost in its original position; but they developed such a marked lumbar curve that the fore legs left the ground completely. By doing so, they not only deprived the forward end of the spine of its original support, but they actually added the weight of the fore legs to the burden of the iliosacral joints. Among other "disadvantages of the upright position," true mechanical estimates for all strains received from above downward have been greatly complicated, since these strains must be computed through the torus of the lumbar curve.

Concerning erect spinal posture, it is interesting to note that, when a quadruped stands erect on the hind legs, the lumbar vertebrae and the axis of the sacrum are almost vertical. The same vertical posture is almost equally true when a human being is in an erect sitting posture. However, when a human being stands up on the legs, the lumbar vertebrae assume the characteristic curve and the sacrum retains its horizontoid axis. The relative amount of discomfort to patients afflicted with lumbosacral pain, experienced between standing and sitting, suggests its own postural remedy. Having digressed for a moment on the subject of lumbosacral pains, I shall continue with the original subject of iliosacral joints.

The purpose in submitting the foregoing mechanical properties is merely to suggest further possibilities concerning both diagnosis and treatment. Sometimes present methods of diagnosis fail. The history of the case and accident are not always dependable. The excellent method of flexing the thigh (with knee unbent) on the abdomen may fail, because iliosacral disorder is only one of several causes for limiting this type flexion.

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1. I have referred to the pubes as an articulating area, first, because it is not ankylosed, and secondly, because two converging bones, with intervening cartilage, bound together with fibrous tissues, move with reference to each other; and, with iliosacral joints, they share motion both in kind and in degree.

A roentgenogram of a suspected joint may fail to afford convincing evidence, because it may not show any abnormality at all. I therefore make the suggestion that the entire pelvis be shown on each picture; then study the pubes where the long indicators of ilio-sacral displacements may be recorded on a magnified scale. I would further suggest that the picture be taken with reference to bringing out lack of pubic symmetry. To demonstrate the result of pelvic girdle strain, have the patient stand on one leg for one picture and on the other leg for the other picture.

In regard to treatment, we are to remember that we have to deal with a body ring, composed of three bony segments jointed together at three places. Each of the bony segments has its own individual lever projections. By grasping the crest of the ilium or the pubes or the ischial tuberosity on each side of the body, an opportunity is afforded to exert compression or traction or rotation as an aid to other manipulations in the reduction of fractures, as well as in the reduction of dislocations. Through the rectum, a firm grip can be taken on the lower end of the sacrum. By properly employing the manipulation just mentioned for expanding and maneuvering the segments of the pelvic girdle, we may simplify the reduction of difficult cases and avoid some open operations.

ABSTRACT OF DISCUSSION

DR. R. W. KNOX, Houston, Texas: I do not believe that the upright posture of man may yet result in a menace to the human race. On the contrary, it is fair to presume that the troubles of the lumbosacral region are not so great now as in the earlier history of the race when the strong muscular and ligamentous attachments were not so well adapted as at present for holding the body in an erect position. In fact, the mechanism of the spine seems well adapted not only for the complex movements of the body, but for its support as well. Like all machinery, whether organic or inorganic, it may suffer from overloading or defects in material. The sagging of the lumbar vertebrae due to the loose sacral joint is a frequent cause for trouble requiring rest and mechanical support for relief. Another frequent and serious cause for trouble in this region is the elongated or hypertrophied condition of the transverse processes of the fifth lumbar vertebrae. When these processes impinge on the ilium or sacral joint, a painful bursa may form at the point of contact and serious invalidism may result. Nature, at times, attempts relief by ankylosing the last vertebrae to the pelvic bones. When this occurs, the subject walks with a characteristic stiffness of gait.

DR. C. L. LOWMAN, Los Angeles: From the standpoint of treatment, I should like to call attention to the legs and feet in relation to sacro-iliac conditions. When the arches are relaxed, there is inward rotation of the leg with strain, stretching and tension on the external rotators. The piriformis muscle is the only muscle in the body that goes cross-ways. The inward rotation of the legs gives constant strain, and rotating the thighs outward, as in the regular rotation exercise for foot treatment, tones up the external rotators. We order a movement that is one of the chief toning up exercises for the piriformis muscle. The patient lies prone and rotates the leg outward against the resistance of an assistant, who grasps the heels and holds the foot in the toe-in position against the patient's resistance. This affects the only group of muscles that has any stabilizing effect on the sacro-iliac joints laterally.

DR. H. R. ALLEN, Indianapolis: Parts of the discussion have contributed very much to the paper by way of elucidating the various points I endeavored to express in the least number of words and to the elucidation I owe much gratitude.

FRACTURE OF THE SPINE OF THE TIBIA *

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Fracture of the spine of the tibia is a rare type of intracapsular fracture of the knee-joint. Often associated with this injury there is found rupture of either one or both crucial ligaments. Investigation has shown that rupture of the crucial ligament may exist with fracture of the tibial spine, or fracture of the spine of the tibia may exist without rupture of the crucial ligaments.

Hogarth Pringle¹ published a report in 1907 on a case of rupture of the crucial ligaments with avulsion of the tibial spine. In this case he sutured the spine back into position. This is the first recorded operation for this type of injury. In 1888, Sir Rickman Godlee described the lesion that he had found in a leg that was amputated by Erichson in 1873. The injury in this instance had been caused by the passage of a cart-wheel over the leg.

Briefly, I will describe the anatomy of the superior articular surface of the tibia. On the upper surface of the tibia two articular facets extend upward in the middle of the joint, forming the two tubercles of the spine of the tibia. Along the summit of the spine runs a groove anteroposteriorly. This groove opens up at the anterior and posterior ends into the V-shaped intercondyloid fossa. The anterior V-shaped intercondyloid fossa furnishes attachment to the anterior portion of the semilunar cartilage and for the anterior crucial ligament. The posterior fossa offers attachment to the posterior horn of the semilunar cartilage and the posterior crucial ligament. Thus the anterior crucial ligament passes from the inner tubercle of the spine upward, backward and outward, and is inserted into the inner aspect of the external condyle of the femur. The posterior crucial ligament passes upward, forward and inward to be attached to the interior portion of the internal condyle. It lies behind the anterior crucial ligament.

It follows, therefore, that: 1. When the knee is fully extended, the anterior crucial ligament is tense and prevents displacement of the tibia forward on the femur. 2. When the knee is fully flexed, the posterior crucial ligament is tense and prevents backward displacement of the tibia on the femur. 3. Both ligaments prohibit inward rotation of the tibia.

Bearing these points in mind, one may diagnose an injury of the crucial ligaments quite readily; e. g., if in the extended position the tibia cannot be displaced forward, it may be assumed that the anterior ligament is intact. If in full flexion the tibia cannot be displaced backward, the posterior ligament may be presumed to be intact. The most constant sign of fracture of the spine of the tibia is an obstruction to full extension of the leg.

Avulsion of the tibial spine is practically always produced by violent traction on the crucial ligaments. It seems logical, therefore, to assume that extreme vio-

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Pringle, J. H.: Ann. Surg. 46:169 (Aug.) 1907.

lence is necessary to rupture the crucial ligaments. Such violence would in all probability produce complete dislocation of the knee-joint.

In a personal observation of about 1,000 fractures during the past ten years, I have observed three cases of fracture of the spine of the tibia. The first was seen in the fall of 1913, the second in the fall of 1920, and the third in April, 1921.

LITERATURE

Prior to 1873 but three cases of fracture of the tibial spine are described in the literature. In each case the fracture was not recognized until after amputation or at postmortem examination. As stated above, Pringle reported the first case in American literature in 1907. Sir Robert Jones² reported fourteen cases of fracture of the tibial spine. He classifies three types of this injury: (1) avulsion of the tibial spine or its internal tubercle; (2) fracture of the external tubercle of the spine, and (3) injury to the tibial spine combined with fracture of a tuberosity of the tibia. In 1915 I³ reported a case of fracture of the tibial spine, which I had seen in 1913. This is the second case reported in American literature. While, of course, this type of injury is rare, there surely must have been a number of cases seen by others during the eight years that have elapsed between the appearance of the articles by Pringle and myself. Sever,⁴ in 1916, reported a case in a man, aged 59. Smith,⁵ in 1918, reported a case in a British officer. Jones⁶ reported a case in a man, aged 47. He also reports in the same article the roentgenographic findings in seven other cases.

MECHANICS PRODUCING THE INJURY

I am of the opinion that the tibial spine is practically always fractured by indirect violence, and that fracture or avulsion of the spine is due to sudden and powerful traction on one or both crucial ligaments, but usually the posterior.

The tibial spine is so situated and protected by nature that it is practically impregnable to direct assault.

In my three cases the history will show that a powerful traction on the crucial ligaments produced the injury in each case. The violence is applied while the knee is flexed and abducted and usually externally rotated. This injury may also occur if the knee becomes suddenly and powerfully hyperextended, as in Case 3.

REPORT OF CASES

CASE 1.—A white man, aged 19, seen in the fall of 1913, three weeks previously had jumped off a wagon, and in landing on the ground his leg suddenly flexed under him and he fell, striking the knee against the curbstone. He was unable to rise or extend the knee because of severe pain in the joint. The leg became greatly swollen and painful, and two roentgenograms were said to be negative. At the end of six days, he was discharged from the hospital. Pain and stiffness persisted and he later came under my observation.³ The knee was painful, swollen and contained free fluid. A roentgenogram disclosed a complete transverse fracture of the

tibial spine. A plaster cast was applied with the leg in complete extension for six weeks, at which time it was removed and active and passive motion instituted. He made a complete recovery with normal function. In this case, the force was applied by way of the posterior crucial ligament.

CASE 2.—A white woman, aged 50, stumbled while going down stairs. In falling, the knee was flexed and strongly abducted. There was a violent pain in the knee, and the patient could not straighten the leg. She said that her knee was dislocated outward and was pulled into place by her husband. She was seen by me several days later. The knee was greatly swollen, discolored and quite painful, and was fully extended. There were no symptoms of crucial ligament injury, but the tibia could be abducted on the femur, thus showing a rupture of the internal lateral ligament of the knee. The roentgen-ray revealed an avulsion of the spine of the tibia, together with a compression fracture of the outer tuberosity of the tibia. In this case, the force to the tibial spine was transmitted by way of the posterior crucial ligament.

CASE 3.—A white man, aged 25, slipped on an icy pavement while stepping out of his wagon onto a platform. He struck the knee cap forcibly against the edge of the platform, and instead of the knee becoming suddenly flexed as is usually the case, it became violently hyperextended. There was violent pain in the popliteal space, and the patient said that he felt the "cords" in the popliteal space give way. The knee became discolored and greatly swollen. He was treated by his family physician by the application of heat and massage. He came under my observation about four months after the injury. The chief complaint was that of locking of the knee accompanied by pain. The knee usually unlocked itself within fifteen or twenty minutes. Examination revealed the fact that flexion and extension of the knee was free except to within a few degrees of the normal range of motion. He complained especially of tenderness over the external semilunar cartilage. The roentgen-ray revealed a crack through the spine of the tibia, the fragment at this time not being separated from its bed. The locking in this case was due, in all probability, to the deranged semilunar cartilage. The force of violence was transmitted by way of the anterior crucial ligament. There were no signs of crucial ligament injury.

Patients 2 and 3 passed from my observation, and I cannot report their ultimate condition.

SYMPTOMS

There is sudden severe pain. The patient is unable to arise or straighten the knee. Effusion and swelling are rapid, and there may be marked ecchymosis.

DIAGNOSIS

Fracture of the tibial spine can be diagnosed positively only by means of the roentgen ray. The most presumptive evidence is blocking or locking of the knee, preventing extension; but a displaced semilunar cartilage may produce this phenomenon together with the identical signs of fracture of the tibial spine.

TREATMENT

The treatment should be entirely conservative and should give way to operative interference only when repeated attempts to obtain full extension prove impossible.

The knee should be manipulated under anesthesia until full extension has been obtained, and then immobilized in a splint or preferably in a plaster cast extending from toes to groin. It is best not to disturb this for about eight or ten weeks, at which time the cast is removed and massage and passive motion are instituted.

2. Jones, Robert: Rupture of the Crucial Ligaments of the Knee, and Fractures of the Spine of the Tibia, *Brit. J. Surg.* **1**: 299 (July) 1913.

3. Kurlander, J. J.: Fracture of Spine of Tibia, *Surg., Gynec. & Obst.* **20**: 179 (Feb.) 1915.

4. Sever, J. W.: *Am. J. Orthop. Surg.* **14**: 299 (May) 1916.

5. Smith, S. Alwyn: *Brit. J. Surg.* **6**: 176 (Oct.) 1918.

6. Jones, S. Fosdick: *Colorado Med.* **17**: 217 (Aug.) 1920.

Should the crucial ligaments be ruptured, the same treatment should be followed, except that immobilization is maintained for at least three months or more.

The results of conservative treatment are usually highly satisfactory.

Where chronic disability due to blocking of extension persists, it is best to remove the offending fragment of bone through the split patellar incision. The postpatellar pad of fat is removed and an excellent view of the tibial spine and anterior crucial ligament is obtained. Any obstructive mass is removed and the knee straightened. The incision is then closed. No suture of the patella is necessary. The leg is then immobilized for six weeks, after which the dressings are removed and motion commenced.

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ABSTRACT OF DISCUSSION

DR. ROLAND HAMMOND, Providence, R. I.: Many injuries of the knee are overlooked because roentgen-ray examinations are not made at the time of the injury, or are not made properly. I believe that proper examination of cases of severe knee injury would show many more of these fractures than the statistics quoted by Dr. Kurlander disclose. The significant point is that when we find an injury to the spine of the tibia, fixation should be prolonged for a greater time than is ordinarily done. When we come to the severe cases not properly treated, the problem is more serious. Rupture of the crucial ligament leaves a badly damaged knee. Are we to condemn the patient to a life of wearing a brace, or attempt reconstruction of the crucial ligament by the operation of Alwyn Smith? I have never tried any of these operations. They seem to me to be formidable, but I have seen good results from them and I think they are worthy of trial.

SIR ROBERT JONES, Liverpool: Dr. Kurlander has given a very accurate and full description of fractures of the spine of the tibia and sketched the anatomy. I have seen a great many of these cases, and on looking up old roentgenograms I have found that in early days I had overlooked a great number of these fractures. This condition is so closely associated with injury to the crucial ligaments that it is impossible to study the question without paying attention to this fact. The symptoms of rupture of the crucial ligaments are very clear when we bear in mind the anatomy. Internal rotation is the most important factor, and the force is intensified by abduction of the limb, the ligament being drawn across the sharp internal margin of the external condyle. It is fortunate that when rupture does occur it generally occurs at the attachment to bone and renders any attempt at immediate suture not only difficult but sometimes impossible. We must remember that the anterior crucial ligament is tense when the knee is fully extended, and prevents the tibia being displaced forward on the femur, and that the posterior crucial ligament is tense in complete flexion and prevents the tibia being displaced backward on the femur. Remembering these facts makes the diagnosis easy. If after an injury of the knee the tibia can be displaced backward or forward or rotated inward in the extended position, an injury of one or both crucial ligaments may be diagnosed. If in the extended position the tibia cannot be displaced forward, it may be assumed that the anterior crucial ligament is not torn across. If in the fully flexed position the tibia cannot be displaced backward, the posterior crucial ligament is presumably not injured. The most constant sign of fracture of the spine of the tibia is an obstruction to full extension. The block feels like a definite bone obstruction, and is quite different from the locking which occurs when the semilunar cartilage is nipped. In the case of displacement forward of the fractured spine of the tibia, it is necessary to remove it if we are to obtain full extension of the knee. This is best done by an incision through the patella from above downward while the knee is flexed over a table. An excellent

view can in this way be obtained of the anterior crucial ligament and also of the displaced tibia. If the case is seen immediately after injury and a bone block is present, the knee should be manipulated until full extension is secured. If there is no laxity of the joint as a result of injury to the crucial or other ligaments, fixation should be applied, not exceeding a few weeks, and good function may be expected. If, however, full extension is not possible an operation will have to be performed. The management of old ruptures of the crucial ligaments with fracture of the spine of the tibia, which have not been treated adequately, is definite. In a certain proportion of such cases improvement will occur by limiting the strain on the injured ligament, while in others there is a tendency to increase of disability, more especially when the lateral ligaments have also been badly injured. This point of view, however, must also be remembered: quite a number of patients show little functional disability, although they are able at will to push the tibia to and fro on the femur. I have known men who have suffered from dislocation of the knee in early life, showing all signs of rupture of the anterior crucials, and yet able to walk. In my opinion, secondary operations on the crucial ligaments are of very little practical utility.

DR. CHARLES F. PAINTER, Boston: I did not realize that there were so few cases of fracture of the spine of the tibia recorded in the literature. I have seen four cases. I operated on two patients whose anterior ligament was ruptured. The longer fragment of the tendon was the anterior one, which made the operation very difficult. Both patients, one a woman over 50, the other an aviator, aged 35, had received their injuries more than two years before. Fragments of connective tissue were between the two stumps, but not enough to establish a useful ligament. The operation consisted in making a silk ligament connecting the torn ends, and both patients now have stable joints. One case is only of three months' duration, but the man has a laterally stable knee, flexion to right angles and complete extension. He is protected with the "cage splint" devised by Sir Robert Jones, and I think he will do very well.

DR. HORACE R. ALLEN, Indianapolis: Before making a median line incision through the patella, I would advise any one to flex the knee clear back in order to see if the median line through the patella in extreme flexion corresponds closely to the median line through the lower extremity in extension. Occasionally, in men with unusually strong legs and in some others, the patella deviates strongly to the outer side of the median line when the knee is flexed well back. I heartily agree with Sir Robert Jones that through the usual methods it is a most difficult task to anchor the fractured spine of the tibia back in place without leaving some foreign body within the knee joint. Some years ago I reported a method of entrance to the knee joint without cutting the capsule of the joint and without splitting the patella. Just below the tubercle of the tibia, saw posteriorly about 1 cm.; then saw vertically to within about 0.5 cm. of the articulation, and then saw posteriorly toward the popliteal space. When within a safe distance, use a thin chisel, carefully cutting the unsawed remainder of the upper end of the tibia. This leaves the knee joint intact. The soft tissues of the popliteal space serve as a hinge between the leg and thigh. When the leg is well flexed, the lower end of the femur is covered by the thin plate of the tibial articulation. At an appropriate point between the condyles of the femur, a hole is made through the tibial plate. The spine of the tibia is then pulled down and anchored to the plate. Gouge out a space for the knots. Then bring the leg back into extension and treat the patient for a broken leg. It must be remembered that it takes about as long for the spine of the tibia to grow back in place as it does to secure bony union where the bone has been sawed. In all of my bone work I am careful to wash out all fats soluble in ether before closing a wound. I have thus so far avoided the evils of fatty embolism and possibly this point in technic plays an important part.

DR. JOSEPH J. KURLANDER, Cleveland: This condition is probably not so very rare; if we roentgenograph all our cases we shall see more of them.

AN ETIOLOGIC FACTOR IN ANGIO-
NEUROTIC EDEMA

PRELIMINARY REPORT

FREDERICK MYLES TURNBULL, M.D.

DULUTH, MINN.

A peculiarly striking vasomotor disturbance is angio-neurotic edema, otherwise known as giant urticaria, or Quincke's disease. Although first described as a clinical entity by Stolpertus as early as 1778, nothing is as yet known of its etiology, and the results of treatment have been negligible. The condition is characterized by a sudden localized swelling of the skin of the face or limbs, lasting from a few hours to a day or so, and as suddenly disappearing. A rapidly fatal result has been known to follow an attack involving the larynx, the patient being asphyxiated before tracheotomy could be accomplished.

The similarity in the pathologic conditions found in the cases here reported, together with the striking results which followed the same line of therapy in each case, points significantly to an etiologic possibility which may prove later to have an important bearing on this and similar vasomotor disorders.

REPORT OF CASES

CASE 1.—A widow, aged 66, who had always been well aside from frequent attacks of tonsillitis and an illness ten years before, described as Bright's disease, complained of frequent large swellings of the face, tongue, arms, legs, hands and feet. The first attack took place six years before, and the swellings had been recurring with great frequency ever since. The attacks were likely to occur in series, the tongue being so swollen one day that speech was impossible, while the next day the tongue would be normal but one hand or the other, or the whole arm, would be swollen, then the feet, legs, etc. Such a series was followed usually by a period of from ten to twenty days when there were no swellings to be seen. The patient had never been free of an attack for a period longer than three weeks since the trouble started. The swellings appeared with great suddenness and without warning. There was a feeling of flushing and filling of the affected area, followed by itching. The swellings disappeared as rapidly as they came.

There had been frequent attacks of sore throat during the last ten years; she complained of dryness and harshness in the back of the throat, with much dropping of mucus and a bad taste in the mouth. Dull headaches had been almost constant for several years.

The positive findings on physical examination were all confined to the head. The left antrum and ethmoid sinuses were found to be the seat of an old suppurative process, this finding being confirmed by roentgen-ray examination. The tonsils were extremely septic, there being appended a note to the effect that we might expect a severe reaction to follow operations.

The blood pressure was: systolic, 223; diastolic, 110; hemoglobin, 62 per cent.; leukocytes, 4,500; Wassermann reaction, negative; urine, normal, and sputum, negative for tubercle bacilli.

A radical sinus operation revealed the antrum filled with a greenish yellow pus and marked polypoid degeneration of the lining membrane. The ethmoid cells were soft, and contained pus and polypoid material. The sphenoidal cells likewise contained a small amount of pus. The operation was followed by considerable shock.

Four days later the patient had the worst attacks she had ever had, the swellings affecting the face, tongue and both hands, and for the next ten days one region after another became severely affected.

The tonsils were then removed. The following day the lips, face, tongue and hands were greatly swollen for six hours. During the following week no further attacks appeared, and the patient was discharged.

Four months after operation the patient stated that she had been entirely free from all swellings for the last three months. The longest interval between attacks since the onset of the disease, six years before, had been three weeks. Her general health was much improved. The hemoglobin was now 84 per cent., and blood pressure down to 180.

CASE 2.—A married woman, aged 50, with a negative history, stated that for two years she had been greatly troubled with sudden swellings of the left arm, left hand and occasionally the left leg and ankle. During the two years since the first attack the swellings had recurred regularly once or twice every month, and were especially liable to appear when she was fatigued. The swelling was usually most marked in the left arm, which at one time suddenly increased 4 inches in circumference.

Head examination, corroborated by roentgen-ray examination, revealed a marked chronic involvement of the sinuses of the left side; also diseased tonsils. A radical sinus operation disclosed the same polypoid change in the lining membrane and much pus. A few days later the tonsils were removed. There was no marked shock or reaction. During the next few months the attacks became milder and less frequent. This patient has now been entirely free of attacks for more than eighteen months.

COMMENT

In many respects, there exists a great similarity between angioneurotic edema and certain anaphylactic reactions. We know that asthma and certain bronchitic conditions may be merely anaphylactic reactions. We likewise know that sinus infections and nasal polyps may result in a respiratory picture very similar to the ordinary anaphylactic reactions. It is quite conceivable, and certainly these cases would indicate very strongly, that there may exist an etiologic factor in these chronic nasal sinus infections, with the accompanying polypoid change, which may cast much light on anaphylactic manifestations in general. The results of certain experimental work along this line, now in progress, are awaited with much interest.

CHRONIC POISONING FROM MIXTURE
OF POTASSIUM NITRATE
AND SULPHUR

REPORT OF CASE

EMIL WINDMUELLER, M.D.

WOODSTOCK, ILL.

There is no reference to chronic potassium nitrate poisoning in standard works on toxicology or therapeutics. A fairly extensive search of the literature fails to reveal any case of chronic poisoning. The acute poisoning usually occurs after accidental administration, the nitrate being mistaken for Epsom salt. It is noted that 4 gm. of the drugs is sufficient to cause symptoms of acute poisoning characterized by marked intestinal irritation, vomiting and prostration. Eight grams have caused death within two hours. Recovery has been noted after the ingestion of 30 gm.

White, in his work on materia medica, notes that the salt has a high diffusive power and that it acts as a cardiac depressant rendering the cardiac pulsations feebler and fewer in number. Small doses, from 0.3 to 1 gm., act as a diuretic. The injection of the salt

increases the elimination of chlorids. It was noted by White that in vitro the salt prevented coagulation of the blood, but he states that it is not known that it has any effect on the circulating blood. A distinct toxic action was noted on the heart if the amount in the blood exceeded 0.05 per cent.

REPORT OF CASE

The fatal case of poisoning occurred in a farmer, aged 57, whose general health had always been excellent. He was seen by me on several occasions during the last two years for a chronic sacro-iliac arthritis. A urinalysis was made, Jan. 5, 1921, which was negative both chemically and microscopically. The total amount of urine in twenty-four hours at that time was 49 ounces. The blood pressure was: systolic, 150; diastolic, 85.

Some three weeks after this consultation the patient was advised by a friend to take equal parts of sulphur and saltpeter in teaspoonful doses four times a day. He followed this treatment for twenty-six days, taking daily approximately 10 gm. of potassium nitrate.

He was seen, February 20. At that time he appeared to be acutely ill. His eyes were sunken, he had lost much in weight, and was very nervous. He complained of intense muscular pain aggravated by motion or touch. The symptoms were suggestive of trichinosis, but this was ruled out by the absence of edema and eosinophilia. The temperature was normal or subnormal at all times. The pulse varied from 85 to 95. The blood pressure was: systolic, 140; diastolic, 80. The stools were distinctly loose. There was no paralysis. The deep reflexes were normal; the pupils reacted to light and accommodation, and vision was not impaired. The examination of the chest and abdomen was negative.

The blood findings were suggestive of a simple but high grade anemia: hemoglobin, 50 per cent.; erythrocytes, 290,000; leukocytes, 8,500. A few poikilocytes were found. Eosinophilia was not marked. The twenty-four hours' urine amounted to 21 ounces, with urea 2.25 per cent. Albumin was present in substantial quantities. There were a few hyaline and waxy casts, and few red blood cells.

In spite of diuretic treatment, the output of urine remained around 20 ounces a day, and if water was increased the quantity of urine was not raised but it would be eliminated in the form of cold perspiration. The muscular pains gradually subsided on discontinuing the salt, but the restlessness persisted. He was sleepless for days at a time, and the loss of flesh was very rapid. The stools contained no blood or intestinal parasites. He died, March 7, seventeen days after he came under observation and treatment for the nitrate poisoning. Unfortunately, a necropsy could not be obtained.

At the time he began the ingestion of the mixture of saltpeter and sulphur he was strong and healthy with the exception of his arthritis. The illness began shortly after he began taking the large doses of potassium nitrate. The symptoms became more stormy as the illness progressed. At no time was there edema, dyspnea or cardiovascular disturbance. There were no symptoms of uremic poisoning, in spite of the evident kidney involvement and the low urinary output. The most significant thing during his illness was the profound blood changes.

COMMENT

Clinical reasoning leads me to attribute this man's death to the ingestion of potassium nitrate, though the sulphur may be thought an incriminating element. Sulphur has been used as a cathartic for years, and it is frequently fed to children over long periods in substantial doses. Treacle and sulphur was at one time a highly esteemed domestic remedy, and was thought to be especially useful in the spring. Though effective in these conditions, it is not highly reactive. On the other hand, the quantity of potassium nitrate taken daily by this man was sufficient to cause symptoms of acute poisoning, and in works on toxicology it

is noted that 8 gm. have caused death within a few hours. That the continuous administration of potassium nitrate is likely to cause chronic poisoning would be in accordance with the general rule that all substances which cause acute poisoning will be followed by chronic poisoning with the successive administration of subtoxic doses. It is my opinion, therefore, that the poisoning was due to potassium nitrate; but as I have no data which eliminate definitely any sulphur action, I must perforce include sulphur in the record title.

It is regrettable that inability to obtain a postmortem renders the cause of death somewhat problematic. There can be no doubt that the immediate cause was the profound blood changes. In this connection it is interesting to note that White observed that the coagulation of the blood was prevented by the salt. While there is no proof that it acts in the same way on the circulating blood, it probably did so in this case. The puncture of the ear made for the purpose of a blood count in this patient bled for six hours.

THE FAD FOR PSEUDOSCIENCE

PERTINENT QUERIES AND MUSINGS

GEORGE DE TARNOWSKY, M.D.

CHICAGO

Blind indeed must be the present-day Esculapian who does not sense the changing attitude of many laymen toward our profession. With all due allowance made for the endemic reform wave, the competition of pathies and isms, the desire for "something new" and the unmistakable tendency toward compulsory state health insurance, the fact remains that our patients are demanding that they be more fully taken into consideration as individuals and not as cases, and that they be subjected to lines of treatment based on natural laws. Equally blind is the doctor—specialist or general practitioner—who, frankly comparing notes with his colleagues, has not sensed a faint but nevertheless unmistakable awakening to a fuller realization of the truth as at present understood, based on rational knowledge of the basic subjects of our medical studies.

Why is there so much medical unrest, so much open or hidden dissatisfaction among an ever increasing percentage of the medical profession? It is still fashionable to blame the World War for everything; certain it is that many of our fellows returned from camp or overseas to their more or less thoroughly disrupted civil practices with new ideas, new thoughts and many doubts regarding the value of certain surgical or medical "sheet-anchors" to which they had clung through the years as barnacles to a ship's bottom—barnacles being periodically scraped off whenever a vessel is dry-docked for repairs. Never in the past quarter of a century has there been such dire need of medical dry-docking as at present.

May all this mental doubt not be due to the fact that the medical "Intelligentzia," to use a now popular term, has come to realize that it knows too much and too little of the forces which preside over the state of balance which we call health, and of the biochemical changes which occur in departures from the normal? Happy indeed is the physician who can

still prescribe tincture of ferric chlorid in erysipelas or apply a beautifully finished and carefully dated plaster-of-Paris cast over a nonreduced fracture with a clear conscience; thrice happy and to be envied is the still more venerable practitioner who has definite specifics which can, in the twinkling of an eye, "scatter" inflammation internally or externally. The rest of us, having more or less unwillingly discarded many of our old methods and beliefs, are at present confronted with a mass of new undigested theories, dogmatic assertions and extravagant claims. Old mental props lie discarded at our feet before consolidation of the new has taken place, and we—the sober-minded conservatives—sadly but gingerly creep along with the fear of angulation ever before our eyes, while fad follows fad and the public, with its ever increasing knowledge of fundamental biology and physiology, begins to question our authority.

Methods of treatment have ever changed with—not ahead of—the evolution of knowledge; but, whereas in the past the individual's gastro-intestinal tract could rebel and eject the offending portion per vias naturales—either proximal or distal—nature is now given no chance of asserting itself because we either plunge our medication intramuscularly, intravenously or intrathecally, or else apply emanations whose potentiality for harm, when injudiciously used, is rarely mentioned in scientific discussions. Only the other day were we assured that the proper way to treat tonsillar hypertrophies was to subject them to repeated applications of the roentgen rays. How many calamities will be necessary before this new method is discarded?

Are there no voices in the wilderness sending out a warning cry which will cause the thoughtless among us to pause and think before accepting new curios and applying them to the alleviation of disease? Yes, thank heaven, a few courageous physicians have recently made themselves heard in no uncertain tones. Read Harvey Cushing's presidential address, delivered before the Society for the Study of Endocrinology. The World War gave me many opportunities for studying the effect on unwilling spectators of a bomb falling unexpectedly among them, and I bitterly regret having missed this recent treat. In the April, 1921, number of the *American Journal of Syphilis* is another timely note of warning uttered by A. R. Fraser, medical inspector of venereal diseases for the Union Government of South Africa. In this article (Some Account of the Responsibility of Intensive Treatment Methods with Regard to the Incidence of Early Neurosyphilis), Fraser squarely lays the responsibility for the serious increase of neurosyphilis to intensive intrathecal neo-arsphenamin treatment. He says:

At the present time the world of syphilology is obsessed with the apparently premier position of the pathological and serological finding. The syphilologist is being strangled by the tyranny of the Wassermann reaction. His sheet anchor in diagnosis is the Wassermann, his standard of cure is summed up in the word Wassermann, and his ultimate hopes and fears with regard to the future welfare of his patient are obscured in the misty haze of an empirical and nonspecific potentiality to deviate complement.

Fraser's plea for a more rational line of treatment is based on the fact that early intensive arsphenamin or neo-arsphenamin therapy inhibits the formation of antibodies, the presence of which prevents invasion of the central nervous system. At a meeting of the

Chicago Medical Society in May of this year, Ludwig Hektoen emphasized the all too little known fact that both roentgen-ray and radium emanations inhibit phagocytosis and hence lower the natural resistance of our body-cells. In a recent number (April, 1921) of the *Anales de la Facultad de Medicina* of Lima, Peru, is the bold statement made by Escomel to his students that:

Each individual exhibits idiosyncrasies or special predispositions to immunity or anaphylaxis; in his own blood stream are marshaled the forces of reaction, and it follows therefore that his serum contains all of the biochemical elements, either in process of transformation or reaction, with which he will defend himself against bacterial invasion regardless of the latter's species, strain or morphology. It is therefore self-evident that each individual harbors a polyvalent serum which belongs to him exclusively and which is capable of exerting the maximum of benefit or of curative value on himself alone. Is this not tantamount to the frank admission that departures from the normal, i. e., diseases, tend to be overcome by means of a total, integral autogenous serum? Even granting that a very few so-called specific anti-toxins, such as those of diphtheria or of tetanus, have proved their prophylactic or curative value, there are valid objections against the use of serums obtained from zoological species which differ more or less widely from man; is it not reasonable to ascribe to this fact the majority—if not all—of the hemolytic and anaphylactic phenomena which have sometimes even terminated fatally? Does not the use of a heterogenous antitoxin explain the not infrequent failures which in all probability always occur in polymicrobial infections?

With equal truth Escomel might have added that the polyvalent commercial antitoxins represent a thoroughly inaccurate and unscientific attempt to meet this polymicrobial type of infection. Inaccurate because the individual's bacterial flora are rarely, if ever, cultivated and identified prior to the use of these "shot-gun" infections; unscientific because, even if such cultures were made, they could not accurately indicate the relative present toxicity of the various strains in the individual and hence determine the percentage of each and every "specific" antitoxin which the manufacturer so glibly puts up and markets for the convenience of our inert gray matter. Is not Pierre Duval's recent attempt to treat appendical infections by means of polyvalent stock vaccines which include all "probable" bacterial strains—from *Streptococcus hemolyticus* to the colon bacillus, with *Bacillus catarrhalis* and a few other varieties thrown in for good measure—a distinctly retrograde one, scientifically speaking? Finally, are there not grave doubts in the minds of many thoughtful men, internists as well as surgeons, that antitoxin reactions are merely non-specific protein reactions? Is not the present wave of "milk-serum" injections a tacit admission of the truthfulness of the foregoing suspicion?

The craze for novelty, love of the pseudomiraculous and fear of not finding himself "in the procession" are prompting too many of our colleagues to discard methods of treatment which have stood the test of time for pseudoscientific measures which appeal to the imagination or inherent love of mysticism of our patients; and we, the conservatives, are called on to repair the often irreparable damage done by the faddist.

A 50-year-old man presented himself with the following history: A life-long sufferer from a chronic hereditary dermatitis involving the palms of both hands, he had been

recently persuaded to take a course of Finsen light treatments. The result had been a total loss of five fingers and the partial loss of the remaining five, with marked tendon contraction and a chronic intractable ulceration of both palms. Portions of both thumbs and of the index fingers remained, and a plastic repair of the damage was sought by the patient. As there were unmistakable evidences of bone necrosis in the various stumps, the ultimate outlook was not very reassuring.

A well developed case of tuberculous cervical adenitis in an 8-year-old girl was brought to me; the glands, though already fluctuating, had not broken down, and a radical operation was clearly indicated and advised. Influenced by the statements of an enthusiast, violet rays were extolled in order to "save the child from the knife." A year later the sorrow-stricken parents returned to my office with the same child, who now presented a hideous broken-down suppurating scar involving the entire right anterior angle of the neck. "How soon can you perform a plastic repair of my little girl's neck?"

A 14-year old girl, suffering from recurrent attacks of gastro-enteritis, was dubbed a "deficient endocrine" and given pellets in which anterior pituitary, suprarenal, pancreatic and ovarian extracts had been judiciously blended by some commercial firm dealing in these miracle producing preparations. Physical examination plus a bismuth-meal roentgenogram revealed a V-shaped kink of the transverse colon with gastropotosis.

On the eve of entering a city hospital for further observation, a former patient presented herself to me with total aphonia and a train of clinical symptoms dating back several years which clearly pointed to the specific origin of her trouble. The almost self-evident diagnosis was merely confirmed by a four plus Wassermann reaction, and massive doses of potassium iodid performed a "miracle." Yet this patient had been receiving local treatments for several weeks at the hands of one who should have known better.

A 30-year-old unmarried woman was treated for six months for intermittent fever by means of stock vaccines. When referred to me by the family, the patient's entire pelvis was found to be occupied by a large, fluctuating mass which reached to the umbilical line. Clinical signs of pulmonary tuberculosis were readily obtained and the laboratory reported a positive sputum. A rapid abdominal drainage revealed a double pyosalpinx with two fistulas of the ileum, and well advanced tuberculous peritonitis.

The preceding are a few of the cases encountered since the war which have prompted these musings. How can we teachers protect the present and future graduates in medicine from these fatal tendencies? Can we not more strongly impress on them the reliability of basic principles of anatomy, physiology and biology, and the unreliability of commercialized ready-to-use methods which are surely undermining our standing in the body-social? Are we sufficiently emphasizing the curative forces of nature in our lectures or demonstrations—whether they be on general or special topics of the healing art? Is it not the duty of teachers—either in the fundamentals or in the specialties—to tell our students what nature, unaided, will do or try to do in any given departure from the normal in order that they may learn to avoid antagonizing the forces of nature which we are at last beginning to understand and appreciate at their true value? Is it not time for us to clean house, to teach our students along rational lines, discarding the many fetishes we have so long clung to and cautioning them against new theories until the latter have become facts? Both in surgery and in internal medicine we have often failed to give nature full play, and the undoubted success of the host of pathies and pseudoreligious sects with which we are waging a more or less futile and undigni-

fied warfare is the natural reaction against our stubbornness.

Will not our position in the body-social be strengthened rather than weakened when we drop the mantle of mystery with which we at present surround ourselves and frankly take the public into our confidence? The time will never arrive when nature cannot be helped in a myriad logical ways and medical men will ever be in demand; the trouble with our profession is that it persists in too much meddlesome therapy—using the term in its broadest sense—to the detriment of nature. We are losing sight of "the patient himself"—to quote from Dr. Hugh T. Patrick's superb article on the subject, and many of us are substituting machine-made diagnoses for clinical acumen, ready-to-use advertised remedies for intelligent cooperation with nature, fads for facts.

Let's dry-dock!

BLOOD SUGAR AND BASAL METABOLISM

FINDINGS IN CHRONIC PULMONARY TUBERCULOSIS AND HYPERTHYROIDISM

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SANATORIUM, N. C.

This paper is based on some of the studies that the laboratories of the North Carolina State Sanatorium have been pursuing during the current year, and is a continuation of our work on the differential diagnosis of incipient pulmonary tuberculosis and incipient hyperthyroidism.

First, let us report our findings on the basal metabolic rate in tuberculosis. For this work we used a modified Benedict¹ metabolimeter whereby the rate of oxygen consumption per unit of time is determined. This finding is converted into calories of heat per hour and divided, using Du Bois'² body area formula, by the square meters of body surface, which in turn gives the metabolic rate per square meter of body surface per hour. This determined rate is compared with the known normal rate as given by Aub and Du Bois³ based on age, weight, height and sex, and from this the percentage of increase or decrease is determined.

The literature on basal metabolism in chronic pulmonary tuberculosis is very meager despite the fact that even as far back as 1882 to 1893 such workers as Muller,⁴ Kurlov,⁵ Grudziev⁶ and Bochkarev⁷ each found in a very thorough and scientific study of a few cases of pulmonary tuberculosis that the nitrogen metabolism was increased in this disease. McCann and Barr⁸ have recently published, among their numerous reports on basal metabolism, a paper on the basal metabolic rate in tuberculosis in which they find that

1. Benedict, F. G.: A Portable Respiratory Apparatus for Clinical Use, Boston M. & S. J. **182**: 243-245 (March 4) 1920.

2. Du Bois, Delafield, and Du Bois, E. F.: A Formula to Estimate the Approximate Surface Area if Height and Weight be Known, Arch. Int. Med. **17**: 863 (June) 1916.

3. Aub, J. C., and Du Bois, E. F.: The Basal Metabolism of Old Men, Arch. Int. Med. **19**: 823 (May) 1917.

4. Muller: Ztschr. f. klin. Med. **12**: 57, 1882.

5. Kurlov: Inaug. Diss. (Russian), 1886, Table 1.

6. Grudziev: Vrach **11**: 213, Table 1; *ibid.*, Table 7.

7. Bochkarev: Inaug. Diss. (Russian), 1893, p. 2.

8. McCann, W. S., and Barr, D. P.: Basal Metabolism in Tuberculosis, Arch. Int. Med. **26**: 663 (Dec.) 1920.

"the basal metabolism of tuberculous patients may be normal or very slightly above that of normal men of of the same size." Boothby⁹ believes that we can gain very little in the diagnosis of incipient pulmonary tuberculosis by the study of the basal metabolic rate.

Our studies have been on twenty-three incipient, seventeen moderately advanced and four far advanced cases, along with six known nontuberculous persons. This totals fifty cases, three of which are duplicates. In each case a routine duplicate determination was done as a check. This gives a grand total of 100 determinations.

FINDINGS

In 59 per cent., three cases of which are suspicious hyperthyroids, of the fifty-four tuberculous the basal metabolic rate was increased over 10 per cent.; in 36 per cent., one case of which had been a very definite hyperthyroid but in which we had lately given three roentgen-ray treatments over the gland according to Hodges,¹⁰ there was a normal basal metabolic rate; and in 5 per cent. there was a decreased basal metabolic rate. According to classification, we found in the twenty-three incipients the basal metabolic rate increased in 61 per cent., normal in 35 per cent., and decreased in 4 per cent. The seventeen moderately advanced and four far advanced, grouped together, showed: increased, 57 per cent.; normal, 38 per cent.; decreased, 5 per cent.

According to classification of the cases, we found the following: In the twenty-two incipient: increased basal metabolic rate and increased blood sugar, 36 per cent.; increased basal metabolic rate and normal blood sugar, 18 per cent.; normal basal metabolic rate and increased blood sugar, 18 per cent.; normal basal metabolic rate and normal blood sugar, 14 per cent.; decreased basal metabolic rate and increased blood sugar, 5 per cent.; increased basal metabolic rate and decreased blood sugar, 4.5 per cent.; normal basal metabolic rate and decreased blood sugar, 4.5 per cent. There were no incipient cases with a decreased basal metabolic rate and a normal or decreased blood sugar. In the twenty-one moderately and far advanced, grouped together, increased basal metabolic rate and increased blood sugar, 24 per cent.; normal basal metabolic rate and normal blood sugar, 24 per cent.; increased basal metabolic rate and decreased blood sugar, 14 per cent.; normal basal metabolic rate and increased blood sugar 14 per cent.; decreased basal metabolic rate and increased blood sugar, 5 per cent. None of this class fall in the following classes: normal basal metabolic rate-decreased blood sugar; decreased basal metabolic rate-normal blood sugar, and decreased basal metabolic rate-decreased blood sugar.

Now, let us report our blood sugar findings: In this work we used Epstein's¹¹ modification of Lewis and Benedict's¹² method for the reason that our studies, of which this is just a preliminary report, will not permit the frequent withdrawal of larger quantities of blood from the tuberculous. All blood was collected from one and one-half to four hours after a breakfast light in carbohydrates, and used at

once. We have called readings between 0.08 per cent. normal.

In view of the literature we are unable to find any bibliography on this subject, though Pottenger¹³ believes that it is of little value.

This report is based on the blood sugar findings in seventy-two cases of active pulmonary tuberculosis, and one case of apparently arrested tuberculosis with eight known nontuberculous and healthy adults as laboratory controls and technic checks.

Analysis of the seventy-four tuberculous cases shows the blood sugar increased in 58 per cent., normal in 27 per cent. and decreased in 15 per cent. By classification according to the stage of the disease, we find, in the twenty-seven incipient, the blood sugar to be increased 51 per cent., normal in 33 per cent. and decreased in 16 per cent. Of the forty-six moderately and far advanced grouped together, 65 per cent. increased, 28 per cent. normal and 7 per cent. decreased. The one apparently arrested case showed an increase.

Blood sugar determinations were made in all the forty-four metabolic cases, reported above, with these results: basal metabolic rate and blood sugar increased in 32 per cent.; basal metabolic rate and blood sugar normal, 18 per cent.; basal metabolic rate increased with a normal blood sugar, 18 per cent.; basal metabolic rate normal with an increased blood sugar, 16 per cent.; basal metabolic rate increased with a decreased blood sugar, 9 per cent.; basal metabolic rate decreased with an increased blood sugar, 4.5 per cent.; basal metabolic rate normal with decreased blood sugar, 2.5 per cent.; basal metabolic rate decreased with decreased blood sugar, none; basal metabolic rate decreased with normal blood sugar, none.

To convert the foregoing figures into words, one would say: In about one third of the cases of chronic pulmonary tuberculosis, the basal metabolic rate and the blood sugar are both increased; in about one fifth of all such cases there may be an increased basal metabolic rate and a normal blood sugar, or just the reverse, while in a much smaller percentage of cases, you may find any change in either basal metabolic rate or blood sugar; very seldom, however, would both be decreased or even one decreased and the other normal.

COMMENT

To explain why we found a large percentage of incipient (and other) cases of pulmonary tuberculosis to have an increased basal metabolic rate and blood sugar, as well as the numerous variations of each named above, is extremely difficult, if not impossible. However, we would advance the following theory: Pathologists are agreed that the liver is very resistant to *Bacillus tuberculosis*, while the suprarenal glands are very susceptible. Knowing that *Bacillus tuberculosis* thrives best where its toxins destroy tissue most easily, it is logical to believe that the tuberculoxins comparatively easily affect the suprarenal glands. Believing this to be true, by deductive reasoning from chemical and physical pathology, it seems possible that the increased basal metabolic rate and increased blood sugar, as well as their several variations cited above, are produced by a stimulation (which is the

9. Boothby, W. M.: Recent communication to the author.

10. Hodges, F. M.: Personal interview.

11. Epstein, A. A.: An Accurate Microchemical Method of Estimating Sugar in the Blood, J. A. M. A. **63**:1667 (Nov. 7) 1914. Janney, N. W., and Isaacson, V. I.: A Blood Sugar Tolerance Test, *ibid.* **70**:1131 (April 20) 1918.

12. Lewis and Benedict: J. Biol. Chem. **20**:61, 1915.

13. Pottenger, J. E.: Recent communication to the author.

mildest action a poison or toxin can have) of the suprarenals by the tuberculotoxins. This would result in an increased output of the secretion from these glands, which in turn would do three things: (1) Inhibit the island of Langerhans; (2) stimulate glycolysis, and (3) stimulate the thyroid gland to greater activity. The latter action (stimulation of the thyroid gland) would in turn act to prevent or lessen glyco-genesis, as well as produce the many hyperthyroid symptoms we frequently meet in incipient and other cases of chronic pulmonary tuberculosis.

When you heard the phrase, "stimulate the suprarenals," you probably immediately thought this: "That theory is incompatible with the established fact that there is usually a vascular hypotension in pulmonary tuberculosis"; and you can furthermore get the case records of the state sanatorium, showing over 6,000 blood pressure readings, as additional evidence of this hypotension. Hamener, Hoskins and McClure¹⁴ and Trendelenburg¹⁵ have found that the secretion of the suprarenal glands does not play an appreciable factor in the maintaining of vascular tension, and they furthermore report that a sufficient concentration of suprarenal secretion in the blood to influence blood pressure will cause a suppression of intestinal peristalsis. Therefore an increased output of this suprarenal secretion, caused by stimulation from the tuberculotoxins, needs not cause any blood pressure changes.

CONCLUSIONS

Remembering the well established fact that hyperthyroidism consistently shows both an increased basal metabolic rate and an increased blood sugar, it is impossible for us to draw from our work any other conclusion than this: The determinations of basal metabolic rate and blood sugar are of no practical value in the differential diagnosis of chronic pulmonary tuberculosis and hyperthyroidism.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

BEEBE PROTEIN MILK.—Eiweiss Milch of Finkelstein.—A modified milk preparation having a relatively low content of carbohydrate and fat and a relatively high protein content. Each 100 Gm. contains approximately, solids 10.2 Gm., carbohydrate 2.5 Gm., protein (casein 5.3 Gm., fat 1.6 Gm.) and ash 0.8 Gm. (The acidity is stated on each package.)

Actions and Uses.—According to Finkelstein, the mineral and lactose content of cow's milk is irritating, in some cases, to the gastro-intestinal membrane, causing fermentation and indigestion. The high protein content of protein milk is claimed to act as a preventive of fermentation and to serve as a medium in which a change in the intestinal flora takes place; thus it is claimed to be an aid in overcoming

conditions manifested by fat and sugar intolerance. Protein milk is said to be especially indicated in gastro-intestinal disorders of infants, accompanied by fermentation and diarrhea.

Dosage.—For the majority of conditions, Beebe Protein Milk should be administered in small quantities according to age and condition of the patient after a period of starvation of from twelve to forty-eight hours. Suitable carbohydrates may gradually be added to the preparation, as indicated by the clinical conditions.

For use, the contents of one can of Beebe Protein Milk, after thorough shaking, are emptied through a strainer or sieve into a clean quart measure, the solids being gently forced through with a spoon; carbohydrates, if prescribed, are dissolved in a little warm water and added to the protein milk, and then sufficient boiled water is added to make one quart. The finished mixture without additional carbohydrates contains approximately 31.7 Gm. of protein, 15.1 Gm. of carbohydrate, 9.5 Gm. of fat and 5.4 Gm. of ash.

Manufactured by Beebe Laboratories, Inc., St. Paul, Minn. No U. S. patent or trademark.

Beebe Protein Milk is manufactured by adding freshly prepared and finely divided casein to fresh buttermilk brought to a temperature of 100 C., filled in cans, which are sealed and sterilized by heat.

BEEBE MODIFIED BUTTERMILK.—Buttermilk with flour.—Buttermilk Modified formula of Langstein and Meyer.—Buttermilk containing flour partially dextrinized by heat. Each 100 Gm. contains approximately total solids 9.7 Gm., carbohydrates 4.7 Gm., protein (N \times 6.38) 3.3 Gm., fat 0.6 Gm. and ash 1.2 Gm. (The acidity is stated on each package.)

Actions and Uses.—Beebe Modified Buttermilk is offered as a means of combating intestinal fermentation by modifying the intestinal flora. Since it contains several forms of carbohydrates which have different periods of digestion, it is believed to afford an opportunity of assimilation without overtaxing the digestive powers. It is said to be indicated in digestive disturbances of children and adults characterized by milk dyspepsia, fat intolerance, eczema and vomiting.

The nutritive value of 500 Gm. of Beebe Modified Buttermilk corresponds approximately to 191.5 calories, of which 95.5 are due to carbohydrate, 67.7 to protein and 28.3 to fat.

Dosage.—From 175 to 300 c.c. (6 to 10 fluid ounces) at each feeding. For the average infant 100 c.c. per kilogram of body weight daily, divided into four feedings at four hour intervals.

Manufactured by the Beebe Laboratories, Inc., St. Paul, Minn. No U. S. patent or trademark.

Buttermilk of proper acidity is placed in vats, flour in definite proportions is added and the mixture brought to boiling and then cooled to 80 C., the mixture is again brought to a temperature of boiling and cooled to 80 C., it is again heated to boiling and transferred to cans which are sealed and then sterilized by heat.

MERCURIC OXYCYANIDE (See New and Nonofficial Remedies, 1921, page 194).

Actions and Uses.—Mercuric Oxycyanide has been proposed as a substitute for mercuric chloride. Its antiseptic power is claimed to be greater and it is asserted to be less irritating than mercuric chloride because it does not act on albumin to the same extent. It has the advantage over mercuric chloride in that it does not corrode steel instruments.

Representative syphilographers differ as to the use of mercuric oxycyanide intravenously. Some believe that its use should be limited to hospitals; others, that it has no advantage over other and safer methods of administering mercury; while others consider it safe and valuable; but all are in accord that its safe use requires experience.

Dosage.—Mercuric oxycyanide may be administered subcutaneously, intramuscularly or intravenously in the same doses as mercuric chloride. It may be applied locally in solutions of 1:5,000 or somewhat stronger.

The following dosage forms have been accepted:

Loeser's Intravenous Solution of Mercury Oxycyanide: Each ampule contains 5 Cc. of solution, representing 0.008 Gm. ($\frac{1}{8}$ grain) of mercuric oxycyanide, N. N. R.

Prepared by the New York Intravenous Laboratory, New York.

Ampules Ven Sterile Solution Mercury Oxycyanide 0.008 Gm.: Each ampule contains 5 Cc. solution representing 0.008 ($\frac{1}{8}$ grain) mercuric oxycyanide, N. N. R.

Prepared by The Intra Products Co., Denver, Colo.

Ampules Ven Sterile Solution Mercury Oxycyanide 0.016 Gm.: Each ampule contains 5 Cc. solution representing 0.008 ($\frac{1}{8}$ grain) mercuric oxycyanide, N. N. R.

Prepared by The Intra Products Co., Denver, Colo.

14. Hoskins, R. G., and McClure, C. W.: Am. J. Physiol. **30**: 192, 1911-1912; **31**: 50, 1912-1913. The Adrenal Glands and Blood Pressure, Arch. Int. Med. **10**: 343 (Oct.) 1912.

15. Trendelenburg, W.: Ueber die Beziehungen der Nebennieren zur normalen Blutdruckhöhe, Ztschr. f. Biol. **43**: 155, 1914.

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SATURDAY, SEPTEMBER 10, 1921

THE CURDLING OF MILK

The study of milk must remain of interest to physicians so long as this fluid continues to be not only a uniquely valuable food for man at various stages of his growth and development, but also a product that plays an important part in dietotherapy. For decades the attention of physiologic chemists has been directed to one or another aspect of the composition and chemical reactions of milk. Recently, the newly recognized food factors designated as vitamins have been foremost in the scientific considerations of milk. A few years earlier, interest was centered in the bacteriologic properties of milk; and, prior to that time, the proteins of milk and their behavior were the subject of considerable discussion in medical circles. Since cow's milk has for a long time been destined to replace human milk in many instances, comparisons between these two products in particular have repeatedly been instituted.

The fact that the rennin coagulation of cow's milk ordinarily results in a curd noticeably unlike that which is produced in human milk through the agency of the gastric enzyme has led to the conclusion, in past years, that the caseins of the two types of milk are chemically unlike. Bosworth¹ has lately undertaken a new investigation of this subject at the Laboratories of the Boston Floating Hospital. This has demonstrated that these caseins are acids having the same chemical composition and the same chemical characteristics. According to Bosworth, under the action of rennin on casein or milk this protein is split into two molecules of a protein designated as paracasein. Whether or not coagulation takes place will depend on the nature of the salts in the milk. The deposition of protein is facilitated by soluble calcium salts, which cow's milk contains, and retarded by soluble salts of the alkalis, which preponderate in breast milk. In other words, as the latter contains small amounts of casein and small amounts of soluble calcium with relatively large amounts of sodium and potassium, rennin produces in it either no curdling or only a very small amount of

finely divided curds. Bosworth contends that breast milk enters not only the mouth and stomach but ordinarily also the intestine in a liquid state. No large curds are formed in the stomach, at any rate, and therefore they cannot block the pylorus, as may happen when cow's milk or some of its modifications are ingested by infants. Modifications of cow's milk to prevent objectionable curdling are not unknown in pediatric practice.

That an acid reaction favors the curdling of milk with rennin has long been known. Bosworth asserts that perfectly fresh cow's milk does not curdle on the addition of rennin, though the coagulation is promptly produced as soon as sufficient change in reaction ensues. Hence we are admonished that all cow's milk used for infant feeding should be pasteurized immediately after milking. Evidently such factors as reaction and salt content cannot be overlooked in the consideration of the behavior of milk in the body.

THE NATURE OF KETOGENESIS

For more than a quarter of a century it has been recognized by students of metabolism that the appearance of the so-called acetone substances—acetoacetic acid, beta-hydroxybutyric acid and acetone—in the body is somehow associated with certain features of the oxidation of carbohydrate. The precursors of the acetone substances are today known to be chiefly the fats and certain amino-acid derivatives of the proteins. The latter have come to be designated as ketogenic, in contrast to the antiketogenic carbohydrates. Ketosis arises whereby acetone and the two related acids are excreted when abnormally small quantities of carbohydrate are being burned in the organism. Various explanations have been offered to account for the well substantiated facts. For example, the somewhat vague and fanciful statement of Rosenfeld¹ that the fats are burned in the flame of the carbohydrates² has been widely quoted. At best it may signify the belief that "carbohydrate serves to catalyze or set off the oxidation of fats." Other hypotheses have dwelt upon probable chemical reactions and definite interrelationships between intermediate products of the breakdown of sugar and fatty acids, respectively; but the theories of antiketogenesis have until recently remained too indefinite or untenable to permit any verification in actual physiologic tests.

About a decade ago, Woodyatt³ of Chicago published an attractive chemical formulation of the view that "antiketogenesis is an effect due to certain products which occur in the oxidation of glucose, an interaction between these products on the one hand and one or

1. Bosworth, A. W.: Strides of Infant Feeding, XIII, The Caseins of Cow's Milk and Human Milk in Their Relation to Infant Feeding; the Action of Rennin on Casein, *Am. J. Dis. Child.* **22**: 192 (August) 1921.

1. Rosenfeld, G.: *Berlin. klin. Wehnschr.* **43**: 978, 1906.

2. "Der Zündstoff für die Fette sind die Kohlenhydrate."

3. Woodyatt, R. T.: The Action of Glycol Aldehyd and Glycerin Aldehyd in Diabetes Mellitus and the Nature of Antiketogenesis, *J. A. M. A.* **55**: 2109 (Dec. 19) 1910.

more of the acetone bodies on the other." The deduction has further been made that antiketogenesis is of the nature of a chemical reaction between definite quantities of ketogenic and antiketogenic substances. An analogy in vitro to the action of glucose and similar substances, notably fructose and glycerol, in abolishing or preventing the formation or accumulation of acetoacetic acid and the related compounds in man has been reported by Shaffer⁴ of the Washington University Medical School, St. Louis. He has demonstrated that the oxidation of glucose in alkaline solution by hydrogen peroxid accomplishes the disappearance of acetoacetic acid if the latter is present in solution. In the absence of the carbohydrate or "ketolytic" substance the acetoacetic acid disappears at best very slowly, if at all. The inference is that some intermediate oxidation product of glucose combines with acetoacetic acid, the compound then being further oxidized. If this is true, the immediate cause of the formation of acetone substances, as shown in ketonuria, should be essentially the same in both the nondiabetic and the diabetic person. Furthermore, molecular relations, such as apply in ordinary chemical reactions, may be expected to exist between the ketogenic and antiketogenic substances arising normally under conditions in which no abnormal ketosis is manifested.

Recent studies of Shaffer⁵ strongly suggest that the hypothesis is correct. He concludes that the minimum molecular ratio of ketogenic to antiketogenic substances for the avoidance of ketonuria in human subjects is 1. When this is exceeded, the familiar pathologic phenomena arise. Woodyatt⁶ has recently presented the outcome as follows: The anomaly of the metabolism in which abnormal quantities of acetone, acetoacetic and beta-hydroxybutyric acids appear in the tissues, blood and urine is not due directly to any impairment of the endocrine functions of the pancreas. It is a secondary effect in the nature of a disturbed metabolic balance resulting from the withdrawal of oxidizing glucose, as, when one stone is withdrawn from an arch all the other members settle into a new position. This anomaly, he adds, is not peculiar to diabetes nor constantly associated with it. It occurs in other diseases. It may be made to appear in a normal person by starvation, or a diet containing too low a proportion of carbohydrate and too high a proportion of fat; and when this is done it may be made to appear again by adding more carbohydrate to the diet. It seems, Woodyatt concludes, to be the immediate result of the oxidation of certain fatty acids in the absence of a sufficient proportion of "oxidizing" or dissociated glucose. The rationale of appropriate dietary adjustment in conditions in which ketosis

arises will therefore consist in so adjusting the supply of sugar and fatty acids, potential or preformed, that these foodstuffs shall metabolize in suitable proportions. This is a new aspect of nutrition that is certain to demand careful consideration in the near future in relation to practical dietetics in disease.

CALCIUM AND PHOSPHORUS IN THE BLOOD IN RICKETS

Current literature in the domain of scientific medicine attests the growing interest which has lately been directed to the subject of rickets. This disease, which has been defined as characterized by a deficient deposition of calcium salts in the bones and in the intercellular cartilage of the epiphyses, has long given rise to varied speculations as to its etiology. The successive theories have as a rule had a short-lived popularity because they have in turn failed to satisfy the critical tests of scientific investigation. Latterly the hypothesis of vitamin deficiency—a shortage of vitamin A in the diet—has attained considerable prominence and has been the subject of occasional discussion in *THE JOURNAL*.¹ At present, however, frequent protests are heard against the assumption that the so-called fat-soluble vitamin A is essentially an anti-rachitic vitamin. Thus, Hess, McCann and Pappenheimer² have found that, although animals receiving a diet complete except for a lack of vitamin A invariably failed to grow and in due season were likely to die, the skeletons showed no gross changes whatever. Microscopic examination presented definite signs of a lack of active osteogenesis, but in no instance lesions resembling rickets. Hence these New York investigators concluded, in conformity with their previous experience in regard to infantile rickets, that if the diet is otherwise adequate, lack of vitamin A does not bring about rickets.

It has been remarked that, since rickets involves certain features of calcification and the salts of bone consist predominantly of calcium phosphate, the concentration of calcium and phosphorus in the circulating fluids of the body may have a significant part in the deposition of these elements. Only in recent years, however, has the analytic technic for the estimation of inorganic elements in the blood been perfected to a stage at which accuracy and clinical applicability are combined. The newer microchemistry of the blood, which has contributed so much to a better conception of the content, in this fluid, of such physiologically important substances as sugar, urea, uric acid and creatinin is also being exploited in the interest of precise knowledge of inorganic constituents. From this

4. Shaffer, P. A.: Antiketogenesis, I, An in Vitro Analogy, *J. Biol. Chem.* **47**: 433 (July) 1921.

5. Shaffer, P. A.: Antiketogenesis, II, The Ketogenic Antiketogenic Balance in Man, *J. Biol. Chem.* **47**: 449 (July) 1921.

6. Woodyatt, R. T.: Objects and Method of Diet Adjustment in Diabetes, *Arch. Int. Med.* **28**: 125 (Aug. 15) 1921.

1. Green Foods and Vitamins, editorial, *J. A. M. A.* **72**: 1077 (April 12) 1919; Some Properties of the Fat-Soluble Vitamin (Fat-Soluble A) *ibid.* **73**: 1066 (Oct. 4) 1919; The Nature of the Fat-Soluble Vitamin, *ibid.* **75**: 544 (Aug. 21) 1920.

2. Hess, A. F.; McCann, G. F., and Pappenheimer, A. M.: Experimental Rickets in Rats, II, The Failure of Rats to Develop Rickets on a Diet Deficient in Vitamin A, *J. Biol. Chem.* **47**: 395 (July) 1921.

it now appears that the calcium content of the serum or plasma is singularly constant under conditions of health. An enormous experience on the part of Howland and his associates in the Department of Pediatrics at the Johns Hopkins University has indicated that in only two conditions previously studied, namely, tetany and nephritis, is there any striking diminution in the circulating calcium. The content of this element in the serum of normal children is reported as slightly higher than that of adults. It is usually between 10 and 11 mg. per hundred cubic centimeters, whereas with adults it is usually from 9 to 10.5 mg. These data³ are essentially like the plasma values just reported from California by Jones and Nye.⁴ There still remains a seemingly irreconcilable difference of opinion with respect to the red corpuscles, in which Howland and Kramer³ maintain, in distinction from Jones and Nye⁴ as well as several other analysts, that there is regularly no demonstrable amount of calcium. That the abnormality of calcification of the bones in rickets is not due to some alteration in the form of the blood calcium whereby it is no longer readily diffusible would seem likely from the observations of von Meysenbug and McCann,⁵ who have reported the diffusible calcium in the serum in both experimental tetany and human rickets to be between 60 and 70 per cent. of the total serum calcium.

The phosphorus and bicarbonate of the serum seem to be similarly constant in healthy children. This fact is regarded by Howland and Kramer as determining the constancy of the inorganic composition of normal bone. They have found³ that, during a period of active rickets, the calcium concentration of the serum may be normal or slightly reduced. The reduction does not seem to them, however, to depend directly on this disease; they are inclined rather to associate it in many instances with a latent form of tetany.

The inorganic phosphorus of the serum, on the other hand, is stated to be regularly reduced in active rickets, sometimes to an extreme degree. This is believed by Howland and Kramer to represent an important deficiency in relation to the causation of the pathologic lesion. To this deficiency is ascribed the failure of calcium deposition. It is argued that calcium salts exist in the blood ordinarily in nearly saturated solution. This would explain why no increase in the blood content of calcium is brought about by feeding calcium salts to animals or to man unless, perchance, there has been a previous reduction of calcium. Howland and Kramer report, for example, that the feeding of soluble calcium salts in large

quantities to children and over prolonged periods does not result in any increase in the serum calcium above the normal. It can readily be understood however, that a decrease in the phosphorus of the blood would render more difficult the precipitation of the tertiary calcium phosphate characteristic of bone. According to the most recent data, the ratio of the concentration of calcium to that of phosphorus in the serum of non-rachitic children is practically identical with the ratio of these elements in the tertiary phosphate which composes about nine tenths of the salts of normal bone. The difficulty in the precipitation of such phosphate would even be exaggerated by any reduction in the calcium of the fluid, such as has been found to exist in certain cases.

Practically, it is important to realize, as the result of these studies, that the finding of a low content of inorganic phosphorus in the serum of a young child is nearly conclusive evidence of active rickets. This may have distinct diagnostic importance. During the process of healing, whether the latter occurs spontaneously or as the result of the administration of cod liver oil, the phosphorus content of the serum gradually rises to a normal figure and often somewhat above this, according to Howland and Kramer's observations. Relapses are accompanied by a fall in the phosphorus concentration of the serum. Speaking specifically, all the children under 2½ years of age in whom the inorganic phosphorus content of the serum has been found to be 3 mg. or less per hundred cubic centimeters have been suffering from active rickets. Definite facts of this type cannot fail to be helpful in the further investigation of this hitherto baffling disease.

Current Comment

INEFFICIENCY OF THE EFFICIENCY EXPERT

Few, if any, captains of industry would be unwilling to accept the dictum *mens sana in corpore sano* as a desirable admonition to those who are under their command in the world of business. Good health is generally recognized as an almost indispensable requisite of a proficient worker. The investigations that have been inaugurated in recent years by the comparatively new science of industrial hygiene have made it increasingly clearer that even slight indispositions, not to mention more pronounced lack of physical stamina, are often sufficient to lower the output or degrade the quality of the work of laborers in many fields of industrial activity. Hence the growing concern of those interested in productivity for the physical welfare and personal well-being of the person who produces. In a recent address, Holmes¹ of the University of Kentucky has struck a timely note, on the other hand, regarding the failure of many of

3. Howland, J., and Kramer, B.: Calcium and Phosphorus in the Serum in Relation to Rickets, *Am. J. Dis. Child.* 22: 105 (Aug.) 1921.

4. Jones, Martha R., and Nye, Lillian L.: The Distribution of Calcium and Phosphoric Acid in the Blood of Normal Children, *J. Biol. Chem.* 47: 321 (July) 1921.

5. Von Meysenbug, L., and McCann, G. F.: The Diffusible Calcium of the Blood Serum, II, Human Rickets and Experimental Dog Tetany, *J. Biol. Chem.* 47: 541 (Aug.) 1921.

1. Holmes, P. K.: *Science* 54: 158 (Aug. 19) 1921.

our "giant efficiency experts" to apply their principles of efficiency to their own living. Now and then, when the public becomes acquainted with the unexpected breakdown of a great leader of men at an early age, one is impelled to ask whether he failed to apply to himself the same standards of concern for efficiency which he set before his employes. In speaking of the occupational failures of the "experts," Holmes reminds us that their principles of efficiency are frequently not applied to their own living. Big business, he adds, cannot long be done efficiently on artificial stimulants and by flabby muscles and shortness of wind. In the struggle for business, only the strong survive. Today, when there is a great need of capable leaders, it is essential to preach the lesson that even the keenest intellect is not immune from the action of physiologic laws. Even the "experts" must sometimes be admonished to practice what they preach.

THE EXPENSIVE "POOR MAN'S MEDICINE"

A favorite argument of the nostrum exploiters, advanced when threatened with restrictive legislation or taxation, is that "patent medicines" are "the poor man's medicine." Never had a pretension a flimsier basis of fact. But a certain portion of the public can be counted on to accept as gospel any preposterous statement if only it be repeated often enough and in sufficiently black type. The purchaser who buys a bottle of Dr. Quack's Quick Cure does not realize that about 75 cents of his dollar has been expended by Dr. Quack in an effort to convince him that he is suffering from something for which "Quick Cure" is a sure-shot remedy. The most expensive thing about a "patent medicine" is the advertising. As one "patent medicine" maker said, when, in a burst of candor, he was speaking before others of his kind:

"The twenty thousand newspapers of the United States make more money from advertising the proprietary medicines than do the proprietors of the medicines themselves. . . . Of their receipts, one third to one half goes for advertising."

If, on the admission of the manufacturers, from 33 cents to 50 cents of a dollar paid for a "patent medicine" goes to the newspapers, the additional cost of exploitation in "almanacs," window displays, circulars and other publicity features can easily be counted on to bring the amount up to 75 cents. And the farce—or tragedy—of the whole thing is that John Doe pays this 75 cents—unconsciously—for the purpose of being persuaded that he is suffering from some ailment for which the nostrum is recommended. Every physician and every druggist knows that the present "patent medicine" is unnecessary. He knows that there are already in existence official products more than ample to fill every legitimate need of self-drugging, that is, to furnish all the "home remedies" that can safely be used by the public. These official products being nonsecret, and their strength and purity being guaranteed under federal and state laws, they are in every way superior to the proprietary article of secret composition. Moreover, there being no element of monopoly or proprietorship, in the

narrow sense, in the manufacture of these official products, competition may be counted on to keep the price down to a reasonable figure. The small margin of profit on the sale of official products makes it impossible for such preparations to be sold by intensive advertising methods, and their open formula makes false and fraudulent therapeutic claims unfeasible. The abolition of "patent medicine" advertising would do much to abolish the making of hypochondriacs by suggestion and would result in a great decrease in all drug taking. In addition to this large indirect financial saving there would be a direct saving in that when John Doe purchased a simple home remedy he would pay only for the actual cost of the medicine plus a small legitimate "overhead" to cover production and distribution. It is a demonstrable fact that if the public depended on a few of the official products for their home remedies instead of on the multitudinous "patent medicines," they could save 75 cents on every dollar now expended. "Poor Man's Medicine" forsooth!

THE NATIONAL BOARD OF MEDICAL EXAMINERS

The National Board of Medical Examiners was organized six years ago and has been conducting examinations for five years. It has always held high ideals and has been fortunate in having well known and competent men in its membership. It is to be regretted, however, that thus far only 325 candidates have been examined, of whom 269 have received the Board's certificate. The reasons for this small number are quite evident. The benefit to be derived from the passing of the examination had not been proved. Only recently has the Board's certificate been endorsed by more than a few state boards. With this limited benefit, therefore, recent graduates did not care to devote the time and expense necessary to attend the examinations, which were held only at infrequent intervals and in one, or at most, two centers, possibly thousands of miles away. As previously pointed out in *THE JOURNAL*¹ a provision whereby the examinations could be held simultaneously in a larger number of widely separated places would be of advantage in that recent graduates could more conveniently take the examinations. It is encouraging to note in a report which appears on another page² that the National Board is about to enter on a period of expansion. A student in a high grade medical school will hereafter be enabled to take his examination in three parts, the first two of which are to be taken without leaving his medical school, respectively, at the end of the second and fourth years of his instruction. The third part of the examination also, which consists of practical laboratory and clinical tests, is to be offered simultaneously in at least fifteen cities in widely separated parts of the country. This plan for the greater convenience of candidates and the increasingly wide recognition of the Board's certificate by the licensing boards in this country and in Great Britain gives promise that larger numbers of medical graduates will take

1. *J. A. M. A.* 74:1104 (April 17) 1920.

2. This issue, page 881.

the examinations. Meanwhile, an additional incentive to graduates in medicine might include not only the certificate of the Board but some fitting designation such as is conferred by the licensing boards of England.

WOMEN IN SCIENCE AND MEDICINE

The doors of opportunity have been thrown open to women in many fields in recent years. According to the statistics presented in the Educational Number of *THE JOURNAL*,¹ there were 879 women studying medicine last year. This number represents nearly 6 per cent. of all medical students, the largest proportion recorded in many years. With the barriers largely removed which formerly made the progress of women toward the goal of medical practice difficult, some of the obstacles remain which prejudice and tradition still present. One occasionally hears the statement that women are not "adapted" by nature for a career in science. Vague generalities of this sort can scarcely be regarded as constituting a serious arraignment of any group of persons. There may be factors in the present-day life of women which tend to divert their activities from the domain of serious endeavor in the world of science; but there is no real justification for the offhand conclusion that some feminine unfitness precludes success for women either in medicine or in comparable departments of activity. Flexner² has given expression to a sane view in advising the students at Bryn Mawr College that there is no line of demarcation between the sciences which men, on the one hand, and women, on the other, should choose as a career. With women as with men, he adds, what should count are taste and aptitude and opportunity. There are various circumstances, partly environmental, partly hereditary, that may help to determine the path which a young man or young woman preferably enters. However, at this season, when our professional schools are beginning their year's work, it is well to emphasize what many untutored persons fail to appreciate, namely, that discoveries in science do not result from mere accident. As Flexner has well expressed it, whether the investigator moves in the lower or the upper realm of experiment and observation, there are demanded, as a minimum, knowledge of fact and familiarity with method, with which not even the most fortunately circumstanced are naturally endowed. Surely there is nothing in this irreducible minimum which cannot be—or has not at times been—attained by women. Hospital experience and other routine medical practice inevitably furnish many opportunities for great discoveries in the science of medicine. America will do its share in realizing these only if it can produce generations of men and women alike equipped with what Pasteur called the "prepared mind." A vivid imagination and keen insight are blessings beyond measure; but foremost is the fundament of a "knowledge of fact and familiarity with method." This is the primary requisite of a trained intelligence and trained senses.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Gift for Children's Hospital.—Mrs. Edward Laurence Doheny and Mrs. William May Garland, Los Angeles, have each given \$15,000 for the construction of an additional unit to the Children's Hospital, the two units to comprise a new contagious ward. Mrs. Deheny's contribution was made in the name of her children, and Mrs. Garland's gift was made in memory of her mother. Plans have already been drawn for the building and submitted for approval.

Hospital News.—Plans have been completed for the new building to be erected at the County Hospital, Los Angeles, at the cost of \$250,000. The building will be three stories and will be provided with 130 beds.—The government's new tuberculosis hospital for discharged service men recently erected at the Soldiers' Home at Sawtelle, at a cost of \$500,000, was opened, August 29, and 175 patients moved into the two wings. The buildings, which have accommodation for 350 patients, are joined at the north ends by a temporary service building, containing the wards, kitchens, and dining and operating rooms. According to a statement of Major Vernon Roberts, surgeon in chief, plans are under consideration for two additional hospital buildings, a service and administration building, and possibly additional wings.

DISTRICT OF COLUMBIA

Personal.—Dr. Joseph Winthrop Peabody, resident physician at the Tuberculosis Hospital, was elected superintendent of the institution, August 23, to succeed Dr. William D. Tewksbury, who resigned after ten years' service to engage in private practice in this city.

GEORGIA

Georgia Railway Surgeons' Association.—At the third annual convention of the association, held at Indian Springs, August 17, Dr. Charles H. Richardson, Macon, was elected president, and Dr. Jarret W. Palmer, Ailey, secretary-treasurer. The next meeting will be held at Macon, Aug. 18, 1922.

ILLINOIS

Chicago

Hospital News.—A \$1,000,000 hospital, to be named in commemoration of Dr. John B. Murphy, is prospected according to a recent announcement. The plans were approved by Mrs. Murphy just before her death. Dr. Frank Byrnes, associate of the late Dr. Murphy at Columbus Memorial Hospital, and at present manager of the Sheridan Park Hospital, is president of the new J. B. Murphy Hospital Corporation. Twenty physicians and the nurses who worked under Dr. Murphy will form the nucleus of the new hospital's staff. The completed institution will care for 500 patients.

IOWA

Poseskie County Medical Society.—At a meeting of the society, held September 6, at Montezuma, Dr. Pearl E. Somers of the Grinnell Clinic presented a paper on "Reports of Recent Radium Cases," and Dr. Engelke J. Ringena, on "Effect of Endocrines on Pregnancy."

Scott County Medical Society.—At the regular meeting of the society held, September 6, at Davenport, Dr. Paul A. White, Aberdeen, S. D., spoke on "Radium and Its Uses," with slides showing its results, and Dr. Frederick H. Lamb, Davenport, on "The Hemolytic Anemia of Pregnancy."

Personal.—Dr. Arthur John Lomas, Johns Hopkins University, has been appointed as superintendent of the state university hospital, to succeed Dr. Thomas Graham, who resigned some months ago.—Dr. Herbert V. Scarborough, who was for thirteen years connected with the Oakdale State Hospital for Tuberculosis at Iowa City, has been made medical director of Sunny Crest Sanatorium, which opened August 17.

1. J. A. M. A. 77: 531 (Aug. 13) 1921.

2. Flexner, Simon: The Scientific Career for Women, Sc. Month. 13: 97 (Aug.) 1921.

KENTUCKY

Hospital News.—Work on the government hospital at Dawson Spring is being rushed as fast as possible. Eight fire-proof buildings are under construction, and the entire unit when completed will include twenty-two buildings.

MARYLAND

Increase in Typhoid Fever.—The Bureau of Communicable Diseases of the Baltimore City Health Department has reported for August 271 cases of typhoid fever. During August of last year only eighty-eight cases developed. The increase of cases is also noticeable in the counties and, to check the spread of the disease, inoculations are being made on a large scale. At the present rate, the bureau fears the disease cannot be checked until October, the end of the seventy-first-day period during which a larger proportion of cases are reported each year.

Maternity Unit for New City Hospital.—Plans for the new municipal hospital, which is shortly to be erected, include a maternity unit. The first step has been taken under the Child Hygiene Bureau, of which Dr. Mary Sherwood is director. Dr. C. Hampson Jones, commissioner of health, and Dr. Sherwood have been working on plans for such a hospital for some time, and maternity clinics have been in operation in northwest and south Baltimore for several months. These clinics are under the direction of Dr. Susanne Parsons and Dr. Helen Evarts. The clinic system is only a part of the plan under which a maternity unit will be provided, if the health department's ideas are carried out. Such clinics will be developed in all sections of Baltimore city.

University of Maryland to Enlarge.—A new hospital group, designed to be one of the largest and most up to date in the country and incorporating the University Hospital, the nurses' home and the schools of medicine, dentistry and pharmacy in a single system, is to be erected by the University of Maryland at Lombard and Green streets, Baltimore. The main building will be eleven stories in height with a roof garden above. Plans call for a hospital of 300 beds, and ultimate expansion to 500 is contemplated. The nurses' home is planned to furnish accommodations for 200, with facilities for 300 students in the combined schools. The cost is estimated at about \$1,250,000. When the project is fully developed, a unique feature will be an arrangement by which the most modern adjuncts of medical science will be placed at the disposal of rural practitioners through graduate and extension courses. It is planned to have traveling instructors, who will hold courses in rural communities and also to give the rural practitioner the opportunity to bring all special cases to the hospital. The institution will offer the medical practitioner the service which the agricultural college of the university now provides for the farmer. One of the principal objects of the enlarged institution will be to relieve the city's inadequate hospital facilities. Construction of the first portion of the group will be begun within the month and will cost approximately \$250,000 when completed; erection of the second unit of the home is expected in about a year. The whole project will require several years for its development. The University Hospital is the oldest institution for the care of the sick in the state. It was opened in 1823 under the name of the Baltimore Infirmary, and has been enlarged fourfold by successive additions.

Personal.—Dr. J. H. Mason Knox, Jr., has sailed for France and with his family will make his home in Paris for the next year. Dr. Knox has been made general supervisor of the child welfare work of Europe under the Red Cross. —Dr. Brice W. Goldsborough of Cambridge is convalescing at Stone Hospital, Parry Sound, Canada, from a major operation, performed by Dr. Howard A. Kelly, whom he was visiting at his summer camp at Maganatowan, Ontario. Dr. Goldsborough was on a canoe trip to Deer Lake when he became ill and an operation was imperative. —Dr. Warren N. Hoak, medical officer in charge of the U. S. Public Health Service, at Baltimore, while investigating a small glass vial, supposed to contain narcotics but containing trinitrotolucene, had a narrow escape from blindness or permanent disability when it exploded and the fumes spread upward to his face and eyes. Except that his eyes were slightly burned, no ill consequences resulted. The vial was picked up at Chincoteague, Va., and brought ashore with many others by a schooner for investigation. —Major Howard H. Bailey of the Army Medical Corps has been detailed under the National Defense Act as professor of military science and tactics at the Johns Hopkins Medical School.

—Dr. Hugh H. Young has arrived in Baltimore after a two months' trip to Europe. Dr. Young attended the International Medical Congress in Paris last month and read a paper on urology and roentgen-ray work. He also visited France, Germany, Belgium and England during his stay abroad. —E. V. McCollum, Ph.D., professor of biochemistry at the Johns Hopkins School of Hygiene and Public Health, read a paper on "Relation of Diet to Dentistry" before the convention of the National Dental Association, which was held recently at Milwaukee.

MASSACHUSETTS

Appointment on Registration Board.—Governor Cox has appointed Dr. Francis X. Corr, Boston, as a member of the state board of registration in medicine, to succeed Dr. Augustus L. Chase, Randolph, whose term expired in July. Dr. Chase has been a member of the state board of registration in medicine for twenty-seven years.

MICHIGAN

Personal.—Dr. Walter L. Finton, Jackson, has been appointed chief surgeon of the Consumers Power Company, for the state of Michigan.

Upper Peninsula Medical Society.—At the twenty-fifth anniversary convention of the organization, Dr. Frederick McD. Harkim, Marquette, was chosen president by acclamation; Dr. Theodore W. Scholtes, Munising, was elected vice president; Dr. James B. Turner, Houghton, second vice president, and Dr. Addison D. Aldrich, Houghton, secretary. The 1922 convention will be held at Houghton. The society passed a resolution endorsing the plan for a permanent legislative committee, to be supported by voluntary contributions from members of the county societies of the state.

Cardiac Clinics for Schoolchildren.—The medical examination of Detroit schoolchildren last year showed that 1,000 children have at least a suspicious cardiac defect. In an organized attempt to provide proper equipment for the adequate treatment of children affected with heart disease, two meetings will be held, October 17. Dr. Robert H. Halsey, who has organized this work in New York City, has been invited to address an open meeting in the afternoon, on the subject of "Heart Disease in Schoolchildren—Scope of Problem and Method of Care"; and the Wayne County Medical Society, in the evening, on "Heart Disease in Children and the Treatment."

Heart Disease in Michigan.—More than one tenth of all deaths which occurred in Michigan during the first six months of 1921 are due to heart disease, according to a total of 2,776 deaths from organic heart disease reported to the state department of health for that period. This gives Michigan a death rate for this disease of 145.4 per hundred thousand population, which, though below the average rate of 150.4 for three years beginning with 1917, is still higher than any other disease death rate. Dr. Richard M. Olin, commissioner of health, states that "organic heart disease annually claims nearly twice as many victims as either tuberculosis or pneumonia, and yet many of the deaths from this cause are undoubtedly preventable or postponable."

MINNESOTA

Home for Tuberculous Children.—A three-story sanatorium is being constructed at Glen Lake, Hennepin County, at a cost of \$160,000, which will be devoted exclusively to the care of tuberculous children. The basement will contain the school and playrooms, the girls' and boys' dormitories will occupy the first and second floors, and the third floor will be used for the care of infants and isolated contagious cases. The infants' department will be separate and inaccessible from the quarters of contagious cases. The south walls of the third floor will form a series of terraces to be used for heliotherapy. When completed, the building will be turned over to the county sanatorium management as a gift from the Citizen's Aid Society, which is a corporation organized and heavily endowed by the late George Henry Christian for the purpose, among others, of combating tuberculosis, and the building will be erected as a memorial to his wife, Mrs. Lenora Hall Christian.

MISSOURI

Personal.—Dr. Virgil W. McCarty, Kansas City, courteously stopped his automobile, August 17, to give two young men a lift on the way to Hillcrest Country Club. Later, Dr.

McCarty was found in a clump of bushes with his feet and hands tied. He had been robbed and beaten and his automobile stolen.

Four Year Medical Course for University.—The board of curators of the state university has decided in favor of establishing a four year course in medicine at the university. The board will prepare for presentation at the 1923 session of the legislature a bill to authorize and appropriate money for establishing the state hospital at Columbia, to be opened in conjunction with the medical school.

NEBRASKA

Personal.—Dr. Benjamin F. Williams, former head of the state hospital for the insane, Lincoln, has been appointed consulting director of the child welfare bureau of the state. This position was created at the last session of the state legislature. Dr. Margaret W. Koenig, Lincoln, will do field work for the bureau, which has general control of all delinquents and defectives wherever found.—Dr. Beverly A. Finkle, superintendent of the orthopedic hospital, has resigned to become prison physician. Dr. Jacob H. Matthai, Newberry, Mich., will succeed Dr. Finkle, and his work will also include the state home for dependent children.

NEW YORK

Medical Association of Central New York.—The fifty-third annual meeting of the association was held at the Buffalo City Hospital, Buffalo, September 9. Visiting physicians who presented papers were: Dr. Alfred C. Croftan, Chicago, whose subject was "Concerning a Group of Sugars that Is Well Tolerated by Diabetics"; Dr. George W. Holmes, Massachusetts General Hospital, "Roentgen-Ray Treatment of Thyroid Condition with Results"; Dr. Preston M. Hickey, Detroit, "Skulls" (with lantern slides), and Dr. Alfred E. Cohen, Rockefeller Institute, "Consideration of Heart in Acute Infection, and Treatment."

OHIO

Vaccination Required for Schoolchildren.—On the recommendation of the health commissioner, the board of education, Middletown, at its last meeting, revised the regulations regarding vaccination against smallpox, and hereafter will require successful vaccination of all children of any age entering school. This action was taken because of the common occurrence of the disease in Middletown.

PENNSYLVANIA

District Medical Meetings.—At the annual meeting of the fifth censorial district, held at Piney Mountain Inn, near Caledonia Park, Franklin County, August 25, Dr. McCurdy, Shippensburg, was elected president of the district for the ensuing term of one year. Dr. H. Lawn Hartmann was elected vice president, and Dr. Gibson Smith, secretary.—At the annual meeting of the fourth censorial district of the Pennsylvania State Medical Society, held at the Colonial Club, Harrisburg, the Dr. Robert E. Holmes golf cup was retained by the Harrisburg physicians, who defeated all contestants. The new officers elected are: Dr. Clarence R. Farmer, Lancaster, president; Dr. W. W. Taylor, Lancaster, vice president; Dr. Tobias C. Shookers, Lancaster, secretary. The tennis tournament was won by Drs. Edward M. Green, Pennsylvania State Hospital, and George B. Stull. Dr. Hugh Hamilton read his annual poem at dinner.

Philadelphia

Personal.—Dr. George Souwers of Georgetown, surgeon in the U. S. Public Health Service, was cut and bruised when the automobile in which he was riding collided with another at Gloucester, N. J., August 31.

Infant Mortality Lower.—Prenatal care of babies administered free by the department of public health is reducing the infant mortality rate, according to statistics announced by Director of Public Health Charles L. Furbush. In 1920, of the 2,881 infants born under the care of the department's division of child hygiene, sixty-eight died when less than 1 month old, constituting a death rate of 24 per thousand. Comparison with similar data for the entire city shows that 1,527 babies died during the first month of life, out of 43,547 born alive, making a death rate of 35 per thousand. The rate of death among the babies of prenatal cases under the care of the health department is one third less than that of the entire city.

SOUTH CAROLINA

Personal.—Dr. Kenneth M. Lynch, professor of pathology, Medical College of the State of South Carolina, Charleston, has resigned from the faculty to become connected with a group clinic at Dallas, Texas.

TENNESSEE

The New Laboratory Building.—According to an agreement to pool their equipment and coordinate their personnel, entered into, Sept. 29, 1920, the several public health agencies operating laboratories in Memphis on September 1 moved into their new quarters in the university laboratory. Dr. William Krauss, professor of preventive medicine and hygiene in the college of medicine for many years, has been made director of the laboratories, and his salary will be paid jointly by the agencies interested, which include the malarial research laboratory of the U. S. Public Health Service, the West Tennessee laboratory of the state board of health, the department of bacteriology of the University of Tennessee College of Medicine, and the laboratories of the Memphis department of health. The plan of coordination has received the endorsement of Dr. Frederick F. Russell, director of laboratories for the International Health Board, who visited Memphis and investigated the possibilities of laboratory coordination and development.

TEXAS

Building for Physicians and Dentists.—A site has been purchased at Dallas for a building to be used exclusively by physicians and dentists, at a cost of \$45,000. The funds have been raised by those who will occupy the building.

Report of University Health Service.—The University of Texas has employed a whole-time medical staff, consisting of four physicians, since Sept. 1, 1920. Complete physical examination is made of matriculants on entrance, and all subsequent services are reported on the same folder on which the examination is noted. These records are kept on file and furnish valuable statistics. Students are classified for athletics and other physical training according to conditions found in their examination. Special courses for physical training are prescribed for those found to have gross physical defects. Few exemptions were found to be necessary during the long session. The medical staff has established a system to improve the sanitation of all university buildings, grounds, fraternity and sorority houses, boarding and rooming houses, cafés, swimming pools, picture shows, and all other places where students congregate.

UTAH

State Medical Meeting.—The program of the twenty-seventh annual session of the Utah State Medical Society, to be held at Salt Lake City, September 13-15, under the presidency of Dr. Robert R. Hampton, shows the names of the following visiting physicians: Drs. Frank Hinman, San Francisco; Nelson W. Janny, Los Angeles; John R. Williams, Washington, D. C.; Daniel T. Quigley, Omaha; Roland E. Skeel, Los Angeles; Carlisle P. Knight, Washington, D. C.; Albion W. Hewlett, San Francisco; Isaac H. Jones, Los Angeles; Alfred C. Reed, San Francisco, and Emil Goetsch, Brooklyn. Because of the high class of subjects presented and the opportunity to hear physicians of widely distributed centers, the committee is extending an invitation to members of other state organizations who live near enough to Salt Lake City to make it convenient for them to attend the convention.

GENERAL

Appointment for Veterans' Bureau.—Major Arthur D. Dean, who held the chair of vocational education at Columbia University, was appointed, August 20, as assistant director for the newly created Veterans' Bureau, in charge of the rehabilitation division.

American Conference on Hospital Service.—The semi-annual meeting of the American Conference on Hospital Service, of which Dr. Frank Billings, Chicago, is president, will be held September 12-16, at West Baden, Ind., in conjunction with the twenty-third annual conference of the American Hospital Association.

Meeting on Occupational Therapy.—Announcement has been made of the fifth annual meeting of the National Society for the Promotion of Occupational Therapy to be held, October 20-22, at the Southern Hotel, Baltimore. The officers of the association are: president, Dr. Herbert J. Hall, Marble-

head, Mass.; vice president, Dr. C. Floyd Haviland, Middletown, Conn.; treasurer, Miss Marion R. Taber, New York; secretary, Louis J. Haas, White Plains, N. Y.

Appointment of Consultants to Tuberculosis Association.—In a nation-wide movement to make available expert service and knowledge to individuals and communities afflicted with tuberculosis, the National Tuberculosis Association has appointed a number of present and former active members of the Boston Tuberculosis Association to serve in the respective districts in which they live. The three specialists named in clinical tuberculosis, are: Dr. Edward Otis, professor of pulmonary diseases and climatology at Tufts Medical School; Dr. Vincent Y. Bowditch, medical director of Sharon Sanatorium, and Dr. John B. Hawes, second president of the Boston Tuberculosis Association. In accordance with this arrangement, when any local tuberculosis association plans to hold an institute or a survey with clinics, it may call upon one or more of these consultants for expert advice.

Cancer Week.—The American Society for the Control of Cancer has announced a seven day campaign to be designated "Cancer Week," October 30 to November 5. The purpose of the movement is to reach as many persons as possible in the United States and Canada, with the vital message of cancer control. Committees have been established in all parts of these countries, lecture bureau made up of interested and authorized speakers, and the campaign will be conducted through lectures, the distribution of literature, and publication of many articles in professional journals and in the lay press. Medical schools and colleges will be asked to cooperate in the campaign by devoting at least one lecture to the subject of the prevention and control of cancer, and by carrying appropriate cancer announcements and cancer control information in any bulletins or circulars which may be sent out at that time. Other organizations asked to participate are: hospital nurses' training schools, nurses' organizations, schools of health officers, insurance companies, federation of women's clubs, all welfare and social service organizations, chambers of commerce and boards of trade, manufacturers' and merchants' associations, labor unions and trades councils, ministerial and other clerical groups, church clubs, Rotary and Kiwanis clubs, fraternal orders and lodges, Y. M. C. A., Y. W. C. A., Knights of Columbus, civic clubs and any other local organization which may exist.

LATIN AMERICA

Monument to Dr. Núñez.—Funds are now being collected in Havana in order to erect a bust of Dr. Emiliano Núñez, at the entrance to the Hospital "Nuestra Señora de las Mercedes." Dr. Núñez was a leader in hospital work in Cuba.

Typhus in Chile.—The *Revista Médica de Chile* cites the figures for 1920 in respect to the occurrence of typhus. There were 7,939 cases recorded throughout the whole of Chile, with a mortality of 19.90 per cent. In Santiago alone there were 1,457 cases, the mortality 31.64 per cent.

New Cuban Journals.—Two new medical journals have appeared recently in Cuba. One is a quarterly, the *Revista Médico-Quirúrgica de la Policlínica Nacional Cubana*, its editor being Dr. Nicolás Gómez de Rosas, one of the most prominent Cuban surgeons. The other, *Médica*, is published in Matanzas and the editors are Drs. M. E. Dihigo and Oscar Forest.

Bacillary Dysentery in Chile.—C. Garces Baeza relates in the *Revista Médica de Chile* that he isolated six different types of bacilli from the stools of fifteen of thirty-eight cases of suspected dysentery. Some were very virulent and toxic and yet they did not correspond to the Shiga-Kruse type, and they differed from each other in fermenting and agglutinating properties although otherwise closely alike. The fifteen cases with positive findings included several children. The bacilli reproduced the disease in rabbits, not in dogs and guinea-pigs.

Memorial to a Physician in Pan-American Hall of Fame.—There was unveiled recently in the Hall of the Americas of the Pan-American Union, Washington, D. C., a marble bust of Dr. Hipólito Unanue. The bust, which represents Peru's contribution to the gallery of Pan-American great men, is the work of Mrs. Sally J. Farnham and stands on a pedestal at the left of the entrance to the hall. Dr. Unanue was chief protophysician and founder of the Medical Society of Lima. He was born at Arica, Aug. 13, 1755, and died, July 15, 1833. He distinguished himself as a philosopher, mathematician, philologist, orator, journalist, financier, revolutionary leader, statesman, occupying the highest positions in public life in

his country. Both the Peruvian Ambassador and the Secretary of State of the United States called attention to the deserts of this Peruvian leader, who, the ambassador stated, had been an honorary member of several learned societies of New York and Philadelphia.

FOREIGN

Prize to Brachet.—The quinquennial prize for the best work in the medical sciences, offered by the Académie de Médecine at Brussels, has been awarded to Prof. A. Brachet of the chair of anatomy and embryology of the University of Brussels for his publications on topographic anatomy.

Colony for Insane Delinquents.—The Belgian government has created at Reckheim what is to be called the asylum colony for criminals who have become insane while serving a prison term, and for persons accused of crimes committed during mental derangement. It is intended only for the docile insane.

Sanatorium for Grave Nervous Diseases in Ex-Soldiers.—A psychiatric exchange describes the inauguration recently at Arosio, Italy, of the institution for care of shell-shocked and paralyzed soldiers. The establishment is the gift to the state of Senator Borletti and is said to be unique in its line. Dr. E. Medea, professor of nervous and mental diseases at the University of Pavia, is in charge of the institution.

Heliotherapy Institute Planned as Memorial to Codivilla.—The Rizzoli Institute of Bologna has agreed to purchase the land and maintain this sanatorium planned as a memorial to the great Italian surgeon, and funds are being collected to erect and equip the building. It is to have a capacity for 200 beds with arrangements for orthopedic treatment of outpatients. It aims to realize one of Codivilla's dreams for the welfare of poor children, which he did not live to see carried out.

Personal.—A meeting was held at Brussels recently to pay public tribute to the work of Prof. P. Heger in various welfare organizations. There were no formal addresses, but two children and one disabled soldier presented flowers and over 400 persons thronged to shake hands with him.—As Prof. L. Mangiagalli retires this year from the chair of obstetrics and gynecology at Milan, having reached the age limit, his friends are collecting a fund for a Mangiagalli foundation for graduate scholarships at Milan.

Expression of Gratitude by Vienna University.—The *Wiener klinische Wochenschrift* states that the University of Vienna has created an honorary title to express publicly its gratitude to those who have aided in relieving the material distress of the university during the last few years. The honorary title has been conferred on Dr. F. Pérez, the ambassador from Argentina; Dr. Ferrière, the president of the International Red Cross, and Dr. F. Boas of New York, besides the ambassadors of Great Britain and Sweden, Mr. Herbert Hoover, the president of Argentina and an English woman, Lady Mary Murray.

The Insane Asylums in the War Region.—An illustrated article in the supplement to *Encéphale* states that the large asylums at Armentières and Bailleul were destroyed by the invaders, but the inmates were removed in time and scattered through other French asylums. The asylums at Lommelet and Esquermes also had to be evacuated, but the buildings escaped destruction. The asylum at Prémontré was invaded by the Germans, Sept. 1, 1914, and even after the Germans had been driven back, it was still within the German lines. The medical staff of the asylum had been called to the colors at the outbreak of war, and the whole charge of the asylum fell on the lay director, M. Letombe, who was also the mayor of the community, and his son. In March, 1917, the Germans ordered the evacuation of the asylum, sending the Letombe family farther back into their lines, and distributing the insane inmates in Belgian asylums. Of the 1,300 inmates, 539 had died in the interim. The insane were repatriated in 1918, and those buildings at Prémontré which had not been entirely demolished have been restored to some extent, and in 1919 received back some of their former inmates.

Deaths in Other Countries

Dr. A. Sánchez Cruz, a prominent pediatrician of Santiago, Chile.—Dr. J. del C. Cardenas, in charge of the clinic for tropical diseases at Bogota.—Dr. R. Fajardo Vega, also of Bogota.—Dr. J. R. Ewald, formerly professor of physiology at Strasbourg, aged 66.—Dr. O. Jolasse, at one time medical director of the general hospital at Hamburg, aged 66.—Prof. H. Krause, a laryngologist of Berlin, aged 73.

Government Services

Assignments in Navy

Capt. Frank L. Pleadwell, Naval Medical Corps, has been detailed as assistant to the chief of Bureau of Medicine and Surgery, Navy Department, at Washington, D. C. Lieut.-Com. Eugene A. Vickery, Naval Medical Corps, has been detached from duty at the naval hospital in Boston and ordered to the Asiatic station for assignment to duty.

Colonel Forbes Makes Tour of Inspection

Col. Charles R. Forbes, director of the Veterans' Bureau, has left Washington, D. C., for a field inspection of the various agencies of the bureau. His first stop will be in the Chicago district. Other district offices to be examined include Minneapolis; Helena, Mont.; Portland, Ore.; San Francisco; Los Angeles; the South Atlantic states, and the hospitals in New Mexico and Arizona. It was announced that cases of hospitalization and compensation in the future would be settled in district offices except in cases in which the claimant desires to appeal to Washington. Before his departure, Colonel Forbes canceled vacations of 500 employees of the medical department of the Veterans' Bureau because of the rush of business.

Order of Rising Sun Conferred on Colonel Wilson

Col. James Sprigg Wilson, Medical Corps, U. S. Army, has been presented by the Japanese government with the Order of the Rising Sun in acknowledgement of services rendered as president of the Interallied Sanitary Commission in Siberia. Dr. Wilson, who is now on duty as a surgeon of the Fifth Corps Area at Fort Benjamin Harrison, Ind., organized the medical department of the American Expeditionary Forces in Siberia, in Manila, and accompanied the expedition to Siberia, where he served as chief surgeon for a year.

Reduction in Personnel of Naval Reserve Force

Medical Naval Reserve Officers, according to the announcement made by the Surgeon-General of the Navy, will be reduced from 1,550 to 300. This reduction was made on recommendation of the Navy's General Board, and commanders of all naval districts have been instructed to report the names of reservists under their command recommended for retention. One of the reasons given for the radical decrease in the number of naval reservists is the lack of adequate training facilities. Another is the retainer pay given reservists of the Navy, which ranges from \$12 to \$1,000 a year. Another announcement was to the effect that officers of the staff corps of the reserve force other than those of the Medical Corps and the Supply Corps will not be enrolled in the Naval Reserve Force on the termination of the current enrolments.

Reduction in Personnel of Public Health Service

The transfer of the hospitalization and medical care of former war veterans from the U. S. Public Health Service to the new Veterans' Bureau is resulting in a large reduction of personnel in the U. S. Public Health Service. It is estimated that by the time this transfer is completed the U. S. Public Health Service total of officials and surgeons will be about the same in strength as previous to the war. Recently a formal call was issued by Director Charles R. Forbes on Surgeon-General Hugh H. Cummings as provided in the Veterans' Bureau law recently passed by Congress, because of the fact that the U. S. Public Health Service has been desirous of keeping under its control all of its personnel. It is said that efficient handling of the veterans' claims necessitates a separation of the medical work from the civil treatments that have been handled by the U. S. Public Health Service.

Survey of Staff in Veterans' Bureau

It is announced at the offices of the newly created Veterans' Bureau that no new appointments on its medical staff will be made until a survey shall have been completed of the personnel transferred to this bureau from the U. S. Public Health Service, Bureau of War Risk Insurance and Rehabilitation Division of the federal Board of Vocational Education.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 15, 1921.

Criticism of the London Clinics for Venereal Disease

Dr. F. N. K. Menzies and Brevet-Col. L. W. Harrison, M.B., have submitted to the London County Council a report on the joint venereal diseases scheme for London and the home counties, which at the end of 1920 had been in operation for four years. The premises of the London clinics are the subject of criticism. With only a few exceptions they are located in the outpatient departments of the various hospitals. This arrangement frequently interferes with the efficiency of the clinic for various reasons, the chief of which are that (a) the premises are available only at certain hours on certain days during the week, and it is impossible to arrange for intermediate treatment of both sexes to be carried out at all hours, and (b) the rooms of the average outpatient department are not arranged conveniently for the work of a venereal disease clinic. The internal arrangement of most of the London clinics make for inefficiency or waste of man power, or both. "Assuming that maximum efficiency is the goal, and there may be no other under the public health venereal disease scheme, more men are required for the conduct of the average London clinic than would be necessary if the premises were designed for the special needs of venereal disease work." Apart from the St. Thomas's clinic, which is open for treatment from 8 a. m. till 10 p. m. daily except Sundays, only seventeen of the twenty-seven clinics in London are open on Saturdays, and only one of the seventeen provides an evening session on this day. There are no clinics available for any form of treatment on Sundays. On these points the report says: "The question as to whether the days and hours of the clinics are conveniently arranged for the various classes of patients, and sufficiently numerous for the demands made on them at present, required careful consideration, and many inquiries were made in a variety of directions on this subject. With regard to the provision made for diagnosis and treatment, the facilities available on Saturdays for these purposes are inadequate; considerable extra provision should be made on this day as soon as possible. The provision of clinics on Sundays for diagnosis and treatment of new cases is not advocated at present. Certain of the clinics suffer from overcrowding, and the large number of patients in attendance per session tends to inefficient treatment." Among the methods suggested for overcoming the overcrowding difficulties are: (1) increase in the number of clinics; (2) increase in the number of sessions, and (3) increase in the number of hours daily when treatment is available. The last method is the one which has been adopted at St. Thomas's Hospital, and is undoubtedly the best of all for meeting the difficulties indicated.

The Ministry of Health

The second annual report of the ministry of health has just been issued. It sounds an optimistic note in regard to the establishment by the League of Nations of an international health organization, which was approved at the first session of the assembly of the league in December, 1920. This is considered to be destined to forward the work of safeguarding the health of the people in this and other countries in a number of directions. The organization will have the duty of bringing administrative health authorities in different countries into closer relations, and of securing rapid exchange of information and of action against the attacks of diseases which transcend national boundaries. Pending the

effective establishment of the new organization, a provisional committee, on which the department is represented, has been set up. The assistance of the council of the league has already been invoked in assisting the Polish health authorities with the financial and sanitary measures required to check the spread of typhus in Poland.

Venereal Diseases

The number of treatment centers for venereal diseases opened during 1920-1921, and the number of patients dealt with for the first time increased by twenty-three and 7,000, respectively. The attendances at centers rose to 1,489,000, as against 1,003,000 in 1919, and 488,000 in 1918. The amount of the grants in aid of venereal diseases schemes paid during the year was \$1,637,975, or approximately \$500,000 more than in 1920. Schemes are now in operation for gratuitous diagnosis and treatment in every county. The number of patients dealt with for the first time amounted to 105,000, of whom 19,500 were found not to be suffering from venereal disease. The number found suffering from syphilis was 43,000, from gonorrhea 40,000, and from soft chancre 2,500.

Maternity and Child Welfare

The number of centers rose during the year by 183 to a total of 1,780, of which 1,068 were provided by local authorities and 712 by voluntary agencies. The health visitors at work increased from 3,000 to 3,215, the time devoted by them to these functions being approximately equivalent to the whole time of 1,617. A somewhat larger proportion of births in London and in county boroughs was attended (during 1919) by registered midwives; and their assistance is now estimated to be available to 68 per cent. of the rural population. The grant distributed by the department in 1920-1921 in aid of this service was \$4,369,250 (for England and Wales), of which \$3,369,620 was paid to local authorities and \$999,630 to voluntary agencies—an increase of more than \$1,500,000 over the amount paid in 1919-1920. The infant death rate fell from 89 per thousand births in 1919 to 80 per thousand births in 1920, the lowest point yet reached in the recorded figures for England and Wales.

The National Insurance Act

About 12,300,000 persons in England are now entitled to medical benefit under the national health insurance acts. The annual cost of this service is about \$40,000,000, of which nearly half is defrayed by the government in the form of statutory contributions and special grants. Steps have been taken to promote the efficiency of the treatment thus made available to insured persons by the appointment of both divisional and regional medical officers, whose primary duty is to advise on cases of incapacity for work referred to them either by insurance physicians or by approved societies.

PARIS

(From Our Regular Correspondent)

Aug. 12, 1921

Mortality Statistics in France and the United States

At the forty-fifth congress of the Association française pour l'avancement des sciences, held at Rouen, August 1-7, Monsieur E. Cacheux presented an interesting communication concerning the possibilities of reducing the mortality rate in France. After recalling the encouraging sign presented by the most recent vital statistics in France; namely, a considerable excess of births over deaths, Cacheux showed that a comparison of the mortality rates of France and other countries of Europe and America was not at all favorable to France. In the United States especially, cities have a mortality rate lower than that of French cities. To be sure, it

may be urged that the mortality rate is always lower in new cities. But Cacheux is not content with this explanation of the mortality rate of American cities. He thinks it must be attributed in part to the strict enforcement of sanitary regulations, not only in the home but also in commercial and industrial establishments.

Physical Education

At the same congress, Dr. Langlois, an associate professor at the school of medicine of the University of Paris and a well known physiologist, pointed out that the application of the law with respect to physical education, which is awaiting a final vote in the French senate, cannot give satisfactory results, unless: (1) a body of instructors in physical education is formed whose moral and intellectual condition and financial position will permit complete assimilation with the rest of the instructional corps, and (2) the body of school physicians has sufficient knowledge of the problems of physical education and of the advantages and dangers of various sports according to the age and constitution of the subjects, so that the school physicians can assume scientific direction of physical exercises in collaboration with the technical instructors. High school and college physicians should belong to the administrative council of these institutions and should have a voice in deliberations.

Book Production in France in 1920

Monsieur Delalain has an interesting article in the *Bibliographie de la France* on the book production of France in 1920. From his investigations it is evident that the book trade for 1920 shows a satisfactory increase. As compared with 5,361 books registered in 1919, 6,315 were registered in 1920. The increase affects mainly educational books, works on history and art, and medical books.

Endowment in Support of Scientific Research

Monsieur Edmond de Rothschild has recently contributed 10,000,000 francs for the endowment of an institute, the purpose of which is to aid young scientists and to furnish research workers with the instruments and apparatus they may need to carry on their work. This new foundation will be administered by a scientific council composed of delegates from the most important scientific institutions devoted to the study of physics and chemistry. This council will include two representatives of the Academy of Sciences—one, each, for the sections of chemistry and physics. The Collège de France, the Museum d'histoire naturelle, l'Ecole supérieure des mines, the Faculté des sciences du Paris, the Faculté de pharmacie, the Ecole normale supérieure, the Conservatoire national des arts et métiers, and the Ecole polytechnique will each have one representative. There will also be several members elected by the council itself, so that the total number of members in the council will reach approximately twenty-five. The new foundation will have at its disposal each year 600,000 francs to be distributed among investigators. In accordance with the terms of the endowment 300,000 francs must be distributed in small amounts; the balance may be bestowed in the form of one or more lump sums for costly researches of great importance. Educational establishments and government laboratories will not share in the grants offered by the foundation, as these will be reserved exclusively for the use of independent investigators in the field of physics and chemistry.

Mental Derangement and Moving Picture Exhibitions

The *Journal des praticiens* protests energetically against the exhibition in the cinematographic theaters of Paris of a picture the leading character of which is a man suffering from paretic dementia. All the symptoms of such patients are

vividly shown: delusions of grandeur, flight of ideas, maniacal excitement, change of personality, remission, murder, internment and sudden death by apoplexy. An alienist must surely have collaborated in the staging of the picture. The manifestations of the disease are admirably represented, but the objection is made that the very talent of the actors constitutes a danger for the mental equilibrium of predisposed spectators.

The Plague in Madagascar

The plague has made its appearance in Madagascar. Tamatave was invaded several months ago and now Antananarivo is suffering from an attack.

MADRID

(From Our Regular Correspondent)

July 21, 1921.

Nine Deaths from Tetanus in the General Hospital of Madrid

In the General Hospital of Madrid which, from a surgical standpoint, is the most important since the best surgeons operate there, there have occurred among the operative cases nine deaths. As happens in all such cases when the tetanus germs are transmitted by the suture material, catgut, the patients were already convalescent or had been discharged as cured when the tetanic symptoms appeared. A most careful examination of all the material employed and repeated analysis of the catgut did not show a single tetanus bacillus among the enormous amount of surgical matter studied. However, the fact that tetanus occurred in several clinics that had been furnished catgut at about the same date seems to indicate that the germs were inside the catgut. As might be supposed, the surgeons have taken this happening very much to heart. Until now, they had been well pleased with the chemical sterilization of catgut, which had been used for a long time in the hospital without any untoward accident heretofore.

The Medical Societies and the School of Medicine of Madrid

The medical societies of Spain, headed by the Guipuzcoa Society, are showing great hostility toward the Medical School of Madrid, and the newspapers have published recently a violent protest signed by the medical society of Guipuzcoa. This is the outcome of the discussion on the licensing of foreign physicians to practice in Spain, to which I referred in a previous letter.

Many Spanish physicians were displeased at the action taken by the French government in expelling from France several Spanish physicians who had served in the French army during the war. A former cabinet took cognizance of the matter and issued some regulations aimed at preventing an increase in the number of foreign physicians practicing in Spain. The medical societies of Guipuzcoa and Navarra, which lie nearest to France and therefore have in their jurisdiction the largest number of foreign physicians, were amazed on finding out that the same minister who had signed the previous regulation was, on the other hand, authorizing several foreign physicians to practice in Spain. Thus the trouble began. In the meantime, several foreign physicians who have had clinics in Spain for a long time and consider this their adopted country and have made a position for themselves were compelled to take rather unwelcome steps in order to continue practicing. The law requires that foreign physicians must be examined every six years, but this measure has never been enforced. Now, however, some foreign physicians were compelled to take this examination. The Medical School of Madrid, not influenced by the xenophobia prevailing at present in the provinces of Guipuzcoa and Navarra, contented itself with following strictly the minister's orders when it came to examine the foreign physi-

cians, a total of five, in the various subjects. It showed so much lenience that the medical societies took for granted that the Madrid professors were making sport of the law. The societies now claim that the whole procedure lacks validity, as no examination was held in premedical subjects. The school authorities replied to this that they were not concerned with premedical examinations, but just carried out their instructions. As regards this part of the controversy, no objections can be raised to the school authorities' behavior. It must also be admitted that the five foreign physicians have complied literally with the regulations in force and therefore they are legally authorized to practice in Spain for a period of six years.

The protests from the medical societies of the border provinces as to a display of severity, just in this one case, do not seem to carry much weight. They have overlooked persistently the deficiencies of the Medical School of Madrid—after all, the best of all Spanish medical schools—until their economic interests were affected. It is a fact that the Madrid Medical School, as all the others, is infiltrated with political influence. Some professors are teaching subjects without having shown previously their ability to do so; the moral sense of other professors is so obtuse that they even boast of not having had one single student fail in the examinations during their many years of teaching. If in the present case the school authorities did not show much severity, it must be admitted that the occasion was not very appropriate, as the foreign physicians examined were already practicing their profession in the most brilliant way. The medical societies that are now raising such an outcry could have rendered a truly patriotic service if they had exerted their influence before in trying to bring about improvements in the appointing system, in order to secure a better personnel for medical schools in general.

BUCHAREST

(From Our Regular Correspondent)

July 30, 1921.

Ten Years' Experience with Antitoxin in Bulgaria

From a recent report presented by the chief sanitary board of Bulgaria, we learn that during the ten year period 1910-1920, 10,134 cases of diphtheria were notified, of which 2,713, or about 25 per cent., terminated fatally. Of the total notified cases, antitoxin was given in 6,474, and of these, 594 persons, or about 11 per cent., died, while in 3,660 cases not treated by antitoxin there were 1,768 deaths—a case mortality of no less than 46 per cent. In addition to the 6,474 cases treated curatively, 16,906 were treated prophylactically with antitoxin in households invaded by diphtheria, and of these seventy-three persons subsequently were attacked by the disease, twenty-six of the cases proving fatal. In the two classes thus treated curatively and prophylactically, numbering together 23,380, only twenty-four instances of abnormal after-effects were noted, none of which, however, had a fatal termination. These after-effects comprised eight cases of antitoxin rashes, four of erythema, and two of roseola; three were instances of local inflammation at the site of the injection, and four of abscess; one patient had a painful knee-joint, one had pain in the leg and swelling at the foot, and one had albuminuria.

The Spread of Typhoid Fever Through Conveyance by the Hands

Dr. Schmidt of Marosvasarhely recently made an address on the different ways which serve the spreading of typhoid fever. In his experience of thirty-eight years, he has observed numerous cases of typhoid fever in Transylvania (the province formerly Hungarian but now a part of Roumania), and thinks that the dangers of impure water, of well con-

tamination and of inundations have been greatly exaggerated. In his opinion the conveyance of germs is principally effected by the hands of patients recently recovered from the disease, that is, bacillus carriers, who are still voiding bacilli in their stools. If the hands are not washed after each passage, they deposit the microbes on everything they touch, and if such patients are called on by their occupation to handle foodstuffs, as in the case of cooks, milkmen, waiters, butchers, grocers, bakers and the like, the spread of the disease may reach an incredible extent. For this reason Dr. Schmidt urged the establishing of stations in the large towns of Transylvania where typhus convalescents would be controlled for the period of one year, during which time they would be forbidden to deal with foodstuffs if found containing typhus bacilli. Recalling the fact that typhoid fever claims yearly in Transylvania from 1,000 to 1,200 victims, Dr. Schmidt hoped that this view, which is already generally accepted in the western states, might become more widely spread among the public, as it would result in a great diminution in the disease. He urged that explanatory circulars be posted in all public places, when they would lead to useful results, and further, that a dictation exercise on this subject should be set in the schools, as done eight or ten years ago in France, on the advice of Dr. Rondlet.

Infectious Diseases at the Places of Recent Massacre in Turkey

From different parts of the Turkish battle front, where the recent terrible massacres took place, comes the alarming news of the outbreak and spread of different infectious diseases among the destitute victims. In view of the excessive heat that prevails throughout the Balkans now, it is probable that the sanitary prospects are not at all satisfactory. Among the diseases most prevalent are dysentery and typhoid. The Greek troops fighting the Turks are carrying means for sterilizing drinking water, and therefore in the lines of the fighting Greek army infectious diseases, conveyed by contaminated drinking water, are relatively scarce. Not so with the Turks, who do not have sufficient means to bury their dead soldiers promptly. Sometimes corpses remain in heaps for weeks, the pestilent odor being carried by the wind miles distant. To this is added the excessive heat, in consequence of which water is very scarce, the wells are dried out, and there is general want of water even in hospitals and other sanitary institutions. The soldiers do not get water for washing. The drinking water is taken from rivers and lakes, which are polluted. From these unhygienic conditions not only the fighting troops but also the population behind the front are suffering. Measles and smallpox are claiming hundreds of victims among the children. These conditions are aggravated by the great want of surgeons and skilled nurses. The central authorities and the charitable organizations in Turkey are doing everything possible to help the sufferings of the civil population. They send them medicines, foods, Red Cross physicians and nurses.

A Fatal Error

A young woman met a tragic death in a Bessarabian village recently under painful circumstances. She was suffering from intense heartburn and went into a druggist's shop to obtain a remedy. The proprietor of the establishment was suffering from a severe influenza, and was bedridden, his assistant was gone for lunch, and therefore, in view of the urgency of the case, the druggist's wife proceeded upstairs and asked him what she was to give. He told her to tell his son to dispense 50 gm. of sodium bicarbonate. She did so and pointed to a bottle which she thought contained the bicarbonate. The boy did as requested, and the patient left with the drug. Shortly afterward the druggist suspected that his son might have dispensed from the wrong bottle, and on

getting up, found to his horror that his son gave barium carbonate instead of sodium bicarbonate. The druggist sent his assistant to the patient's house, who found that she had taken from the powder, and gave an emetic of salt and water. The unfortunate woman died shortly after. A verdict was recorded that the death was accidental. The druggist died fourteen days after the accident from pneumonia complicating his influenza attack.

VIENNA

(From Our Regular Correspondent)

Aug. 1, 1921.

Restriction of the Number of New Medical Students

The dean of the medical faculty of Vienna has issued an order by which the number of new students eligible to take up the study of medicine will be limited to 400 for the coming winter term. This is chiefly due to the precarious conditions prevailing in the dissecting rooms. While at first this order encountered serious objection, it is just to admit that the actual conditions make it imperative to restrict the number of the younger students. The Vienna medical faculty was always proud of its numerous foreign guests. These were mostly students of higher degrees, or graduates who desired to obtain, so to speak, their finishing touch at this seat of teaching. And now also the authorities make every endeavor to retain for Vienna its old standing as a medical center. But they must also make every endeavor to enable young students to obtain the best possible training. Formerly, when no more than 150 or 200 new students took up the study of medicine in a term, it was an easy matter to accommodate them. Last term more than a thousand students applied for matriculation. Difficulties arise at the outset of the medical curriculum, for there are not enough cadavers available for the teaching of anatomy to such numbers of students, as explained in my previous letter. Furthermore, the study of obstetrics is at present also handicapped by the abrupt drop in the number of patients applying at the maternity clinics or wards. As there does not exist any possible means to increase the number of cadavers available for teaching purposes or to obtain the required cases of childbirth, the only method to insure adequate instruction of the students is adaptation to the limited means, or, in other words, the "numerus clausus." This restriction does not extend to the teaching of advanced students or to graduate work. On the contrary, the influx of such men is always welcome, and the faculty has organized a series of graduate courses of four weeks each, and covering the whole field of medical knowledge, being of the very latest, most up-to-date kind. The restriction has been viewed unfavorably by a number of eminent men, who think it will only deter others from flocking to Vienna, and because they suspect more political than practical causes for this novel departure. They are, however, by far outnumbered by men holding the opposite view.

Reestablishment of the American Medical Association of Vienna

At the outbreak of the war, American physicians staying in Vienna thought it advisable to dissolve their organization, the American Medical Association of Vienna, which had been of excellent service to all English speaking students in the city. The organization had held a high position among physicians and professors here, and in fact it had "run" nearly all the courses delivered in English here. Now again a number of physicians from the United States have assembled here and the old American Medical Association of Vienna has been recalled into existence. Some of the old functionaries have again taken up their office, and in a short time the old conditions will be found again. The Associa-

tion endeavors to reestablish the scientific and social contact between the professions of American and Austria, and to enable such foreign physicians as desire to work here to get the maximum of benefit from their stay. The dollar is at present valued here at between 800 and 1,000 kronen, and a man can find excellent board and lodging for less than a dollar a day. The courses are rather more expensive than formerly.

Increase of Salaries of Professors and Assistants of the Faculty

Following the constant decline of the exchange rate of our money, the national assembly has thought it fit to increase the salaries of all clinical teachers in such a degree that they are paid at the same rate as state officials of the civil service. The lowest salary will be 89,000 kronen (about \$100) a year, the highest 150,000 kronen (less than \$200 a year). But it must be kept in mind that this sum is sufficient here for the modest upkeep of a small family. Furthermore, the clinical teachers will be entitled to obtain from the money paid by the students for the classes and courses up to 50 per cent. but not less than 15,000 kronen nor more than 100,000, the remaining going to the fund of the university. In special cases, when eminent men are called from abroad, or when there is danger that foreign universities might induce eminent teachers to leave Vienna for good, an increase of payment might be arranged. The assistants of the clinics are paid salaries ranging from 25,000 to 80,000 kronen a year besides board and lodging, so that their economic position is now satisfactory. In order to increase the income of the university, the fees for study have been raised to 10 kronen a week for nationals, and it is already announced that the figure will be raised to 30 kronen during the coming winter term.

Demand for Free Choice of Physician in Sickness Insurance Clubs

The profession has taken an important step forward in informing the general public what an advantage it means to the person insured under the national insurance against sickness, if the patient is entitled to select his physician and not to be forced to submit to the treatment from a man whom he may distrust or at least not exactly trust. As about 60 per cent. of all earning persons are in the *kranken-kassen* or compulsory sickness clubs, this appeals strongly to a large proportion of the population. The arrangement between the sickness society (*kranken-kasse*) of the state officers and the medical organization mentioned in a previous letter is working so satisfactorily—taking both parties—that this argument is a most formidable weapon in the hands of physicians. The difficulty lies in the peculiar political position of this country. The *kranken-kassen* are in the hands of one of our political parties—we are favored with three large political groups—and the appointments of physicians is often exercised from party views. If free choice is possible, then an important weapon and influence would be lost by the party now controlling the sickness clubs. Therefore, these centers try to nullify all efforts of the nature mentioned above, and point always to the financial difficulties of the problem. The profession, on the other hand, points out that it is quite unnecessary for these *kranken-kassen* to accumulate such large funds as are visible in their yearly reports. Better compensation for the physician is possible, they contend, without any extra burden on the insured persons, and the example given by the "free choice" sickness club of the state officials will no doubt prove a most attractive argument. The profession is demonstrating in short articles in the papers as well as by speaking at meetings, that there is only one way of making both parties find their interests looked after, and that it must be "free choice of the physician" in the future.

BERLIN

(From Our Regular Correspondent)

Aug. 8, 1921

Occultism

A fondness for occultism and spiritism is evidence of the tendency toward mysticism that has become more strongly apparent in Germany during the last few years. The Psychological Society of Berlin has therefore taken it on itself to subject some of the so-called occult observations to a careful test. Such action was regarded as necessary lest "science" should be accused of neglecting its duty in establishing and clarifying recently discovered "facts." The society proposes first of all to afford all persons residing in Berlin who consider themselves in possession of occult qualifications an opportunity of being examined by men of science who are acquainted with occultism, its methods and the sources of error pertaining thereto. For this purpose the society has appointed a committee, on which the famous psychologist, Professor Dessoir, and the neuropsychiatrist, A. Moll, have agreed to serve. These are the questions proposed by the committee as bearing on the matter in hand: (1) Is there such a thing as clairvoyance—either as to time or space? (2) Is there such a thing as telepathy; that is, transmission of thought without the mediation of the generally recognized means of communication? (3) Is there such a thing as telekinesis; that is, are there persons who are able to move ponderable bodies without the use of known mechanical forces? (4) Is there such a thing as materializations of the dead or other materializations? Are there persons from whose fingers or from whose mouths tangible or visible substances develop which take the form of parts of the human body or even of whole bodies and finally disappear without leaving a trace? An article by Sommer, professor of psychology and psychiatry in Giessen, entitled "The Supervision of Mediums in the Realms of Occultism and Spiritism," and appearing in No. 23 of the *Deutsche medizinische Wochenschrift*, deals with the same topic. Sommer criticizes the observations found in the book of the Munich neurologist, Dr. von Schrenck-Notzing. He offers to receive gratis in his private clinic any medium proposed by von Schrenck-Notzing with the view to examining such medium, in the presence of a committee made up of members selected by the two investigators, in accordance with the method that he has himself worked out.

Use of Motion Pictures in Medicine

The attempts to use motion pictures for medical instruction have already led to remarkable results. Capillary circulation in lower animals, the movements of bacteria and protozoa, the influence of serodiagnostic and therapeutic reactions on micro-organisms, the motor disturbances brought about by surgical and neuropathologic affections, and many similar processes in the realms of physiology and pathology can, by means of motion pictures, be presented very clearly to students even though the natural objects, for one reason or another, may not be available. Recently, processes in the living organism, which for technical reasons, cannot be reproduced by films, have been represented by so-called trick films. The Munich gynecologist, Professor Döderlein, has had a film made from thousands of drawings, which reproduces the various phases of childbirth on a millimeter scale, as it were, and gives the student a much clearer and more exact idea of the normal birth process than he can get from the study of textbooks and phantoms. Attempts to secure film productions showing the details of operations have not until recently been very successful. Due consideration to which the patient is entitled; the necessity of not disturbing the aseptic measures connected with the operation; technical difficulties arising from the activities of the operator and his

assistants occasioned disturbances during the preparation of the film which impaired the distinctness of the pictures. However, the need of securing better results has led to repeated trials. In the matter of film productions of operations it is not only a question of giving the students a clear idea of the technic employed, but it is also desirable to represent to surgeons in other cities, and especially in foreign countries, any new methods that may be employed, and to make the operations as clear to them as if they had seen them with their own eyes and had followed personally the various maneuvers and the results. A short time ago Dr. von Rothe, the chief surgeon of the surgical department of the Berlin-Wilmersdorf Municipal Hospital, exhibited in the Kaiserin Friedrich Haus an apparatus constructed after his own plans, and it would seem that the pictures taken with this apparatus mark a distinct advance. The apparatus is located above the operating table and takes in the field of operation from above. The light is thrown into the room from outside. Heretofore we saw, in motion pictures of surgical operations, the back of the surgeon, the hands of the nurse and the face of the assistant, and occasionally we caught a few glimpses of the operative program itself. Rothe's apparatus, however, reproduces nothing but the technical maneuvers, which may be seen from the first incision to the tying of the last suture. The details of body cavities may be plainly seen, so that it is possible to follow every maneuver and to recognize every instrument and the special mode of its application. The apparatus is located in a tube projecting from the ceiling and is completely enclosed in a globular metal case. By means of a motor located outside of the room, the apparatus may be raised and lowered or turned and slanted in any direction. A telescope attached to the apparatus by a special mechanism makes it possible to adjust and focus it promptly. The film itself is driven by motor power, which may be turned on and off by means of a device operated with the foot. The apparatus is served from a small rolling table, the surfaces and handles of which are sterilized. At the beginning of the operation, the operator starts the apparatus by a few manipulations without delaying the operation in the slightest, nor is he in any wise dependent on the control of the apparatus or of the film. With the financial support of the Prussian minister of public instruction, the inventor has been able to establish an institute of his own in the Berlin Charité Hospital, where, by means of the new apparatus, films for purposes of instruction and investigation are being produced. Dr. von Rothe has exhibited films showing operative treatment on a fractured patella, a mamma operation, a gastro-intestinal operation and tenotomy in torticollis, all of which met with general approval.

Marriages

BENJAMIN LAWRENCE FREEMAN to Miss Dorothy Langdon Millen, both of Suncook, N. H., at Manchester, N. H., August 25.

ROBERT L. I. SMITH, Pasadena, Calif., to Miss Margaret Williams of San Francisco, at Saratoga, Calif., August 24.

CHARLES GRAFTON WELLER, Washington, D. C., to Miss Esther Curtis of Fond du Lac, Wis., August 6.

AUSTIN J. MINOR, Hazleton, Pa., to Miss Constance Brasefield of New York, at Hazleton, August 26.

MINOR FRANKLIN SEWELL, Lee Summit, Mo., to Miss Dorothy Silcott of Malta Bend, Mo., recently.

BERT BYRD PARRISH to Mrs. Hermione Merker, both of Kirksville, Mo., at Lancaster, August 28.

JOHN VINCENT MCANNICH, Brownsville, Pa., to Miss Jane Davis, Ligonier, Pa., July 30.

JOSEPH T. BELGRADE to Miss Mary B. Kengle, both of McKeesport, Pa., August 25.

Deaths

Russel S. Wingfield ☉ Richmond, Va.; Medical College of Virginia, Richmond, 1920; served as state inspector of the drafts boards in 1917; resident physician at Stetson Hospital, Philadelphia, 1918-20, when he left for Salonica, Greece, to take charge of the American Red Cross Children's Hospital, Kalamaria; died, August 20, from burns received while rescuing patients from a fire which destroyed the hospital, August 14, aged 27.

William Curtis Deane, New York; New York University Medical College, 1884; member of the Medical Society of the State of New York; member of the New York State Board of Dental Examiners in Oral Surgery and Pathology; secretary of the New York State Dental Society; dental surgeon at the New York City Hospital, 1902-1903; died, August 28, at his summer home at Douglaston, L. I., aged 65.

George Tilden, Omaha, Neb.; Albany (N. Y.) Medical College, 1867; member of the Nebraska State Medical Association; served as insanity commissioner for Douglas County from 1874 to 1914; on the staff of St. Joseph's Hospital, also acting assistant surgeon for the U. S. Army, and pension surgeon; author of several articles on insanity; died, August 16, after a long illness, aged 79.

Hansell Crenshaw ☉ Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1900; member of the American Medico-Psychological Association; formerly professor in the Atlanta School of Medicine; editor of "Medical Consensus"; during the late war served in France with the Emory unit; died, August 20, from Raynaud's disease, aged 44.

Fernando C. Robinson, Wyand, Ill.; Rush Medical College, Chicago, 1863; life member of the Illinois State Medical Society; practiced in Wyand for more than half a century; at one time coroner of Bureau County; also president of the Board of Health; died, August 23, from encephalomalacia, aged 84.

Harold Hill Jacobs, Akron, Ohio; Medical College of Ohio, Cincinnati, 1891; member of the Ohio State Medical Association; president of the Summit County Medical Association, 1917; surgeon to the City, Children's and Peoples' hospitals, Akron; died, August 31, from dilatation of the heart, aged 55.

William H. Blake, Shadeville, Ohio; Starling Medical College, Columbus, 1870; member of the Central Ohio Medical Society; Civil War veteran; practitioner in Shadeville for fifty years; died, August 16, in the Grant Hospital, Columbus, following an operation for appendicitis, aged 75.

Robert Lee Goodbred ☉ Mayo, Fla.; Atlanta (Ga.) Medical College, 1892; at one time chief physician at the Florida Hospital for the Insane; former state legislator; was found dead, August 16, from a pistol wound, presumably self inflicted, aged 48.

Albert W. Green, Utica, N. Y.; College of Physicians and Surgeons, Baltimore, 1884; in 1895 served as local surgeon for the West Shore Railroad; was elected president of Oneida Castle village; died, August 17, from cerebral hemorrhage, aged 68.

John M. Feland, Sharpsburg, Ky.; Hospital College of Medicine, Central University of Kentucky, Louisville, 1885; member of the Kentucky State Medical Association; died, August 14, from a complication of disease, aged 60.

John S. Sauvalle, New York; College of Physicians and Surgeons (Columbia University), New York, 1889; at one time consulting physician of the French Hospital, New York; died, August 28, following a brief illness, aged 60.

Arthur George Thompson ☉ Pine Bluff, Ark.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; sheriff of Jefferson County, 1894; died suddenly, August 18, in his office, from heart disease, aged 70.

William Grant Gilmore, Emlenton, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; member of the Medical Society of the State of Pennsylvania; died, August 16, from heat prostration, aged 57.

Julian T. Osbaldeston, Chicago; Michigan College of Medicine and Surgery, Detroit, 1901; member of the Illinois State Medical Society; died, August 21, from injuries received in an automobile accident, aged 62.

Joshua W. Holiday, Burlington, Iowa; College of Physicians and Surgeons, Keokuk, 1869; served as captain in the

☉ Indicates "Fellow" of the American Medical Association.

Civil War; died, August 17, at the Burlington Hospital, from cerebral hemorrhage, aged 75.

John Alexander Duncan, Havre, Mont.; University of Toronto, Can., 1904; member of the Medical Association of Montana; was found dead in a hotel room in Minot, N. D., from heart disease, aged 43.

Isham Hamilton Goss Ⓢ Athens, Ga.; Kentucky School of Medicine, Louisville, 1875; specialized in surgery; for six years member of Georgia state board of medical examiners; died in August, aged 68.

George Holbert Grace, Greenville, Ky.; University of Nashville, Tenn., 1901; member of the Kentucky State Medical Association; died, August 25, following an operation for gall stones, aged 42.

Henry Rich Higgins, Boston; Boston University, School of Medicine, 1883; member of the Massachusetts Homeopathic Society; died, August 23, at the home of his son, Allston, Mass.; aged 76.

Robert Patek, San Francisco; Johns Hopkins University, Baltimore, 1906; member of the Medical Society of the State of California; died, August 25, from epidemic encephalitis, aged 40.

Finley B. Richards, Uniontown, Ohio; Medical College of Ohio, Cincinnati, 1879; member of the Ohio State Medical Association; died, August 23, from carcinoma of the liver, aged 70.

Charles E. A. Laferriere, Woonsocket, R. I.; Victoria University, Montreal, Canada, 1887; died, August 15, following an illness of three years duration, from disease of the kidneys, aged 60.

Weston H. McConnell Ⓢ Lafontaine, Kan.; Medical College of Indiana, Indianapolis, 1882; formerly surgeon of the Pension Bureau of Wilson County; died, August 18, aged 61.

Henry A. Zeigler, Elizabethtown, Pa.; University of Maryland, Baltimore, 1870; died, August 16, in the Masonic Home, Elizabethtown, where he had lived for the last seven years, aged 70.

John D. Arrington, Murrayville, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1882; was shot and killed by a woman, near Gainesville, Ga., July 1, aged 59.

George Dillwyn Baily, New Castle, Ind.; Indiana Medical College, Indianapolis, 1871; former owner of Spiceland Sanatorium, Henry County, 1901-05; died, August 19, aged 76.

Charles M. Butler, Morenci, Mich.; Detroit Medical College, 1880; during the late war served as examining physician, draft board No. 2, Morenci; died, August 19, aged 61.

Lester Burnside LeGro Ⓢ Bradford, Mass.; Baltimore Medical College, 1905; specialized in laryngology and rhinology; also a dentist; died, August 18, from diabetes, aged 55.

Charles H. Carey, Darlington, Wis.; Rush Medical College, Chicago, 1873; served as surgeon in the Spanish-American War, with the rank of captain; died, August 13, aged 80.

Edward Collins Murphy Ⓢ Kenosha, Wis.; Marquette University, Milwaukee, 1914; served in the U. S. Navy, 1896-1904; died, August 26, from acute pancreatitis, aged 45.

Leona F. Barnes, Columbus, Ohio; Ohio Medical University, Columbus, 1895; assistant to chair of anatomy, Ohio Medical University 1895-1900; died, June 10, aged 56.

John D. Smith, Miller School, Va.; University of Maryland, Baltimore, 1874; served forty years as physician to the Miller School, near Croset; died, August 19, aged 71.

John W. Marlow, Clarksville, Ill.; University of Michigan, Ann Arbor, 1872; member of the Illinois State Medical Society; died, August 10, from senility, aged 81.

William Myron Reynolds, New York City; Jefferson Medical College, Philadelphia, 1868; died, August 15, in Saint Luke's Hospital, from myocarditis, aged 59.

Louis Edouard Schiller, Lowell, Mass.; Laval University, Montreal, Quebec, 1888; died, June 10, in a Manchester hospital, following an operation, aged 63.

Edmund H. Chloupek, Chicago; Northwestern University, Chicago, 1889; died, August 23, from carcinoma of the intestines, aged 56.

Ernest Millens Clark, Oakland, Calif.; University of Vermont, Burlington, 1908; died, June 16, from lymphosarcoma, aged 37.

George William Poole, Chicago; Kentucky School of Medicine, Louisville, 1888; died, August 19, from gastritis, aged 62.

Charles Albert Stone, Mason City, Ill.; Rush Medical College, Chicago, 1894; died, August 19, aged 52.

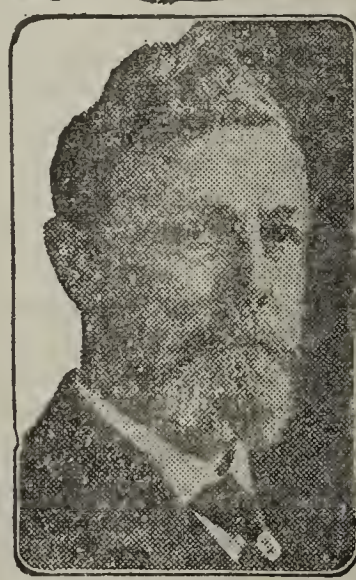
The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Cadomene Tablets.—The Blackburn Products Co. of Dayton, Ohio, shipped a quantity of these tablets in September and October, 1920. The Blackburn Products Co., as many of our readers know, is the concern which has advertised a number of its preparations by the "prescription fake" method. Advertisements appear in the form of a "Health Column" entitled "The Doctor's Advice, by Dr. Lewis Baker." The advertisements appear as "jokers" in what purport to be answers to questions. Cadomene tablets were analyzed by the federal chemists and the Bureau of Chemistry reported that they consisted essentially of zinc phosphid, strychnin and iron salts. Had the Blackburn Products Co. confined their false and fraudulent claims to the newspaper advertisements they could not have been touched under the federal Food



The DOCTOR'S ADVICE
by Dr. Lewis Baker

The questions answered below are general in character, the symptoms or diseases are given and the answers will apply in any case of similar nature.

Those wishing further advice, free, may address Dr. Lewis Baker, College Bldg., College-Ellwood Sts., Dayton, Ohio, enclosing self-addressed stamped envelope for reply. Full name and address must be given, but only initials or fictitious name will be used in my answers. The prescriptions can be filled at any well-stocked drug store. Any druggist can order of wholesaler.

Geo. V. G. writes: "Perhaps you can prescribe for me, as I am at a loss to understand my condition. For the past year have suffered extreme nervousness, trembling and extremities are cold. Have poor appetite, run weak, listless and no ambition to work or seek recreation. Am tired all the time and in no sense the strong capable man I was a few years ago."

Answer: A powerful rejuvenating nerve medicine should rectify the dormant sluggish condition and put new ambition and energy into your blood and nerves. Obtain three-grain cadomene tablets in sealed tubes, take as per directions.

and Drugs Act. But, with less shrewdness than many other nostrum makers, they made false and fraudulent claims on or in the trade package. For example:

"Invigorating . . . for the Treatment of . . . Neurasthenia (Nerve Exhaustion), General Debility, Melancholy, Dizziness, Heart Palpitation, Trembling Weakness, Waning Strength, Functional Irritation of the Urinary Tract, Languor and many other Symptoms due to . . . Worry, Grief, Intemperance, Dissipation, Overwork, Malnutrition, Convalescence from Influenza, Etc.;"

" . . . valuable for those who are despondent, nervous, irritable and unable to act naturally under the most ordinary circumstances . . ."

These and similar claims were declared false and fraudulent and in February, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9179; issued July 25, 1921.]

Equinox Lithia Water.—In September, 1920, the Equinox Mountain Spring Company, Manchester, Vt., shipped a quantity of "Equinox Lithia Water" that federal officials declared was misbranded. The product was declared adulterated for the reason that an artificially prepared mineral water had been substituted wholly or in part for the natural lithia water which the article purported to be. It was declared misbranded because the statements "Equinox Lithia Water . . . Bottled at Equinox Springs," "The Equinox Mountain Spring" were false and misleading. The product was not a natural lithia water but an artificial mineral water, pre-

pared by adding a lithium salt, sodium chlorid (table salt) and sodium bicarbonate (baking soda) to a lightly mineralized spring water. In January, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9107; issued June 17, 1921.*]

Dean Female Pills.—In September, 1920, government officials filed a libel for the seizure and condemnation of twelve packages of "Madame Dean Female Pills (Single Strength)." These had been shipped in March, 1920, con-



signed by Martin Rudy, Lancaster, Pa., to Denver, Colo. Analysis of the pills by the Bureau of Chemistry showed that the product consisted essentially of quinin, aloes, ferrous sulphate ("green vitriol"), hydrastis (golden seal), ginger, and cornstarch. Some of the claims in or on the trade package for this nostrum were:

"Female Pills . . . give relief in Female Disorders of the menstrual functions."
". . . for Painful, Irregular and Scanty Menstruation."
". . . irregular, prolonged, or suppressed menstruation. . . .
Female Pills afford relief for these ailments."
". . . strengthen and build up the uterine function."

These, and similar statements, were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9133; issued June 17, 1921.*]

Dr. J. H. McLean's Sarsaparilla Compound.—In August, 1920, the Dr. J. H. McLean Medicine Co., St. Louis, Mo., were alleged to have shipped a quantity of "Dr. J. H. McLean's Sarsaparilla Compound" which was misbranded. Analysis by the Bureau of Chemistry showed the preparation to consist essentially of iodids, a laxative plant drug, saponin (sarsaparilla), plant extractives included resins, salts of iron, potassium, and sodium, sugar, alcohol, and water. Some of the claims made for the stuff were:

"For The Treatment of Ailments Resulting From Impurity Of The Blood Such As Scrofula and all Scrofulous Humors, Goitre or Swollen Neck, Erysipelas, Old Sores, Eruptions on the Face or any part of the Body, Boils, Pimples, Blotches, Indolent Ulcers, Pains in the Bones, Rheumatism, Salt Rheum, Canker in the Mouth or Throat. Chronic Inflammation of the Mucous Membrane which lines the Nose, Throat, Windpipe, Ears and other parts and General Debility."
". . . for Specific Blood Poisoning, general purifying the blood, . . . and for symptoms which denote blood diseases, such as pimples, skin eruptions, etc. . . ."

These and similar claims were declared false and fraudulent, and in January, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9087; issued May 25, 1921.*]

Prescription 999.—The Combination Remedy Co. of Pittsburgh, Pa., shipped in January, 1919, a quantity of "Prescription 999" which was declared misbranded. When analyzed by the Bureau of Chemistry, Prescription 999 was found to consist of a mixture of fixed and volatile oil including oils of sandalwood, nutmeg and copaiba. The stuff was fraudulently labeled as a remedy for gonorrhea or gleet. In February, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9149; issued June 17, 1921.*]

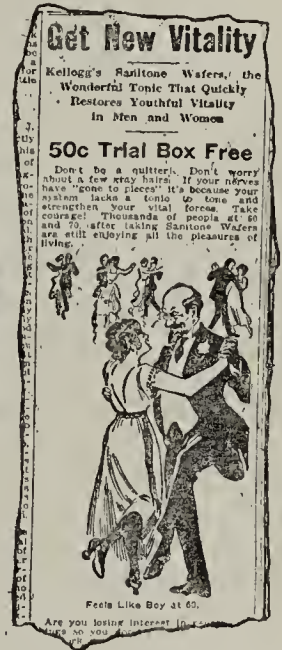
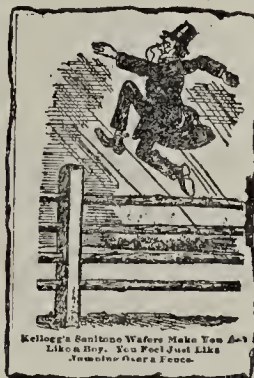
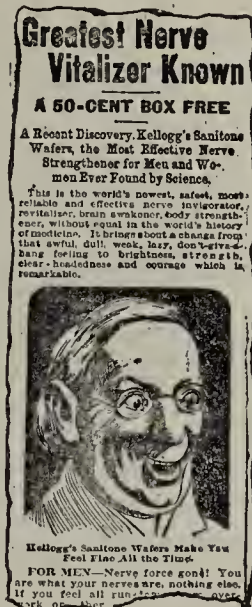
Donaldson's Wonderful New Life Remedy.—In December, 1919, and January, 1920, the T. Donaldson Medicine Co., Philadelphia, shipped a quantity of T. B. Donaldson's Wonderful New Life Remedy from Pennsylvania to Delaware. When analyzed by the Bureau of Chemistry, the preparation was found to consist essentially of an alkaline solution containing Epsom salt, senna, plant extractives, alcohol, and small amounts of volatile oils. Some of the claims made for the product were:

"For All Blood Diseases Stomach And Liver Difficulties Such as Dyspepsia, Biliousness, Syphilis, Scrofula, Erysipelas, Catarrh, Liver Complaints, Rheumatism, Enlargement Of Liver, Diseases Of The Kidneys, Chronic Constipation And Nervous Debility."
"It is one of the greatest kidney medicines in the world."
"It clears the urinal organs and strengthens the bladder, gives vitality, vigor, and vim to manhood."

These and similar claims were, naturally, declared false and fraudulent and in February, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9146; issued June 17, 1921.*]

Acme Brand Pennyroyal Pills.—A quantity of these pills shipped by the S. Pfeiffer Mfg. Co. of St. Louis, in July, 1920, were declared misbranded under the federal Food and Drugs Act. The Bureau of Chemistry reported that analysis showed the pills to consist of aloes and oils of pennyroyal and tansy. The claims on the trade package were those usual to nostrums sold for the alleged cure of suppressed menstruation. Because of the fraudulent claims made they were declared misbranded and in February, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 9158; issued July 25, 1921.*]

Kellogg's Sanitone Wafers.—In May, 1918, the F. J. Kellogg Co., a "patent medicine" concern of Battle Creek, Mich., shipped a quantity of Sanitone Wafers, which the federal authorities declared misbranded. F. J. Kellogg will be remembered by our readers as a quack of unsavory reputation who operated for some years from Battle Creek, Mich., and later from Detroit. From Battle Creek he sold "Kellogg's Safe Fat Reducer" and "Sanitone Wafers"; from Detroit he sold "Rengo" and "Protone." Rengo was an anti-fat preparation; Protone an anti-lean product. Kellogg, who died in January,



1916, is alleged to have made a million dollars out of his nostrums. Some time after his death the Kellogg mail-order fakery was still sending out letters to prospective victims, bearing Kellogg's picture and signature.

Analysis of a sample of "Sanitone Wafers" by the federal chemists showed them to contain, essentially, salts of iron and chromium, a laxative plant extractive, red pepper and a trace of strychnin. The trade package contained such claims as:

"Locomotor ataxia is curable with chromium sulphate. . . . The wafers have chromium sulphate as their chief ingredient."
"Results from this salt (chromium sulphate) are speedy and striking. In . . . neurasthenia it deserves the unique position of being the only drug which is curative."

These and similar claims were declared false and fraudulent and in January, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9154; issued July 21, 1921.*]

Antilaiteuse.—In September and November, 1920, a quantity of Antilaiteuse, consigned by Dr. N. A. Sirois, Manchester, N. H., was shipped from New Hampshire to Maine. Analysis of a sample of the article by the Bureau of Chemistry showed that it consisted essentially of Epsom salt, about 85 per cent., and ground juniper berries. The trade package contained such claims as:

"To Cleanse and Relieve the body and blood of all poisons and impurities causing all kinds of disorders."

"Weening, removal of milk from limbs and blood, to prevent miscarriage, diseases of the womb, change of life, dropsy, kidney disease, rheumatism, eclampsia, excessive stoutness, paralysis, piles . . . and poor digestion."

"It acts by cleaning the kidneys, . . . and the blood."

These claims were declared false and fraudulent in that the article contained no ingredient or ingredients capable of producing the curative effects claimed. In January, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9108; issued June 17, 1921.*]

Leonardi's Injection No. 1.—A quantity of this product, shipped in March, 1918, and consigned by S. D. Leonardi and Co., Inc., was declared misbranded by the federal authorities. The federal chemists reported that analysis showed the preparation to consist essentially of an alkaline solution of borax, camphor and berberin. The stuff was falsely and fraudulently recommended as an effective treatment, remedy or cure for gonorrhea and gleet. In February, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9191; issued July 25, 1921.*]

Correspondence

THE RESISTANCE OF ANTIBODY TO TRYPTIC DIGESTION

To the Editor:—In THE JOURNAL, June 25, p. 1820, Berg raised objections to a statement made by us (*J. Immunol.* 6:185 [March] 1921) that antibodies are not affected by trypsin over considerable periods. The objection is based on a series of experiments by Berg and Kelser (*J. Agric. Res.* 13:471, 1918) in which they exposed tetanus antitoxic serum to the action of trypsin and found a loss of antitoxic power of 60 per cent. in six days.

While we were familiar with the many attempts that had been made to purify immune serum by means of digestion and that such experiments were almost invariably accompanied by loss of antibody content, we considered that such experiments were not comparable with our own, which were performed under totally different conditions. Instead of using serum more or less diluted, we employed a solution of antibody prepared as follows: Pneumococci were allowed to absorb from an antipneumococcic immune serum such antibodies as they would (the well known absorption test), the sensitized pneumococci were then washed free of serum, extracted with mildly alkaline solutions, and the bacteria removed from the solution by centrifugation and filtration through filter candles. Such solutions contained a very considerable concentration of antibody, but necessarily contained such an infinitesimal amount of serum protein that in fact they no longer gave a chemical test for these substances.

As far as we are aware, solutions thus prepared contain antibody in the purest form in which it has yet been obtained, and digestion experiments conducted with such purified solutions must necessarily have greater weight than when the

experiment is complicated by the presence of a mass of serum proteins whose digestion products may or may not be deleterious to the antibody molecule.

The experiments of Berg and Kelser were made with solutions containing 20 per cent. of the serum protein content of the original serums, and were therefore complicated to this extent. Of the basis of their experiments, Berg and Kelser state that although they believe the antitoxic molecule to be nonprotein in nature, it is so closely associated with a digestible protein that the splitting of this substance causes a splitting of the antitoxic molecule.

Antibody is either nonprotein in nature, protein or a compound molecule combining a nonprotein and protein base.

Berg and Kelser would place it in the latter class, since that is the meaning of their statement as to the close association of a protein fraction, but their evidence is inconclusive and capable of several interpretations. Our experiments would place it either in the nonprotein class or in that class of proteins not digestible with trypsin.

It is, of course, possible that the basic chemical nature of the antitoxic molecule differs from that of the antipneumococcic agglutinin and protective antibody with which we worked. In that case the experiments of Berg and Kelser have no bearing on our results except to show that our conclusions were too sweeping; on the other hand, if the basic nature of antibodies is the same (a reasonable assumption), their results are diametrically opposed to ours.

If in any set of conditions in which trypsin is active, antibody is unaffected, such experiments cannot be invalidated by other experiments done under conditions introducing an uncontrolled factor, such as was present in the work of Berg and Kelser. If in the presence of such a factor, antibody is inactivated or destroyed and, in the absence of this factor, remains uninjured, one must assume that this substance or its derivatives are responsible for the deterioration. We must hold, therefore, that the experiments noted by Berg and Kelser in no way invalidates either our experimental evidence or our conclusions.

F. M. HUNTOON, J. MASUCCI and E. HANNUM,
Glenolden, Pa.

"EFFECT OF LIGATION OF VAS DEFERENS ON TESTES"

To the Editor:—Kindly permit me to add the following remarks to the answer to Dr. Heuler's query on page 1698 of THE JOURNAL, June 11. The consequences of a vasectomy depend entirely on the technic used at the operation. If the vas, which Steinach considers to be probably also an organ of internal secretion, is severed, while all, even the smallest, blood vessels are spared, the results will be quite different from those generally following a brutally performed vasectomy. The operation as done under Steinach's personal supervision is a simple, but also a very delicate, one; consequently the testicle does not suffer any degeneration, and the results are quite different from those which we used to see in the times when Keyes' subcutaneous ligation was so often clumsily performed, and which we still frequently enough see after some operations for varicocele.

VICTOR G. VECKI, M.D., Lucerne, Switzerland.

Diabetes and Syphilis.—R. A. Bullrich writes to the *Semana Médica* 27:379, 1920, to comment on the relative frequency of inherited or acquired syphilitic disease of the pancreas as a cause of diabetes. At the same time, he points out that diabetes is extremely rare among the less well-to-do although syphilis is so common among them. In addition to this fact is the experience that the fasting method of treating diabetes yields results far surpassing those obtainable with mercury. Each case therefore has its own indications, and an eclectic point of view is the wisest.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
CALIFORNIA: Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 135 Stockton St., San Francisco.
COLORADO: Denver, Oct. 4. Sec. Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.
FLORIDA: Tallahassee, Oct. 11. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Oct. 9. Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.
IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.
KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.
MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter B. Bowers, 144 State House, Boston.
MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. Alexander MacAlister, State House, Trenton.
NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.
NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 26-29. Mr. Herbert J. Hamilton, Asst. Professional Examinations, Education Bldg., Albany.
OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.
PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.
RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.
UTAH: Salt Lake City, Oct. 4. Sec., Dr. J. T. Hammond, Capitol Bldg., Salt Lake City.
WEST VIRGINIA: Clarksburg, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.
WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

THE NATIONAL BOARD OF MEDICAL EXAMINERS

The National Board of Medical Examiners since its organization in 1915 has completed the trial period of its usefulness. It has stood for the establishment of a thorough test of fitness to practice medicine which might safely be accepted anywhere. It has held eleven examinations, each of which included written, practical and clinical tests covering all the subjects of the curriculum. These examinations were conducted by members of the board, aided by medical teachers resident in the places where the examinations were held—in Washington, Philadelphia, New York, Boston, Chicago, St. Louis, Rochester (Minn.) and Minneapolis. During the war an examination was held simultaneously at Fort Oglethorpe and Fort Riley. Altogether, 325 candidates have been examined, of which 269 passed and received certificates. The board requires for admission to its examination that candidates must have completed a four-year high school course, two years of college work including physics, chemistry and biology, and must have graduated from a Class A medical school and taken a year's internship in an approved hospital.

In 1916, the board was endorsed by the American Medical Association, on the recommendation of the Council on Medical Education. Its certificates are now recognized by the Army, Navy and Public Health Service and by the licensing boards of the following twenty-one states:

Alabama	Iowa	North Carolina
Arizona	Kentucky	North Dakota
Colorado	Maryland	Pennsylvania
Delaware	Minnesota	Rhode Island
Florida	Nebraska	South Carolina
Georgia	New Hampshire	Vermont
Idaho	New Jersey	Virginia

The certificate is recognized, also, by the Conjoint Board of England and the Triple Qualification Board of Scotland.

In order to afford a wider opportunity of securing its certificate by examination, the board has recently adopted a plan which divides the examination into three parts as follows:

Part I: A written examination in the six fundamental medical sciences: (a) anatomy, including histology and embryology; (b) physiology; (c) physiologic chemistry;

(d) general pathology; (e) bacteriology; (f) materia medica and pharmacology.

Part II: A written examination in (g) medicine, including pediatrics, neuropsychiatry and therapeutics; (h) surgery, including applied anatomy, surgical pathology and surgical specialties; (i) obstetrics and gynecology; (j) public health, including hygiene and medical jurisprudence.

Part III: A practical examination in (k) clinical medicine, including medical pathology, applied physiology, clinical chemistry, clinical microscopy and dermatology; (l) clinical surgery, including applied anatomy, surgical pathology, operative surgery, and the surgical specialties of the diseases of the eye, ear, nose and throat; (m) obstetrics and gynecology; (n) public health, including sanitary bacteriology and the communicable diseases.

Parts I and II will be held twice a year in Class A medical schools where candidates are registered. Part III will be held annually in Boston, New York, Philadelphia, Baltimore, Washington, Nashville, New Orleans, Galveston, Cleveland, Chicago, St. Louis, Minneapolis, Iowa City, Denver and San Francisco, where subsidiary boards have been established. The arrangement, therefore, permits the student to take Part I following the completion of the first two years of the medical course, Part II following the last two years, and Part III on completion of his hospital internship. The fees charged are, for Part I, \$25; for Part II, \$25; and for Part III, \$50.

The board received \$15,000 a year from the Carnegie Foundation for the Advancement of Teaching during the experimental period. It has now received \$100,000 from the same source for the next five year period.

The members of the board are Surg.-Gen. M. W. Ireland, U. S. Army; Surg.-Gen. E. R. Stitt, U. S. Navy; Surg.-Gen. Hugh S. Cumming, U. S. Public Health Service; Lieut.-Col. J. F. Siler, M. C., U. S. Army, Washington, D. C.; Surg. G. W. McCoy, U. S. Public Health Service, Washington, D. C.; Commander C. M. Oman, M. C., U. S. Navy, Washington, D. C.; Dr. Herbert Harlan, Baltimore; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. Louis B. Wilson, Rochester, Minn.; Dr. Horace D. Arnold, Boston; Dr. Austin Flint, New York; Dr. Walter L. Bierring, Des Moines, Iowa; Dr. David A. Strickler, Denver; Dr. W. S. Carter, Galveston, Texas; Dr. Eugene L. Opie, St. Louis; Dr. Lewis A. Conner, New York; Dr. A. C. Eycleshymer, Chicago; Dr. J. M. T. Finney, Baltimore, and Mr. John G. Bowman, Pittsburgh. At the annual meeting in June, 1921, the board selected as its officers Surg.-Gen. M. W. Ireland, U. S. Army, president; Dr. J. S. Rodman, secretary-treasurer, and Mr. E. S. Elwood, managing director. The headquarters of the board are in the Medical Arts Building, Philadelphia.

Pennsylvania January Examination

Miss Mary Y. McReynolds, director, Bureau of Medical Education and Licensure of Pennsylvania, reports the written and practical examination held at Philadelphia, Jan. 11-15, 1921. The examination covered 5 subjects and included 50 questions. An average of 75 per cent. was required to pass. Of the 82 candidates examined, 65 passed and 17 failed. The following colleges were represented:

College	PASSED	Year Grad.	Number Licensed
Howard University	(1918, 2), (1919, 2)		4
Indiana University	(1919)		1
Maryland Medical College	(1905)		1
Harvard University	(1893), (1917)		2
Tufts College	(1917)		1
Columbia University	(1903), (1915)		2
Long Island College Hospital	(1919)		1
New York Homeopathic Med. Coll. and Flower Hosp.	(1909)		1
University of Buffalo	(1898), (1904), (1919)		3
Leonard Medical College	(1906)		1
Jefferson Medical College	(1916, 3), (1917, 5), (1918, 2), (1919, 10)		20
Temple University	(1919)		9
Univ. of Pennsylvania	(1915), (1917, 6), (1918), (1919, 6)		14
University of Toronto	(1919)		1
University of Virginia	(1899)		1
University of Naples	(1917)*		1
University of San Salvador	(1919)*		1
Medical School of American University, Beirut	(1912)*		1
FAILED			
Howard University	(1919)		1
University of Louisville Medical Department	(1911)		1
Tulane University	(1895)		1
Maryland Medical College	(1910)		1

University of Michigan Medical School.....(1881)	1
Columbia University.....(1911)	1
Temple University.....(1918), (1919, 5)	6
University of Pennsylvania.....(1919)	1
University of Vienna.....(1899)*	1
National University, Athens.....(1917)*	1
University of Padua.....(1917)*	1
University of Kharkov.....(1905)*	1

*Graduation not verified.

North Carolina June Examination

Dr. Kemp P. B. Bonner, secretary, North Carolina State Board of Medical Examiners, reports the written examination held at Raleigh, June 20-25, 1921. The examination covered 7 subjects and included 70 questions. An average of 80 per cent. was required to pass. Of the 55 candidates examined, 51 passed and 4 failed. Twenty-nine candidates were licensed by reciprocity. Three candidates were licensed on government credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University.....(1921)		(1921)	91.1
Tulane University.....(1919)	86.6,	(1921) 80,	83.6, 87
University of Maryland.....(1921)		(1921)	83.3
Washington University.....(1921)		(1921)	95.7
Jefferson Medical College.....(1920)	83.3,	87.1,	(1921) 80.9, 81.4,
	85, 85.7, 85.9, 86, 86.6, 87, 87, 87.1, 87.1, 87.3,		
	88.7, 89.9, 90.1, 90.1, 90.3, 90.3, 90.4, 90.9, 91.6		
University of Pennsylvania.....(1919)	93.7,	(1921) 84.7, 84.9, 85.1,	
	86.9, 88.1, 88.3, 88.7, 89.3, 89.3, 90, 91.1		
Woman's Medical College of Pennsylvania.....(1921)	87.4,	90.1,	90.6
Medical College of Virginia.....(1921)	82.6,	85.3,	86.9, 87.7
University of Virginia.....(1921)			94
Undergraduate*			
College	FAILED	Year Grad.	Per Cent.
Howard University.....(1920)		(1920)	63.3
Meharry Medical College.....(1918)	75.3,	(1920)	72.3
Medical College of Virginia.....(1918)		(1918)	60.4

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama.....(1909)		(1909)	Alabama
Atlanta Medical College.....(1918)		(1918)	Georgia
University of Louisville.....(1916)		(1916)	Kentucky
Medical School of Maine.....(1874)	Maine,	(1889)	Florida
University of Maryland.....(1905)	Virginia,	(1916)	Maryland
Harvard University.....(1917)		(1917)	Mass.
University of Michigan Medical School.....(1900)		(1900)	New Hamp.
(1918) Michigan			
Washington University.....(1917)		(1917)	Missouri
Cornell University.....(1906)		(1906)	New York
Long Island College Hospital.....(1916)		(1916)	New York
University and Bellevue Hospital Medical College.....(1918)		(1918)	Louisiana
Woman's Medical College of the New York Infirmary			
for Women and Children.....(1890)		(1890)	New Hamp.
North Carolina Medical College.....(1919)		(1919)	Virginia
Medical College of the State of South Carolina.....(1890)		(1890)	Virginia
(1905) South Carolina			
Memphis Hospital Medical College.....(1898)		(1898)	Michigan
University of Tennessee.....(1911), (1917)	Tennessee,	(1912)	Alabama
Medical College of Virginia.....(1916), (1918, 2)		(1918, 2)	Virginia
University College of Medicine.....(1898)		(1898)	W. Virginia
University of Virginia.....(1915, 2), (1917)		(1917)	Virginia

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Pennsylvania.....(1915)		(1915)	U. S. Army
Medical College of Virginia.....(1917)		(1917)	U. S. Navy
University of Virginia.....(1917)		(1917)	U. S. Navy

* Granted limited license.

Connecticut July Examination

Dr. Robert L. Rowley, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, July 12-13, 1921. The examination covered 7 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 39 candidates examined, 32 passed and 7 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Yale University.....(1921)	76.5, 77.6, 78.2, 78.3,	81,	82.9,
	83.1, 83.8, 84, 85.9, 87.4		
Bowdoin Medical School.....(1921)		(1921)	80.2
Johns Hopkins University.....(1921)		(1921)	92
Harvard University.....(1913)	83.4,	(1920) 81.2,	(1921) 84.3, 85.3
Bellevue Hospital Medical College.....(1897)		(1897)	*
Columbia University.....(1919)	85.3,	(1921) 88.4, 89.2	
Cornell University.....(1920)	83.4,	(1920) 83.4,	84.7
Fordham University.....(1921)		(1921)	80.3
Long Island College Hospital.....(1921)		(1921)	76.7
New York University Medical College.....(1896)		(1896)	*
Jefferson Medical College.....(1919)		(1919)	85.8
University of Pittsburgh.....(1914)		(1914)	82.1
Woman's Medical College of Pennsylvania.....(1901)*,		(1920)	84.7
Baylor University.....(1920)		(1920)	73.4
University of Vermont.....(1919)		(1919)	79.6
Medical College of Virginia.....(1917)		(1917)	75

FAILED

Baltimore Medical College.....(1911)	68.8
College of Physicians and Surgeons, Baltimore.....(1904)	64.9
University of Maryland.....(1921)	73.4
Long Island College Hospital.....(1921)	57.1
University of Vermont.....(1920)	71.9
University of Naples.....(1913)†	57.2
Baylor University.....(1920)	73.4

* No grade given.

† Graduation not verified.

Book Notices

GENERAL PATHOLOGY. An Introduction to the Study of Medicine, Being a Discussion of the Development and Nature of Processes of Disease. By Horst Oertel, Strathcona Professor of Pathology, McGill University, Montreal. Cloth. Price, \$5. Pp. 357. New York. Paul Hoeber, 1921.

In the foreword we are told that the aim is to treat of general pathologic processes as expressions of physico-chemical laws, to trace the historical development of the ideas now in vogue in regard to these processes, and to emphasize the anatomic changes of diseases from a dynamic point of view. No fault is to be found with the objectiveness of the presentation, which is well sustained throughout. Undoubtedly there are more historical references in this book than in any other book on the same subject; yet, perhaps unavoidable, the historical matter seems rather too fragmentary to be of as much value as desirable. The influence of Harvey's discovery of the circulation on the development of medicine in general is not emphasized; the growth of the knowledge of the specificness of infectious diseases is not even mentioned; and on page 112 we are told point blank that the first observations on acquired immunity were made in 1791 by Plett, a country schoolmaster—obviously incorrect and misleading. The sections on pathologic anatomy and pathogenesis are probably the most carefully worked over parts. In the section on infection and bacteria, it would have been just as well to omit details of a strictly bacteriologic nature, as the section is not intended to take the place of bacteriologic textbooks. There are some evidences of haste or carelessness that should be removed at the earliest moment possible: There are misspelled names and words—Tunnecliffe for Tunncliffe, Walback for Wolbach, sensilism for sensibilisin. Yellow fever and rabies almost escape any mention, and are passed by with too little notice. Koch's culture methods are said to be ingenious and of great importance, but the student is not told what the methods really are. Once more we have an example of an author remaining in ignorance of the abandonment of the trinomial designations of bacteria. The grouping of streptococci, pneumococci and meningococci is not described, clearly and adequately. Some of the names of bacteria are not correct, e. g., *Streptococcus crysipelatos*, *Bacillus rhinoscleroma*. It is hardly correct to say that the gonococcus is extremely difficult to cultivate or that it "is almost entirely pathogenic for man," that botulism toxin acts similarly to tetanus toxin, that typhoid is transmitted usually by foodstuffs without any mention of water transmission. No mention is made of the flea in connection with rat plague. Examples of this sort could be multiplied and diversified. In the chapter on immunity, the manner in which antibodies develop is not described. There are no illustrations, because "emphasis has been put on discussion of the nature and development of pathological processes, and it is assumed that laboratory experience will supplement the use of the book." In its present form the book cannot be recommended as a high class, reliable text.

GREEK MEDICINE IN ROME. The Fitzpatrick Lectures on the History of Medicine, Delivered at the Royal College of Physicians of London in 1909-1910, with other Historical Essays. By The Right Hon. Sir T. Clifford Allbutt, K.C.B., M.A., M.D., Regius Professor of Physic in the University of Cambridge. Cloth. Price, \$12. Pp. 633. New York: Macmillan and Co., 1921.

This book includes the Fitzpatrick lectures on the history of medicine delivered at the Royal College of Surgeons of London in 1909-1910, together with eight other historical essays. It contains a vast amount of material—so much, in fact, as to cause one to wonder how such a busy and noted physician could find time for the preparation of such a

thorough and scholarly treatise. It is unnecessary to say that it is written in classical and beautiful English, for Sir Clifford Allbutt writes no other kind. While the history of the development of Greek and Roman medicine forms the larger part of the work, the remaining essays, most of which have been previously printed in other publications, add great interest to the book. These essays include "Byzantine Medicine," "Salerno," "Growth of Public Medical Service," "Medicine of the Fifteenth Century," "Rise of the Experimental Method in Oxford," "Medicine in 1800," "Medicine of the Twentieth Century," and "Palissy, Bacon and the Revival of Natural Science." The book is one which will of course appeal to every one interested in the history of medicine. It is to be hoped, however, that its sale may be wide and that it will make many new converts to the study of this fascinating subject.

LIGATIONS OF THE LEFT SUBCLAVIAN ARTERY IN ITS FIRST PROPORTION. By William S. Halsted, M.D. The Johns Hopkins Hospital Reports. Volume XXI, Fasciculus I. Paper. Price, \$2. Pp. 96, with illustrations. Baltimore: The Johns Hopkins Press, 1920.

In this monograph the author includes two personal experiences with this rare operation, one of them being the largest aneurysm successfully operated on in this region. A brief historical review of vascular surgery is first given. The author endorses the ligations of the vein corresponding to an occluded main artery as a means of preventing gangrene of the distal part. He suggests that ultimately we may ligate arteries for the relief of edema due to occluded veins. Abstracts of the twenty-one recorded cases, including the two of his own, are included, with drawings indicating the site of ligation and the location of the pathologic condition. The author gives an interesting and helpful critical analysis of the methods used in the cases reported in the literature. A study of this work will be helpful to any one doing vascular surgery in that it will suggest certain fundamental procedures so that one may avoid mistakes.

FUNERAL MANAGEMENT AND COSTS. A World-Survey of Burial and Cremation. By Quincy L. Dowd. Cloth. Price, \$3. Pp. 295. Chicago: University of Chicago Press, 1921.

The purpose of this book is to contrast the efficient municipal management of burial and protective provision made by European states and cities with the costly, inefficient, ostentatious and frequently vulgar management usually effective in American methods for disposal of the bodies of the dead. The foreword by Graham Taylor points out the need for such an argument. The work is presented in twelve chapters, on the cost of dying; undertaking trade; industrial insurance; laws relating to burial; the monument and mausoleum trade; benefit societies; burial in other countries; cremation; religious control of burial, and reforms in burial. The book is convincing, and its plea for reform deserves intelligent, sympathetic cooperation from physicians who know only too well the necessity for some economic reform in this matter.

RÔLE DES COLLOÏDES CHEZ LES ÊTRES VIVANTS. Essai de Biocolloïdologie; Nouvelles Hypothèses dans le Domaine de la Biologie, et de la Médecine. Par Auguste Lumière. Paper. Price, 16 francs. Pp. 311, with 20 illustrations. Paris: Masson et Cie, 1921.

This book considers the evolution and flocculation of colloidal particles as the basis of physiology, normal as well as pathologic. Life is conditioned on the colloidal state, and flocculation determines sickness and death—that is the hypothesis guiding the author. There is an extensive bibliography of anaphylaxis, brownian movement, and of colloids, but unfortunately the arrangement is such that the only way to find a particular reference is to look up the author's name in the index.

INJURIES TO JOINTS. By Col. Sir Robert Jones, C.B., Ch.M., D.Sc., Inspector of Military Orthopaedics, Army Medical Service. Second edition. Cloth. Price, \$2. Pp. 195, with 29 illustrations. New York: Oxford University Press, 1920.

This "war primer" is of a convenient size to carry in the pocket, and should be a great help to the surgeon who follows its tenets. The pages are crowded with the vital factors of joint treatment selected and condensed from an enormous experience in both civil and military practice. The clearness and definiteness of the directions will appeal to

the practitioner who looks to it for aid. The scope of the work is indicated by the titles of the nine chapters, which consider the general outline and principles; bandaging, massage and movements; pain and stiffness in relation to diagnosis and treatment; stiffness and limitation of movements; contraction of scar tissue; joints of the upper limb; injuries to the spinal column; joints of the lower limb; ankle-joint and foot. With these contents greatly amplified in each of the chapters, there are few related matters that are not to be found in the text.

LIFE AND TIMES OF AMBROISE PARÉ (1510-1590). With a New Translation of his Apology and an Account of his Journeys in Divers Places. By Francis R. Packard, M.D., New York. Cloth. Price, \$7.50. Pp. 297, with 49 illustrations. New York: Paul B. Hoeber, 1921.

This book is divided into two parts, the first consisting of a brief sketch of the life and times of Paré, and the second of a translation of Paré's book entitled "Apology and Treatise Containing the Voyages made into Divers Places." Dr. Packard's account of the life of the great French surgeon is a well written, interesting story, full of brief anecdotes and personalia. The repute of Dr. Packard as a medical historian is sufficient warrant of the accuracy of the biography. The translation of the famous work is a commendable addition to the valuable historical literature of our time. Other translations have appeared, but none of these are now easily available. The publisher has contributed an artistically printed text, and there are numerous reproductions of old paintings and drawings which lend themselves readily as illustrations of the subject matter.

A TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY. By John Glaister, M.D., D.P.H., F.R.S.E., Professor of Forensic Medicine and Public Health in the University of Glasgow. Fourth edition. Cloth. Price, \$7.50. Pp. 902, with 138 illustrations. New York: William Wood & Co., 1921.

The third edition of this book appeared in 1915. Much material has been added dealing chiefly with industrial and other poisons, laws on lunacy and the relationship of intoxication to the responsibility of crime. The book applies, of course, chiefly to English medical practice so that the first chapter deals chiefly with the work of the general medical counsel and the methods of legal procedure followed in England. However, beginning with the second chapter, on medical evidence, the discussions may be considered generally applicable. The author holds the chair of forensic medicine in the University of Glasgow, and has been for many years a medical legal examiner for the district in which he resides. His work may be considered one the best textbooks available on this subject.

THE INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. Cloth. Price, \$6. Pp. 564, with 85 illustrations. New York: William Wood & Co., 1921.

This volume, the thirty-ninth in a long series, covers advances in medical science during the year 1920. Among the American contributors are Drs. F. H. Albee, E. Wyllys Andrews and J. Ramsay Hunt. However, the British authors and contributors have abstracted freely from American literature. To those wishing to brush up on recent contributions to medical science, the book will be of great assistance. The only criticism which continues to attach to the volume is the general use of the apothecaries' system alone in prescriptions which are quoted, and the frequent mention of preparations in the British pharmacopeia not regularly available to Americans.

THE HEART: OLD AND NEW VIEWS. By H. L. Flint, M.D., Physician to the Mansfield Hospital. Cloth. Price, 15 shillings net. Pp. 177, with illustrations. London: H. K. Lewis & Co. Ltd., 1921.

The more recent views as to the mechanism of the heart beat are here clearly and concisely set forth. The aid furnished by the polygraph and electrocardiograph in interpreting irregularities is explained by text and tracings. The first third of the book is taken up with an historical outline of cardiology, emphasis being laid on the views held before the time of Harvey and on the contribution of Harvey himself. The work of those of later date is treated with great brevity. The book is to be recommended to those wishing a brief yet reliable outline of the subject.

Medicolegal

Physicians as Witnesses—Cause of Death—Provisions for Necropsies

(*United States Fidelity & Guaranty Co. v. Hood (Miss.)*, 87 So. R. 115)

The Supreme Court of Mississippi, Division B, in overruling a suggestion of error after a judgment had been rendered in favor of the plaintiff, Mrs. Hood, on a policy of accident insurance that had been issued to her husband, says that the death of the insured, who was 56 years of age, occurred one morning about two weeks after he had fallen and struck his head on frozen ground, and that his body was buried in the afternoon of the day after his death. It appeared from the evidence of a physician who attended him that the insured was affected with high blood pressure and some kidney trouble. Another physician, who had also been called to attend the insured, was placed on the witness stand by the defendant company, and, in the absence of the jury, testified that he made one examination and one visit to the insured; that in his opinion the condition of high blood pressure and the kidney trouble produced the death, and that he could not see that the fall had anything to do with it. This evidence given by the second physician was excluded and did not go to the jury.

The court holds that, under Section 3695 of the Code of Mississippi of 1906 (Hemingway's Code, Section 6380), a physician is incompetent to testify to facts which come to his knowledge by virtue of his being employed by his patient as a physician, and the patient does not waive the privilege because he introduces another physician who testifies for the patient about the same facts. It is improper practice in such case to permit the physician to testify at all about such facts even in the absence of the jury. The proper practice is to ascertain whether the facts were learned because of the relation, and, if so, to exclude the evidence. One of the reasons that may have prompted the legislature in the enactment of the statute was the evil of commercializing knowledge so obtained by certain experts, so called, and by physicians employed by one party to wait on and minister to parties which such employer had injured. But, whatever may have been the reason for the enactment of the statute, the statute expressly prohibits a physician from testifying without the consent of the patient. The evidence of a physician ought not to be received before the court, and it is error for the court to proceed on the idea that the judge and the public may hear the statement of the physician in such case, though it be excluded from the jury.

Where a provision of an accident insurance policy insures against "the effects resulting directly and exclusively of all other causes from bodily injury sustained . . . through accidental means," and an accident happens which sets in action a latent and inactive disease, and death results from the accident accompanied by the effects of such disease, the accident is the proximate cause of the death. To avoid the policy in case of an accident accompanied by disease, the disease must proximately contribute to the death.

As to the provision of an accident policy providing for a necropsy in case of death, it will be construed most strongly against the insurer and in favor of the insured, and so as to require the demand and the operation to be made before interment. If the company desires to make a necropsy, it must arrange its affairs so as to secure the necessary information and make the demand and perform the operation before interment. A provision in an accident policy of insurance providing for a necropsy after the body has been buried is contrary to public policy and void. While the act of removing the body from the grave for the purpose of a necropsy under a contract of the character of the one here involved would not come within the literal meaning and purpose of the Mississippi statute so as to make it a felony, still the court thinks the statute establishes a settled purpose on the part of the public to protect the repose of the dead and to protect the living from the violation of the sensibilities and sentiments that cluster round the dead. The beneficiary in a life insurance policy is not the only person that has an interest in having the repose of the dead respected and held sacred. It is shocking to the senses to conceive of one person or one or

more persons contracting so as to provide for the exhumation and mutilation of dead bodies. The court thinks that to hold that such rights may be established by contract is carrying commercialism to unwarranted extremes.

Physician Issuing to Addict Prescription to Be Filled Through Innocent Agency

(*United States v. Keidanz (U. S.)*, 270 Fed. R. 585)

The United States District Court, Southern District of New York, in overruling a demurrer to an indictment, says that the one question submitted was whether an offense was charged, under Section 2 of the Harrison Narcotic Law, where it appeared that for a consideration the defendant issued an order or "prescription" for opium, not in the regular course of his professional practice, but to an "addict," for a prohibited use, and thereupon, as was intended, the addict presented the prescription to and had it filled by a dealer, who had no reason to believe that it had been wrongfully issued. The act makes it unlawful for any one to "sell, barter, exchange or give away" opium, except in a case, among others, in which it is dispensed or prescribed by a physician "in the course of his professional practice only," and admittedly, under the construction placed on these provisions by the Supreme Court of the United States in *Jin Fuey Moy*, 41 Sup. Ct. R. 98, the physician as well as the dealer may be convicted, where both have the requisite criminal intent. The real contention of defendant Keidanz therefore was that, while he set on foot a plan for the commission of a crime, and performed the first act toward its accomplishment, he could not be held responsible because, as was intended, the offense was consummated through an innocent agency. To such a view this court is unable to assent. The injunction of the statute was violated by the defendant's wilful procurement and participation, and the quality of his act was not affected by the fact that another agency innocently cooperated. In the *Jin Fuey Moy* case it was expressly held that "one may take a principal part in a prohibited sale of an opium derivative belonging to another person by unlawfully issuing a prescription to the would-be purchaser." Such a part the indictment here alleged the defendant took, and he could not claim immunity on the ground that the dealer accepted the prescription in good faith and filled it without knowledge of its unlawful purpose.

Injury to Epileptic Not Arising Out of Employment

(*Cox v. Kansas City Refining Co. (Kan.)*, 195 Pac. R. 863)

The Supreme Court of Kansas says that a workman who had long been afflicted with epilepsy was seized with an epileptic fit in the course of his employment in a refining plant, but such epileptic fit was not traceable to his work; nor did his employment contribute in any measure toward bringing on such affliction. During his epileptic seizure the workman became unconscious and fell against some hot pipes and severely injured his back. The court holds that the accident and consequent injury did not arise out of his employment, but out of his affliction, and compensation for his injuries could not be awarded against his employer.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Child Hygiene Association, New Haven, Conn., Nov. 2-5.
American College of Surgeons, Philadelphia, Oct. 24-28.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Oct. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 27-29.
Medical Association of the Southwest, Kansas City, Mo., Oct. 25-28.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
Missouri Valley, Medical Society of the, Kansas City, Mo., Oct. 25-28.
New England Surgical Society, Worcester, Mass., Sept. 21-22.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Archives of Internal Medicine, Chicago

Aug. 15, 1921, 28, No. 2

- *Objects and Method of Diet Adjustment in Diabetes. R. T. Woodyatt, Chicago.—p. 125.
- *Acute Yellow Atrophy of Liver. M. Kahn and J. Barsky, New York. p. 142.
- *Food Allergy as a Cause of Abdominal Pain. W. W. Duke, Kansas City, Mo.—p. 151.
- Phenols in Urine in Pellagra. M. X. Sullivan and P. R. Dawson, Spartanburg, S. C.—p. 166.
- *Basal Metabolism and Specific Dynamic Action of Protein in Liver Disease. J. C. Aub and J. H. Means, Boston.—p. 173.
- *Diagnosis of "Eventration" of Diaphragm. H. M. Korn, Cleveland.—p. 192.
- *Bigeminal Pulse in Atrioventricular Rhythm. P. D. White, Boston.—p. 213.
- *Synthesis and Elimination of Hippuric Acid in Nephritis: New Renal Function Test. F. B. Kingsbury and W. W. Swanson, Minneapolis.—p. 220.

Diet Adjustment in Diabetes.—The rationale of dietetic management in diabetes Woodyatt points out is to bring the quantity of glucose entering the metabolism from all sources below the quantity that can be utilized without abnormal waste; and to adjust the supply of fatty acids in relationship to the quantity of glucose so that in the mixture of food-stuffs oxidizing in the body, the ratio of the ketogenic fatty acids to glucose shall not exceed limits compatible with freedom from ketonuria. When, as, and if, under these conditions of relative rest for the pancreas, the glucose using function improves, then the food supply may be increased gradually in so far as this can be done without disturbing the above relations. In a normal individual, the ingestion of fat will not prevent the death of the organism because there is a continual loss of tissue protein from the body which finally weakens some vital organ to such an extent that death takes place. But the ingestion of fat may spare tissue fat and thus prevent the protein loss from becoming abnormally great. It may be said that the ingestion of fat spares the individual any such protein loss as will occur if the tissue fat is allowed to become too much depleted. In this sense, the ingestion of fat by an emaciated individual spares protein for that individual. If a certain diabetic patient during a fast reacts essentially as a nondiabetic individual in the same state of nutrition; and if he weighs 50 kg., produces from 1,250 to 1,500 calories, and in doing so actually mobilizes and burns from 100 to 120 gm. or more fat, the ingestion of an equal quantity of fat should leave his metabolism in the same state as before. The supply of fat would come at one time from the tissues, at another from the diet, but the quantity thrown into metabolism—the quantity presenting itself for disposition in the cells would be the same in both cases. If these premises are sound, why then, asks Woodyatt, should we ever use complete fasting for diabetes? For diabetes itself, and particularly for diabetes associated with undernutrition, why for the purpose of desugarization should the patient be compelled to draw from his tissues the fat that he might draw from a diet, especially if in drawing from his tissues he lowers his fat reserves to the extent that he increases his protein losses? The practice of starving, or virtually starving, a patient in order to render his urine sugar "free," and then building up the diet, first with carbohydrate and then with protein, with a particular avoidance of fat, would appear to be based on the supposition that if fat were administered it would increase the catabolism of fat. But this would be in disregard of the endogenous food supply, and illustrates the necessity of thinking in terms of the metabolism rather than of the diet. As the diet falls, the endogenous supply rises to take its place, and vice versa. The lower the diet, the less its significance in calculating the food supply from all sources. Woodyatt deals with the food supply in terms of carbohydrate protein and fat, discusses hypothetical diets, gives an estimation of optimal diets and reports an illustrative case.

Acute Yellow Atrophy.—A chemical analysis was made by Kahn and Barsky of the livers of two cases of acute yellow atrophy.

Food Allergy Cause of Abdominal Pain.—Humans and animals may become sensitive to alien bodies of many varieties. Duke asserts that when this is the case, they react whenever they come in contact with the body to which they are sensitive. The gastro-intestinal mucosa may become hypersensitive to an article of food with the result that the patient experiences severe abdominal pain, often associated with nausea and vomiting, whenever he eats the food to which he is sensitive. These alimentary symptoms are in many cases the sole striking manifestations of the reaction. Individuals sensitive to uncommon articles of diet, such as shad roe, lettuce, honey, strawberries, cabbage, tomatoes and paprika, usually give a history of occasional attacks of abdominal pain and digestive upset. They are, as a rule, free of digestive disturbance between attacks. Individuals sensitive to the commoner articles of food, such as milk or eggs, have more frequent attacks of pain and are often subject to chronic indigestion as well.

Basal Metabolism in Liver Disease.—The basal metabolism in twelve cases of liver disease studied by Aub and Means was essentially within normal limits. The liver is, therefore, either not an important regulator of the metabolic rate, or it is adequate for this purpose even when severely diseased.

Eventration of Diaphragm.—Korn reports a case of aplasia of the right lung and right half of the diaphragm, associated with congenital dextrocardia and reviews the literature on this subject.

Bigeminal Pulse in Atrioventricular Rhythm.—The case of a patient is recorded by White who from some unknown cause of probable vagus overactivity developed sino-auricular bradycardia (or s-a block) with ventricular escape, the rhythm changing later to atrioventricular in type and finally returning to normal—all in the course of a few weeks. Little, if any, clinical evidence of disease existed at any time. When the atrioventricular rhythm was slowest and the backward conduction of the impulse from the a-v node to the auricle the most retarded, a curious bigeminy occurred with the sandwiching of an auricular complex between two ventriculars. This is the second observation of this phenomenon recorded.

Hippuric Acid in Nephritis.—A modification adapting the Folin-Flanders method for the determination of hippuric acid to albuminous urines is described by Kingsbury and Swanson. Sodium benzoate, in 2.4 gm. doses, is completely synthesized into hippuric acid and eliminated as such in individuals whose kidneys have been demonstrated to have been damaged extensively, these findings having in some cases been checked by necropsy findings. In nephritis, hippuric acid is excreted at the same rate whether its source was ingested benzoate or an equivalent amount of hippuric acid in the form of the sodium salt. The synthesis must occur fully as fast as the kidney is able to excrete the hippuric acid formed. Neither benzoic acid itself nor any salt of it has been found in the urine of any patient so far studied after the ingestion of sodium benzoate. The three hour output of hippuric acid on a diet free from fruit and cranberries is relatively too small to affect the results obtained when 2.4 gm. sodium benzoate are ingested, and, therefore, has been disregarded in making the benzoate tests. From 95 to 100 per cent. of the 2.4 gm. of ingested sodium benzoate appears in the urine as hippuric acid within three hours, and represents the normal average. After ingestion of from 6 to 10 gm. sodium benzoate, the rate of elimination is less. Kingsbury and Swanson conclude, that in man the kidney does not play the leading rôle in the synthesis of hippuric acid as has been supposed by various investigators from time to time. It may play a minor rôle, for in the normal individual hippuric acid is excreted at a higher rate after benzoate ingestion than after hippuric acid ingestion in equivalent amount, and this difference is also noted in some of the cardiac cases, but not in the advanced nephritics. A new renal function test is described in which the ability of the kidney to eliminate hippuric acid at a definite and rapid rate is the criterion. Benzoic acid cannot be substituted for the sodium salt in this test for its relatively low solubility in water probably causes a lower rate of absorption. At any rate,

after its use the amount of hippuric acid eliminated in three hours is about one-half only of that eliminated in the same time after the ingestion of an equivalent amount of sodium benzoate.

Boston Medical and Surgical Journal

Aug. 11, 1921, 185, No. 6

- Typhoid Fever Cases in Three Hospital Centers of American Expeditionary Forces, France. W. H. Robey, Boston.—p. 161.
 *Report of Harvard Infantile Paralysis Commission on Diagnosis of Acute Cases in 1920; Incidence of Cases Without Paralysis. F. W. Peabody, Boston.—p. 174.
 Significant Reactions of Arterial Tension. Manifestations of Angiokinetic Energy, Clinically Observed and Interpreted. C. J. Enesbuske, Boston.—p. 176.

Report of Harvard Infantile Paralysis Commission.—A review of the therapeutic results reported since 1916 left the Harvard Infantile Paralysis Commission unconvinced as to the demonstrated value of any method of treatment thus far suggested, and they decided in 1920 that they would not make any representations with regard to specific treatment in the acute stage. The commission offered the services of its representatives simply as diagnosticians. This gave an opportunity for the collection of data regarding the natural course of the disease and the frequency of the development of paralysis. There are only thirteen cases in which the clinical picture, the pleocytosis in the spinal fluid, and the subsequent history of the case, justify the diagnosis of acute poliomyelitis in the preparalytic stage. An analysis of this group of cases show that only four, or 31 per cent., became definitely paralyzed, while nine, or 69 per cent., did not develop any paralysis. In all probability the incidence of paralysis in patients infected with acute poliomyelitis varies in different epidemics, at different periods in the same epidemic, and among different groups or ages at the same period in an epidemic. The Harvard Infantile Paralysis Commission treated fifty-one cases in the preparalytic stage by intravenous injection of the serum of patients who had recovered from the disease, and thirty-five, or 69 per cent., recovered without paralysis. Considering the fact that the evidence at hand indicates that about 65 per cent. of patients infected by acute poliomyelitis never develop paralysis even if untreated, the results of these small series of cases cannot be regarded as carrying great weight. In a disease in which a favorable outcome is apparently more commonly the rule than the exception, it is particularly important to be extremely critical with regard to therapeutic measures. The most valuable criterion of the efficacy of treatment is a real understanding of the natural course of the disease.

Aug. 18, 1921, 185, No. 7

- *Pneumonia in Infants and Children. A Clinical Study of 208 Hospital Cases. A. B. Lyon, Boston.—p. 189.
 *Eczema in Breast-Fed Baby and Protein Sensitization. E. S. O'Keefe, Boston.—p. 194.
 Significant Reactions of Arterial Tension Manifestations of Angiokinetic Energy Clinically Observed and Interpreted. C. J. Enesbuske, Boston.—p. 196.
 Typhoid Osteitis; Report of Case Treated by Carrel-Dakin Method. P. D. Wilson, Boston.—p. 201.
 Lipoma of Mesentery. B. H. Alton, Worcester, Mass.—p. 205.
 Perforation of Meckel's Diverticulum of Jejunum. T. R. Donovan, Fitchburg.—p. 207.

Pneumonia in Children.—During a period of two years, 208 cases of lobar and bronchopneumonia in patients 12 years of age, or younger, have been admitted to the Pneumonia Service of the Boston City Hospital, of whom 109 were of the lobar and 99 of the lobular type. The total death rate in the lobar pneumonias was 4.6 per cent., but in uncomplicated cases, it was only 1.9 per cent. The total death rate in bronchopneumonias was 35.1 per cent.; 74.3 per cent. of these deaths were in patients two years of age or younger.

Eczema in Breast Fed Babies.—Of the forty-one cases of eczema in breast fed infants tested by O'Keefe, twenty-five babies, or about 61 per cent., showed a positive reaction to some one or more of the proteins used. Seventeen, or 41 per cent. showed a positive reaction to one of the egg proteins. Sixteen, or 39 per cent., showed a positive reaction to one of the cow's milk proteins. Oats appeared twice and wheat once. In each case of sensitization to the cereal proteins, egg or milk proteins also gave a positive response. No sensitized case among these breast fed infants failed to show

a positive response to either egg or milk proteins, and about 20 per cent. of these sensitized cases showed a positive response to both. Apparent cure in about 40 per cent. of these cases, and definite improvement in about 20 per cent. more has followed the omission or limitation in the maternal diet of one or more food proteins to which the infant is sensitive.

California State Journal of Medicine, San Francisco

August, 1921, 19, No. 8

- Epidemic Encephalitis. H. C. Moffitt, San Francisco.—p. 305.
 Diagnosis of Hypothyroidism. N. W. Janney, Los Angeles.—p. 313.
 Artificial Pneumothorax in Treatment of Pulmonary Disease. R. A. Peers, Colfax.—p. 316.
 Monthly Fluctuations in Normal Metabolic Rates of Men and Women. A. H. Rowe and M. Eakin, Oakland.—p. 320.
 Tics and Their Treatment. T. C. Little, San Diego.—p. 324.
 Case of Chronic Trochanteric Bursitis. J. K. Swindt, Pomona.—p. 326.
 Meningitic Epilepsy. C. E. Reynolds, Los Angeles.—p. 329.
 Chronic Arthritis. S. J. Hunkin, San Francisco.—p. 334.
 *Skin Rashes in Exophthalmic Goiter. F. F. Gundrum, Sacramento. p. 339.
 Useful Apparatus in Physiotherapy. H. L. Langnecker, San Francisco, and F. E. Beorke.—p. 339.

Skin Rashes in Exophthalmic Goiter.—Gundrum reports two cases which presented what is apparently an uncommon skin complication, and reviews briefly the available literature on skin rashes in exophthalmic goiter. One patient had a discrete rash scattered over arms, body, and legs, most profusely over the legs, as high as the knees. This consisted of deep, pink, almost red macules, barely perceptibly raised, varying from the size of a pea to that of a quarter. They disappeared on pressure. There was no scaling, no weeping, and no edema. The second patient had very slightly elevated macules, deep pink in color, in size varying from a pea to a dime. They itched "quite a lot." The distribution was symmetrical, and about ten were present on each forearm, and twenty on each leg. In both cases the rash disappeared after operation and did not recur.

Colorado Medicine, Denver

August, 1921, 18, No. 8

- *Sporotrichosis; Case Report. C. E. Tennant and W. S. Dennis, Denver.—p. 165.
 Specifications for Simple Septic Tank. J. W. Morgan, Denver.—p. 166.
 Focal Infection in Relation to Systemic Disease, from Dental Standpoint. F. D. Burns, Durango.—p. 168.

Sporotrichosis.—The case reported by Tennant and Dennis occurred in a 16 year old boy, a bank clerk. The patient stated that early in August, 1920, he had a number of mosquito bites on his legs, between the knee and ankle. A suggestion as to the possible source of infection is contained in the fact that at the time of having these mosquito bites he had been bathing in a semistagnant stream; a short time later he became aware of what he describes as a "sore pimple" on the outer aspect of the left leg, at about the junction of the middle and lower thirds. At this site a firm nodule formed. This nodule was below the skin surface and developed slowly to about the size of a cherry. It began to soften and take on a purplish color. During and following this development other nodules appeared, in sequence, one above the other, in almost a straight line, due to the fact that the infection traverses the deep lymphatics. These were also firm and deep and, after reaching the size of a cherry, took on the same discoloration with softening. Spontaneous rupture did not occur. The lesions were incised when they became softened and a thick, bloody, semipurulent material escaped. There was no attempt at healing. Other nodules made their appearance, circumferentially, around the primary lesion and these, after going through the same process of development, merged together forming large ulcerated areas. The surface of the ulcerated areas was unhealthy. The skin edges were slightly sunken, discolored and sloughing. While these ulcers were not entirely painless, the discomfort was small compared with the loss of tissue. There was no particular systemic reaction and the eosinophilia which is often associated with these cases did not present itself. The treatment in this consisted of potassium iodid administered internally, roentgen-ray light therapy, Bier's hyperemia and strapping with adhesive. Eight months after the initial infection, the lesions are completely healed, although the epidermis is very thin.

Georgia Medical Association Journal, Atlanta

July, 1921, 10, No. 14

- Crawford W. Long: Tribute and Plea for Appropriate Recognition in Hall of Fame at Washington. F. W. Quillian, Atlanta.—p. 543.
Sir William Osler. S. Stampa, Atlanta.—p. 549.
Preservation of Health. C. W. Strickler, Atlanta.—p. 550.
Free Diphtheria Antitoxin. T. D. Walker, Macon.—p. 554.
Case Report of Fracture of Femur Followed by False Joint. M. C. Pruitt, Atlanta.—p. 557.
Bronchial Asthma. M. B. Allen, Hoschton.—p. 559.

August, 1921, 10, No. 15

- Status of Child Hygiene in Georgia. W. L. Funkhouser, Atlanta.—p. 607.
Etiology and Treatment of High Blood Pressure. R. T. Dorsey, Atlanta.—p. 612.
Factor of Atony and Ptosis in Gastro-Intestinal Disturbance. J. B. Fitts, Atlanta.—p. 615.
Tonsils, with Special References to Local Anesthesia. A. G. Fort, Atlanta.—p. 618.
Anociation in Abdominal Surgery. W. A. Selman, Atlanta.—p. 619.
Diagnosis and Treatment of Hydrocephalus. C. E. Dowman, Atlanta.—p. 621.
Orthopedic Gymnasium; Its Need and Purpose. T. Tocpel, Atlanta.—p. 625.
Illness and Death of Napoleon. W. R. Holmes, Atlanta.—p. 628.
Life of John Hunter. F. K. Boland, Atlanta.—p. 632.
Vital Statistics and Medicine. S. R. Roberts, Atlanta.—p. 637.

Illinois Medical Journal, Oak Park

August, 1921, 40, No. 2

- Lessons of World War for Internist. H. Brooks, New York.—p. 81.
Radium Emanation in Upper Air Passages as Compared to Radium; A Method of Applying It with Especial Reference to Laryngeal Carcinoma. O. T. Freer, Chicago.—p. 85.
Malpractice Insurance and Its Costs. R. J. Folonie, Chicago.—p. 92.
Hernia of Diaphragm. E. C. Roos, Forest Park.—p. 94.
Removal of Tooth from Nares. S. Rosenblatt, Chicago.—p. 96.
Relation of Eye, Ear, Nose and Throat to General Medicine. J. B. Morton, Decatur.—p. 97.
Defective Mental Development with Special Reference to Cases Showing Delinquent Tendencies. T. G. McLin, Jacksonville.—p. 102.
Headaches of Ocular Origin. W. H. Wilder, Chicago.—p. 104.
Palliative Treatment of Hemorrhoids. C. J. Drucek, Chicago.—p. 107.
Nonperforative Appendicitis Followed by Peritonitis or Abscess. G. L. McWhorter, Chicago.—p. 109.
Detachment of Adherent Placentae and Delivery in Abortion. C. E. Ruth, Des Moines, Iowa.—p. 113.
Prostatectomy and Prostatic Mortality. E. W. White, Chicago.—p. 116.
Infection as Cause of Stillbirth; Report of Case. E. L. Cornell, Chicago.—p. 120.
Otitic Brain Abscess. G. W. Boot, Chicago.—p. 122.
Dichloramin T Treatment of Burns. F. P. Horan, Evanston.—p. 123.

Hernia of Diaphragm.—In Roos' case the entire stomach and the splenic flexure of the transverse colon made up the contents of the hernia into the thoracic cavity.

Tooth in Nares.—Rosenblatt's patient was violently struck in the mouth by a lever handle, which had suddenly been released. This accident lacerated the lips and broke several teeth. Within a few weeks after the accident the mouth, including lips and gums, had been nicely healed, whereon the patient was attended by a dentist who attached suitable bridgework so that the patient again had normal use of his mouth. Two years after this accident the patient complained of difficult breathing through the nose and on examination the left nares was found to be obstructed. On shrinking the mucous membrane a white cartilaginous looking object was noticed which proved to be very firm to the touch, and on working the mucous membrane away from it what might at first have been mistaken for a septal ridge was found to be a tooth.

Nonperforative Appendicitis Causing Peritonitis.—Five cases are reported by McWhorter. In two cases large walled off abscesses were present. The acute inflammation in the appendix had largely subsided and there was no evidence of perforation. In three cases a peritonitis was present. In case three a staphylococcus was cultured from the peritonitis. Nearly all of the round cells throughout the appendix wall contained organisms in cases three and five, the latter of which illustrates particularly well early changes.

Iowa State Medical Society Journal, Des Moines

Aug. 15, 1921, 11, No. 8

- Thyroid and Its Diseases. C. H. Mayo, Rochester, Minn.—p. 297.
Physiology of Heart Beat. E. D. Allen, Hampton.—p. 300.
Usual Clinical Symptomatology of Heart Disease. M. Mallory, Des Moines.—p. 304.
Therapy of Cardiovascular Disease. V. L. Treynor, Council Bluffs.—p. 307.

- Graphic Methods in Diagnosis of Heart Disease. A. C. Davis, Iowa City.—p. 310.
Significance of Hematuria: Report of Forty-Six Cases. E. G. Davis, Omaha.—p. 315.
Feet Potential Seat of Fatigue. W. M. Gerard, Cedar Rapids.—p. 319.
Foundation Fund of Tristate District Medical Society. H. G. Langworthy, Dubuque.—p. 321.

Journal of Urology, Baltimore

May, 1921, 5, No. 5

- Case of Pseudohermaphroditism Masculinus, Showing Hypospadias, Greatly Enlarged Utricle, Abdominal Testis and Absence of Seminal Vesicles. H. H. Young and J. R. Cash.—p. 405.
Some Hypotheses Regarding Renal Tuberculosis. A. L. Chute.—p. 431.
Standard of Cure in Gonorrhea. A. R. Fraser.—p. 439.
Gradual Withdrawal of Residual Urine from Chronically Overdistended Bladder. G. S. Foulds, Rochester, Minn.—p. 453.
Visit to Some European Urologic Clinics. D. N. Eisendrath, Chicago.—p. 461.
*New Growths Developing in Undescended Testicles. J. H. Cunningham, Boston.—p. 471.
Case of True Lateral Hermaphroditism in a Pig with Functional Ovary. G. W. Corner.—p. 481.

New Growth in Undescended Testicle.—A man was operated on for bilateral undescended testes. The right testicle was in the inguinal canal, associated with a congenital hernia. There existed a congenital hernia on the left side and the testicle was found inside the internal abdominal ring. The testicles were placed in the scrotum and the hernia also repaired after the method of Bassini. There was apparently nothing wrong with either testicle. Five years later the man was again operated on for a tumor the right testicle which proved to be a teratoma. Cunningham states that a perusal of the literature shows that new growths developing in undescended testicles is in reality of rare occurrence, usually occurs when the organ is retained within the inguinal canal or abdomen and the case cited is the only one that can be found in which a tumor developed in an undescended testicle, which had been replaced in the scrotum by operation.

Kansas Medical Society Journal, Topeka

August, 1921, 12, No. 8

- Modern Prostatectomy. H. Wilkinson, Kansas City.—p. 249.
Modern Conception of Diabetes Mellitus. C. F. Menninger, Topeka.—p. 254.
Diarrhea in Bottle-Fed Infants. H. L. Dwyer, Kansas City.—p. 257.
Postoperative Complications and Their Care. R. W. Jones, Winfield.—p. 260.
Intussusception. J. T. Scott, St. John.—p. 263.

Medical Record, New York

Aug. 20, 1921, 100, No. 8

- Prevention of Venereal Infection. T. E. Satterthwaite, New York.—p. 311.
Endocrine Therapy. J. M. Anders, Philadelphia.—p. 314.
Therapeutic Uses of Pituitary Gland Substance. B. R. Tucker, Richmond, Va.—p. 316.
Morbidity After Operative Treatment in Abdominal Surgery. W. W. Babcock, Philadelphia.—p. 319.
Promora Center; Its Practical Relations. W. Browning, Brooklyn.—p. 321.
Treatment of Functional Disorders of Colon by Massage. R. Floyd, New York.—p. 324.
*Iodin-Phosphoric Acid Reaction in Urine in Syphilis. R. A. Kilduffe, Pittsburgh.—p. 329.

Iodin-Phosphoric Acid Reaction in Urine in Syphilis.—Among the numerous "short cuts" proposed for the diagnosis of syphilis is a urine reaction originated by Gray. Two reagents are required: A 10 per cent. solution of phosphoric acid and a solution of "resublimed iodine in chloroform or carbon tetrachloride." In the series reported by Kilduffe the iodine was used as a saturated solution in chloroform because it was found that solutions of less concentration gave invariably "positive" results. The urine, to be suitable for the test, must be fresh, with a specific gravity of less than 1.016, of acid reaction, and free from sugar. The presence of sugar, the recent ingestion of alcohol, or polyuria due to diuretics or the excessive ingestion of fluids all interfere with the test, so that the reaction is restricted to such cases as comply with the above restrictions. The technic is as follows: To 6 c.c. of urine in a test tube add 1 c.c. of the iodine reagent and shake. The chloroform, after settling to the bottom, is either a pearly white (negative reaction) or pink or purple, which may be a positive reaction. If there is color in the chloroform layer, add 1 c.c. of the phosphoric acid solution and again shake. If the chloroform layer is

decolorized the reaction is negative. In the series of 352 urines tested there were fifty-six positive urine reactions, excluding the fallacious "positives." The Wassermann test was positive in ten of these cases only, the serum being anticomplementary in one other. In the remaining forty-five cases there was neither history, clinical signs, nor laboratory evidence of syphilis. There were thirty-two cases of syphilis in the series, the Wassermann and history being positive. The urine reaction was negative (Wassermann four plus) in nineteen and positive in thirteen. Owing to the comparatively few specimens found suitable for the reaction and the discordant and unreliable results obtained the investigation was not carried further. The urine reaction described Kilduffe says is unreliable and valueless as a means of diagnosis in syphilis.

Military Surgeon, Washington, D. C.

August, 1921, 49, No. 2

- President's Address: Some Influences of World War on Future of National Health. J. W. Kerr.—p. 125.
Etiology of Scurvy. E. B. Vedder.—p. 133.
Responsibility of Medical Corps in Proper Physical Development of Personnel of Army. J. E. Goldthwait.—p. 151.
Observations in Italy. F. L. Pleadwell.—p. 155.
Etiology and Prevention of Injuries to Eye. H. V. Würdemann.—p. 176.
American Relief Work in Serbia. E. E. Hume.—p. 188.
Mental Examinations of Aliens and Their Bearing on Potential Military Strength of Nation. H. V. Wildman.—p. 202.

Missouri State Medical Association Journal, St. Louis

August, 1921, 18, No. 8

- Betterment of Hospital Conditions. H. E. Pearse, Kansas City.—p. 259.
Hospital Diets. W. Baumgarten, W. Fischel and H. W. Soper, St. Louis.—p. 263.
Autistic Thinking. G. W. Robinson, Kansas City.—p. 270.
Various Operative Procedures Indicated for Different Kinds of Goiter. W. Bartlett, St. Louis.—p. 275.
*Primary Mesothelioma of Pleura: Report of Case. E. A. Wood and A. L. Walter, Sedalia.—p. 277.
Treatment of Varicose Ulcers. W. L. Bandon, Poplar Bluff.—p. 281.

Primary Mesothelioma of Pleura.—A man, aged 45, sustained an injury crushing the left side of the chest slightly when he was 22. One year ago he first complained of pain in the lower left chest in the postaxillary line, accentuated by deep breathing. A diagnosis of acute pleurisy was made and the chest strapped with adhesive strips, relieving the pain immediately. The patient was not seen again for thirty days during which period he took treatments from a mechanotherapist. He returned complaining of shortness of breath, cough and pain in the left chest. Examination now revealed signs of fluid extending from the diaphragm to the level of the fourth rib and the diagnosis was verified by the fluoroscope. The chest was aspirated and three and one-half quarts of a pale straw-colored fluid were withdrawn. The fluid was centrifuged and the sediment stained with Wright's stain and found to contain many small mononuclear lymphocytes, but no polymorphonuclears. This drainage afforded great relief for only a few days. The patient's condition grew worse and after about sixty days he died of cardiac failure. The left pleural cavity contained a firm whitish growth which was pronounced a mesothelioma. A thorough search was made for a possible primary growth in some other organ and none was found. The feature of paramount interest presented by this case is the nature of the fluid withdrawn at thoracentesis. Formed rapidly and in large quantity, as much as three quarts accumulating in seven days. Although aspirated eight times, at no time was a bloody fluid found. Furthermore, cytologic examination of the fluid showed only small mononuclear lymphocytes with an occasional pus cell.

Neurological Bulletin, New York

June, 1921, 3, No. 6

- Static or Posture System and Its Relation to Postural Hypertonic States of Skeletal Muscles. J. R. Hunt, New York.—p. 207.
Extensive Spinal Arachnoid Fibroblastoma. H. S. Howe, New York.—p. 216.
Defective Development in Cerebro-Cerebellar Connections. J. Rosett, New York.—p. 230.

New Jersey Medical Society Journal, Orange

August, 1921, 18, No. 8

- Carcinoma of Rectum and Pelvic Colon; Clinical Study. G. N. J. Sommer, Trenton.—p. 237.
Nursing Problem in New Jersey. G. K. Dickinson, Jersey City.—p. 239.

- Management of Syphilis at Bellevue Hospital. M. B. Parounagian, New York.—p. 242.
Pathology and Treatment of Chronic Gonorrheal Urethritis. E. L. Keyes, Jr., New York.—p. 245.
Some Complications and Sequelae of Gonorrhea. C. L. Begg, New York.—p. 247.
Louis Pasteur. J. F. Hagerty, Newark.—p. 249.
Medical Treatment and Modern Training in State Institutions. B. G. Lewis.—p. 256.

New York Medical Journal

Aug. 3, 1921, 114, No. 3

- *Elements of Diet in Infancy; Employment of Czerny and Kleinschmidt's Butter Flour Mixture. J. P. C. Griffith and A. G. Mitchell, Philadelphia.—p. 137.
Diagnosis of Summer Diarrhea. J. C. Gittings, Philadelphia.—p. 145.
*Use and Abuse of Drugs in Summer Diarrhea. J. F. Sinclair, Philadelphia.—p. 148.
Dietetic Management of Summer Diarrhea. W. N. Bradley, Philadelphia.—p. 150.
Water Treatment in Diarrhea. J. D. Donnelly, Philadelphia.—p. 151.
General and Dietetic Treatment of Eczema. J. P. C. Griffith, Philadelphia.—p. 153.
Management of Babies and Children Suffering from Summer Diarrhea. A. G. Mitchell, Philadelphia.—p. 155.
Treatment of Nutritional Disorders in Artificially Fed Infants. C. Herrman, New York.—p. 158.
Unemphasized Essentials in Infant Feeding. J. R. Gerstley, Chicago.—p. 160.
Relation of Herpes Zoster to Chickenpox. W. M. Kraus, New York.—p. 162.
Management of Children Presenting the Postepidemic Encephalitis Syndrome. S. R. Leahy and I. J. Sands, New York.—p. 166.
Remarks on Nephritis in Children. A. Hymanson, New York.—p. 169.
Artificial Feeding of Normal Infants. W. L. Rost, New York.—p. 172.
Clinical and Therapeutic Observations on Biliary Disorders in Children. J. Epstein, New York.—p. 174.
Prevention of Contagious and Infectious Diseases in Children's Orthopedic Ward. W. G. Elmer, Philadelphia.—p. 176.
Intussusception in an Infant Six and a Half Months's Old. S. Rotenberg and G. M. Schwartz, New York.—p. 177.

Butter-Flour Mixture for Infants.—A review of the literature and personal experience have convinced Griffith and Mitchell that when fed with the butter-flour food infants may often tolerate fat in a manner which can be accomplished probably by no other means. The truly remarkable results which often follow are a strong proof of the great need which the infant's economy possesses for a food containing a sufficiently large amount of fat.

Drugs in Summer Diarrhea.—Sinclair condemns the misuse of opium, calomel, and castor oil in these cases. Where the symptoms and signs point to an irritation rather than to an inflammation of the intestinal tract a prompt and energetic use of castor oil, 1 to 4 drams according to the age of the child, or calomel in divided doses from $\frac{1}{40}$ to $\frac{1}{4}$ of a grain at intervals of one half hour to one hour, until 1 grain has been given, followed by calcined magnesia, from 5 to 30 grains of milk of magnesia, from $\frac{1}{2}$ to $1\frac{1}{2}$ drams is indicated and this medication should be followed by a period of temporary starvation. Occasionally, either the subcarbonate or the subgallate of bismuth may be required for a short period in doses of from 10 to 20 grains every three hours, or 1 dram doses of chalk mixture every two hours may suffice. In the inflammatory or infectious types the preliminary use of castor oil, or calomel followed by magnesia, is indicated and should precede brief periods of starvation. In the milder of these cases chalk mixture may be employed with advantage while the more severe cases call for the administration of bismuth subcarbonate or subgallate in full doses. If these cases do not promptly show an abatement of the diarrhea and especially if there are evidences of excessive peristalsis and pain, opium in the form of camphorated tincture from 5 to 15 drops, Dover's powder, $\frac{1}{2}$ grain, or deodorized tincture of opium is indicated. In case of tenesmus the starch enema with 5 to 10 drops of tincture of opium to the ounce of starch water is usually efficient in relieving this distressing symptom. If stimulation is needed, the best drugs are caffeine sodium benzoate from 1.2 to 1 grain, tincture of digitalis, from $\frac{1}{4}$ to 1 minim, and brandy from 5 to 20 minims well diluted in water. In a threatened collapse, camphorated oil, hypodermically is generally employed. To anticipate and prevent acidosis administer sodium bicarbonate in 15 grain doses every three hours routinely to all infants who are more than mildly ill with inflammatory or infectious forms of gastro-intestinal disease. Anemia calls for Fowler's solution, or the lactate or citrate of iron, or the green citrate of iron.

New York State Journal of Medicine, New YorkAugust, 1921, **21**, No. 8

- Tumors of Kidney; Report of Three Cases. T. F. Laurie, Syracuse, N. Y.—p. 279.
Diagnosis of Myocardial Disease. H. E. B. Pardee, New York.—p. 282.
Ocular Symptoms of Wood Alcohol Toxemia. S. L. Ziegler, Philadelphia.—p. 288.
Nature of Hypertension. H. A. Christian, Boston.—p. 292.
Treatment of Hypertension. W. D. Alsever, Syracuse, N. Y.—p. 294.
*Studies of Humoral Antibodies in Tuberculosis. S. A. Petroff and G. G. Ornstein, Trudeau Sanatorium, N. Y.—p. 299.

Humoral Antibodies in Tuberculosis.—The most important facts brought out by Petroff and Ornstein are: The importance of the antigens is indisputable. The protein fraction of the antigen constitutes the strongest antigenic property. The best antigen used by us is the glycerin extract which we have modified of late. Antigen and antibodies are colloids. That the fixation of complement may occur even without the appearance of a precipitate, cannot definitely be proven. We know that albumin particles may aggregate into larger particles without a precipitation, provided the excess of one of the precipitin-forming colloids acts as a protective colloid. On the other hand, it has not yet really been demonstrated that a physical fixation and not an irreversible chemical change occurs in complement fixation. Antibodies are either globulins or absorbed and carried down with the globulin fraction. Roentgen ray and ultraviolet rays have little effect in causing their destruction. Direct sunlight apparently destroys the antibodies in a short time. The authors have made an attempt to determine the electrical change of the antigen and the antibodies by the study of cataphoresis. Both being amphoteric colloids they found that they are influenced by the H- or OH-ion concentration and may move either to positive or negative pole. Their electric charge is very small and for this reason either of these ions may reverse their electric charge. Precipitins and agglutinins have been studied in tuberculosis. These two antibodies are closely related.

Philippine Journal of Science, ManilaApril, 1921, **18**, No. 4

- Structure of Electron. G. A. Perkins.—p. 325.
Absolute Units and Relativity Principle. G. A. Perkins.—p. 341.
New Coleoptera from Philippine Islands. W. S. Fisher.—p. 349.
Case of Human Coccidiosis Detected in Philippine Islands, with Remarks on Development and Vitality of Cysts of *Isospora Hominis* (Rivolta). F. G. Haughwout.—p. 449.

Virginia Medical Monthly, RichmondAugust, 1921, **48**, No. 5

- Late Results of Series of Head Injuries. C. C. Coleman, Richmond.—p. 235.
*Laryngeal Tuberculosis with Special Reference to Sunlight Treatment. F. B. Stafford, Charlottesville.—p. 239.
Opium—Its Uses and Abuses. G. C. Woodson, Richmond.—p. 242.
Neurasthenia. W. C. Ashworth, Greensboro, N. C.—p. 247.
Appliance for Holding Instruments Grouped While Operating. J. W. Henson, Richmond.—p. 249.
Get the Habit—Essential Factor in Fight Against Tuberculosis. S. Harnsberger, Warrenton.—p. 252.
Meckel's Diverticulum: Report of Six Cases. C. Williams, Richmond.—p. 255.
Municipal Control of Tuberculosis. C. L. Harrell, Norfolk.—p. 257.
Status of General Practitioner As It is and as It Should Be. J. A. Owen, Turbeville.—p. 260.
Dearth of Rural Physicians. C. B. Greear, Honaker.—p. 261.
Vertigo—Its Causes and Diagnosis. W. C. Moomaw, Petersburg.—p. 263.
Epidemic Encephalitis. Report of a Case. W. P. Jackson, Roanoke.—p. 265.
Management of Certain Types of Diabetes Mellitus. W. B. Blanton, Richmond.—p. 267.
Mission of Medicine. M. J. Payne, Staunton.—p. 271.
Analysis and Treatment of Case of Juvenile Aphasia. E. B. McCready, Pittsburgh, and A. B. Colcord, Kenosha, Wis.—p. 273.
*Syphilis of Stomach. F. C. Rinker, Norfolk.—p. 278.
Gastro-Enteroptosis. M. O. Burke, Richmond.—p. 280.

Heliotherapy in Laryngeal Tuberculosis.—Out of seven cases treated by Stafford, four have shown a definite improvement. In the remaining three no improvement was noted, but their chest conditions were well advanced and their general condition so unfavorable that it would not permit their sitting up for the successful and practicable application of the treatment. Of the four that were benefited two had only slight lesions of the throat, but were suffering from active pulmonary lesions. The remaining two had

extensive ulceration and destruction of the laryngeal structures and extensive pulmonary lesions as well.

Syphilis of Stomach.—Of the five cases reported by Rinker four patients complained of pain in the pit of the stomach and on the right side; one had nausea without vomiting; one complained of vomiting and said he had vomited blood several times (this patient also suffered from marked weakness, while the others felt well except for their gastric symptoms); all of them had burning in the stomach when they went without food; four were relieved of the burning by taking either food or soda, this relief lasting only for one or two hours; all had dyspnea on exertion; two were disturbed frequently by accumulations of gas in the stomach and intestines; three had lost from 20 to 35 pounds of weight in less than a year's time; one had gained in weight; one had had jaundice within two months prior to seeking advice; all had been somewhat nervous for several months, but the nervousness was not extreme and the only thing that disturbed their sleep was either pain or nausea; antisyphilitic treatment was effective in these cases.

Wisconsin Medical Journal, MilwaukeeJuly, 1921, **20**, No. 2

- Roentgen-Ray Examination of Chest and Roentgen-Ray Classification of Pulmonary Tuberculosis. K. Dunham, Cincinnati.—p. 49.
Influence of Certain Cardiovascular Conditions on Surgical Risk. A. T. Holbrook, Milwaukee.—p. 58.
When to Operate on Mastoid in Children. E. H. Brooks, Appleton.—p. 66.
Importance of Early Incision of Membrum Tympani in Acute Otitis Media with Profuse Exudate. L. P. Allen, Oshkosh.—p. 69.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

July, 1921, No. 252

- Case of Large Penetrating Ulcer of Lesser Curvature. F. Hernaman-Johnson.—p. 39.
Stereoscopic Roentgenoscopy and New Apparatus for Its Application. J. Van Ebbenhorst Tengbergen.—p. 42.
Intestinal Radiography for Chronic Appendicitis. L. E. Ellis.—p. 47.

British Journal of Experimental Pathology, LondonAugust, 1921, **2**, No. 4

- *Nature and Systematic Position of *B. Paratyphosus C.* F. W. Andrewes and S. Neave.—p. 157.
Characters of Cleavage Products of Certain Bacteria, with Special Reference to Their Toxicity and Antigenic Properties. S. R. Douglas.—p. 175.
Occurrence of Hemolytic Substances in Normal Urine. E. Ponder.—p. 192.
*Physicochemical State of Sugar in Blood. K. Onohara.—p. 194.
*Grouping of Influenza Bacilli. S. Yabe.—p. 197.

Nature and Systematic Position of *B. Paratyphosus C.*—A new form of paratyphoid fever has been observed during the war by many investigators, chiefly in Eastern Europe and in Asia. The causal organism, *B. paratyphosus C.*, is distinct from *B. paratyphosus A* and *B.*, though presenting relationship to the latter. Andrews and Neave described a case of paratyphoid C occurring in England. The bacillus isolated is compared with other members of the *Salmonella* group in detail. In its cultural and fermentative characters *B. paratyphosus C* is shown to differ from *B. paratyphosus B* in its failure to ferment inositol and in its slower rate of alkali production. It differs from *B. suispestifer* in fermenting arabinose and dulcitol. *B. paratyphosus C* is shown to belong serologically to Group I *suispestifer*, in spite of the divergence in cultural characters. Different strains of *B. paratyphosus C* vary in their relation to *B. paratyphosus B*. In some the B element is absent, in others very obvious. An example of each variety was isolated from the case described, and it is shown that the strain which at first showed no relation to *B. paratyphosus B* gradually underwent a serologic change, acquiring the property of being partially agglutinated by a paratyphoid B serum.

Physicochemical State of Sugar in Blood.—It is assumed by Onohara that sugar in the circulating blood is present in the same physicochemical character as in the solution of free

glucose. In other words, it must be present in the circulating blood in the form of free sugar.

Grouping of Influenza Bacilli.—Influenza bacilli can be divided definitely into two groups according to the character of indol formation. Out of 29 strains examined by Yabe, 18 strains (62 per cent.) form indol. No intermediate strains are found. By morphologic and immunologic study it is impossible to divide influenza bacilli into groups, because there are found as many intermediate strains as there are strains examined.

British Medical Journal, London

August 6, 1921, No. 3162

- Visceral Syphilis. T. C. Allbutt.—p. 177.
Syphilis of Heart. J. Cowan and J. K. Rennie.—p. 184.
Anemias of Syphilis. J. Eason.—p. 186.
Syphilitic Aortitis. A. G. Gibson.—p. 188.
Relation of Medical Profession to Local Authorities in Respect of Rate-Provided Hospitals and Clinics. G. Newman.—p. 189.

Journal of Neurology and Psychopathology, Bristol

August, 1921, 2, No. 6

- *Froin's Syndrome; Its Relation to Allied Conditions in Cerebrospinal Fluid. J. G. Greenfield.—p. 105.
Case of Bilateral Eighth Nerve Tumors Associated with Multiple Neurofibromas and Multiple Endotheliomas of Meninges. C. P. Symonds.—p. 142.
Case of Catatonia. R. C. Turnbull.—p. 154.
Recurrent Hypertrophic Neuritis. F. J. Nattrass.—p. 159.

Froin's Syndrome.—The syndrome of Froin consists essentially in the approximation of the character of the fluid obtained by lumbar puncture to that of blood plasma. This approximation is never so complete as to render it identical. This change takes place characteristically when the fluid in the lumbar cul-de-sac is completely cut off from communication with the fluid in the ventricle and cisterna magna. This may be produced by tumors or other disease in the bones of the spine, by tumors of the meninges or cord, or by inflammatory adhesions in the pia-arachnoid membranes. Illustrative cases are cited by Greenfield. The degree of change in the fluid depends more on the completeness of this block than on the nature of the blocking process. But certain constituents of the fluid may vary in relation to the nature of the obstruction. The production of the syndrome is aided by venous congestion below the level of a compression, or by inflammation in the meninges and cord below an area of meningeal adhesion. It is not necessary to postulate any obstruction of the perineural or perivascular lymphatics. The lymph which reaches the subarachnoid space along them aids in the production of the syndrome. Acute peripheral neuritis may in fact itself produce an analogous condition in the cerebrospinal fluid.

Journal of State Medicine, London

August, 1921, 29, No. 8

- Housing Problem in Its Various Bearings. G. McCrae.—p. 225.
Necessity for Greater Attention in Industry to Maintenance of Efficiency and Prevention of Ill Health. E. L. Collis.—p. 229.
Occurrence of Anthrax in Navy; Its Diagnosis and Prevention. P. W. Bassett-Smith.—p. 249.

Lancet, London

Aug. 6, 1921, 2, No. 5110

- Objective Study of Neurosis. F. L. Golia.—p. 265.
*Administration of Hydrochloric Acid. J. C. McClure and H. A. Ellis, London.—p. 271.
*Action and Uses of Kaolin in Treatment of Asiatic Cholera. R. R. Walker.—p. 273.
Inadequate Attendance of Male Syphilitic Out-Patient. R. E. Roberts.—p. 277.

Dilute Hydrochloric Acid Not Harmless.—McClure and Ellis assert that dilute hydrochloric acid is not, in acid sensitive cases at least, the harmless tonic the books would have us believe it to be, and they are sure that when acid is being administered the blood pressure should always be estimated from time to time, and the urine be occasionally tested for its acid and ammonia relations. In cases in which an early condition of renal insufficiency is suspected, the "rest urine" should be compared with the "alkaline tide urine" in respect of their relative acidity. Acid largely regulates the amount and character of the urine excreted by its action on the renal tissue. This is largely controlled by the

increasing acidity of the blood (acidemia) tending to raise the blood pressure; otherwise the kidneys would not be able to maintain the necessary balance between acid and alkali. The regulation is so delicate that in health the normal variation of blood pressure is not apparent, other causes of increased pressure contributing to its concealment. When impairment takes place owing to the breakdown of the chemical balance, general acid sensitiveness occurs, and this condition is accompanied by a rise in blood pressure. If the structure of the renal cells is not injured this is not maintained unless the acidemia continues. If the structure of the cells is injured, the rise of the blood pressure is more or less permanent until other forms of compensation are established. When this structural alteration has occurred, acid administration and acid feeding are contraindicated. When acid is being administered in doubtful cases the blood pressure should always be observed, to avoid the danger of overdose. Overdose is also indicated by the "alkaline tide urine" approaching the "rest urine" in character. McClure and Ellis are of the opinion that the reason why, during treatment with acid, a rise in the blood pressure is not easily reversible, i. e., followed by a more or less similar fall, while this subsequent fall in blood pressure is not easily reversible—is because acidosis may be transferred to the tissues, the acidemia thus being changed into a histo-acidosis, and this causes a fall in the blood pressure. If a histo-acidosis be established it is not easy to raise the blood pressure again, because of the difficulty either of raising the acid content of the blood above that of the tissues or of reducing the acidity of the tissues below that of the blood, the fluid pressure thus persisting toward the tissues, while the balance is against the blood.

Kaolin in Cholera.—In a series of seventy-five cases treated by Walker there were no fatal results, and this result was obtained in spite of the fact that many of the patients arrived at hospital in a condition of extreme collapse. The method of administration was somewhat different from stump's methods. A large supply of half-and-half suspension was placed near the patient and the nurse was told to encourage the patient to take as much as possible. At the commencement large quantities could be tolerated, but as the vomiting and diarrhea ceased the liquid was refused. In all cases food was withheld from eighteen to twenty-four hours, then rice water was allowed, and later milk and rice water. In all cases rectal lavage was done with kaolin solution thickened until it would comfortably pass through the rectal tube. At first none was returned. Later on much was retained. If the condition of the patient was precarious on arrival at hospital, it was found that subcutaneous bilateral infusion usually restored that patient sufficiently to take kaolin by the mouth. In desperate cases hypertonic salt solution was given intravenously, but no such large quantities were used before the introduction of the kaolin treatment (2 liters). The action of kaolin is twofold: (1) mechanical; (2) adsorptive.

Aug. 13, 1921, 2, No. 7

- Psychologic Medicine: Its Position in Medical and Allied Services. C. H. Bond.—p. 319.
*Preservation of Lemon Juice and Prevention of Scurvy. P. W. Bassett-Smith.—p. 321.
*Scurvy: System of Prevention for Polar Expedition, Based on Present-Day Knowledge. A. H. Macklin and L. D. A. Hussey.—p. 322.
Anesthesia with Nitrous Oxid and Oxygen Under Pressure. H. H. Dale and L. Hill.—p. 326.
*Nausea and Vomiting in Pregnancy. V. J. Harding.—p. 327.
*Case of Abscess of Breast Occurring in Typhoid Carrier. S. C. Dyke.—p. 331.
Schistosoma Mansoni in South Africa. F. G. Cawston.—p. 332.
*Case of Human Anthrax in Buganda Kingdom. W. L. Peacock and H. L. Duke.—p. 332.

Lemon Juice Tablets to Prevent Scurvy.—Tablets of dried lemon juice prepared in the cold, Smith asserts, retained their efficiency for over twelve months. Commercial lemon juice made from the whole fruit received from Messina, which had not been specially protected from heat, had lost all its antiscorbutic properties when tested in England. Tinned tomatoes in doses of 4 c.c. act efficiently against scurvy in guinea-pigs, both as a prophylactic and a curative agent.

Prevention of Scurvy.—Great heed is given at this time to the subject of scurvy; because of the projected polar expedition attention is particularly directed by Macklin and Hussey

toward scurvy and the antiscorbutic or water-soluble C vitamin, but it is realized that there is a close relationship between this and other deficiency diseases, especially beriberi. In so far as they can be separated clinically, however, the latter presents for its prevention a much less difficult problem. The antiberiberi (antineuritic or water-soluble B) vitamin is much more resistant to extraneous factors than the antiscorbutic vitamin, and foods in which it maintains its activity are more easily obtainable. Its elimination is aimed at on the ship by provision of the following foods: rice (containing germ), whole meal flour, dried eggs, dried peas, beans and lentils, fresh meat (including the sweetbreads, liver, and brains of any animals killed), and marmite is added to the sledging ration, which in itself probably contains active antiberiberi vitamin. During the course of the expedition fresh penguin eggs will be freely used if obtainable.

Vomiting of Pregnancy.—It is proposed by Harding that the primary etiologic factor in the nausea and vomiting of pregnancy is lack of glycogen in the maternal liver. Secondary factors are intestinal intoxication and neurosis. As the condition progresses starvation and possibly dehydration intensify the symptoms to a degree known as pernicious vomiting. The correct therapy consists in the recognition of the value of the factors and bringing them under proper control by the following means: (a) the use of glucose to restore and maintain the glycogen content of the maternal liver; (b) the keeping open of the bowel; (c) rest and isolation, with a cautious use of sedatives to control the neurosis; (d) the use of water to combat any dehydration.

Typhoid Abscess of Breast.—The points of interest in Dyke's case are: (1) the occurrence of a typhoid abscess in the breast, having, so far as could be made out, no association with underlying bone; (2) the fact that the patient, although a carrier, was unaware that she had ever had typhoid fever, and (3) the absence of typhoid agglutinins in the patient's own serum.

Case of Human Anthrax.—A man whose work had nothing to do with hides or cattle, had cut up some of the flesh of a bullock. Three days later he noticed a small papule on his cheek which he scratched, and it had gone on increasing in size from that time up to his admission to hospital some six days later. On admission the pustule was at once excised and the wound painted with pure phenol, partly closed by stitches, and a wet phenol dressing applied. A smear examined immediately after the excision showed typical anthrax bacilli in pure culture.

Archives des Maladies du Cœur, etc., Paris

June, 1921, 14, No. 6

*Nomenclature of Heart Sounds and Murmurs. W. Janowski.—p. 241.

*Acute Pulmonary Edema with Valvular Disease. L. Gallavardin.—p. 262.

Origin of Vasomotor Nerves of Arm. J. Heitz.—p. 274.

*Acute Leukemia. J. Sabrazès.—p. 282.

Nomenclature of Heart Sounds and Murmurs.—Janowski styles the period of closure of the heart valves and increase in the intraventricular pressure, the protosystole, and the period of expulsion of the blood, the telesystolic period. All the sounds and murmurs fall into one or the other of these periods unless a murmur is continuous, in which case he calls it holosystolic. Modern methods have demonstrated that part of the systole is accomplished noiselessly, at least at certain points in the heart area. He reproduces the tracings in some typical cases of organic and functional murmurs, analyzing them from the differential standpoint.

Pulmonary Edema in Valvular Disease.—Gallavardin refers to endocardiac valvular disease outside of pregnancy, and gives the details of four cases following rheumatism; four of chronic mitral or aortic insufficiency, and four of pure mitral stenosis with edema mainly from insufficiency of the left auricle. With the edematous form of pure mitral stenosis the heart action is generally regular, and the minor attacks are brought on by physical effort, a hot bath or other exertion; the more serious attacks by indetermined causes. In one of the rheumatismal cases, frequent attacks of pulmonary edema developed during three years but then the tendency seemed to subside and the case now presents the ordinary clinical picture of mitral insufficiency. The attacks of edema were elicited by slight exertion, and they also some-

times occurred spontaneously at night, but there has been no recurrence of the edema during the last seven years. Venesection and digitalis, alone or together, are the main reliance.

Acute Leukemia.—Sabrazès' experience has confirmed that acute leukemia of the hematogonia type kills in a few days; of the myeloblast or lymphoblast type in a few weeks; of the myelocyte or lymphocyte type, in two or three months, while myeloid leukemia of rapid course may not prove fatal for a year. We are powerless in the presence of acute leukemia.

Archives de Médecine des Enfants, Paris

June, 1921, 24, No. 6

*Epidemic Meningitis. K. Lewkowicz.—p. 329. Conc'n No. 7, p. 407.

Harmonious Growth of Children. Dumoutet.—p. 352.

Generalized Neurofibromatosis. J. Comby.—p. 362.

Mongolian Blue Spot in Two Children. J. Comby.—p. 366.

Infant Welfare Work. J. Comby.—p. 369.

Epidemic Meningitis.—This is Lewkowicz' fifth communication on the subject of specific treatment of epidemic meningitis at all ages. He emphasizes that the antiserum has a sure therapeutic action if it can reach all the nests of meningococci in the ventricles. Obstruction to the circulation of cerebrospinal fluid should be suspected when there is a difference in pressure and in the albumin content of the fluid in the ventricle and in the spinal subarachnoid space. There is less secretion of fluid in epidemic meningitis than normal, and this is one of the causes of stagnation and accumulation of thick pus in the ventricles. By puncturing the ventricle, we can estimate its capacity at the time and thus detect stenosis of the ventricle, and also detect hydrocephalus in its incipency and trace its course. Inflammatory hydrocephalus is a consequence of the edema of the brain with epidemic meningitis. From the third to the tenth year the brain is generally vigorous and resistant enough to stand the pressure from the edema, but in artificially fed infants the brain tissue yields and, even in the breast fed, abnormal laxity of the brain tissue is not uncommon, as also in most children over 10. He reiterates in conclusion that the most effectual way to introduce the antiserum, especially when there is evidence of stenosis in the ventricle, is to make the injection directly into the lower portion of the lateral ventricle. The needle is inserted transversely to the skull on a line joining the parietal eminence with the external auditory meatus, opposite the tip of the ear, or 1 to 4 mm. above it. The needle has to be introduced from one fourth to one third of the transverse diameter of the skull at this point. This route avoids the motor zone, the needle passing by the second frontal convolution, and the needle does not have to be pushed in so far as for puncture of the corpus callosum. A decompressive operation should be considered in extreme cases of cerebral edema. On account of the grave dangers when the infectious process drags too long, treatment, especially for infants, should be prompt and energetic. He gives the minute details and charts of 29 cases, which brings to 114 the number he has thus analyzed. Only 3 of the total 31 infants recovered completely. A number of others recovered from the meningitis but succumbed to the effects of the hydrocephalus or the progressive spastic paralysis. It seems evident that there is scarcely a chance for complete recovery unless the infants are breast fed, and not always then.

Bulletin de l'Académie de Médecine, Paris

July 19, 1921, 86, No. 29

*Diabetes of Bearded Women. C. Achard and J. Thiers.—p. 51.

*Surgical Treatment of Angina Pectoris. T. Jonnesco.—p. 67.

Decline of Breast Nursing. V. Wallich.—p. 71.

*Spinal Anesthesia. Mériel and Lefebvre.—p. 73.

*Necrotic Pneumonia. M. Letulle and F. Bezançon.—p. 77.

Hirsutism Plus Diabetes.—Achard and Thiers discuss whether this combination is a special form of virilism or a special form of diabetes. A case is described in which the beard began to grow at the age of 9 or 10 and at 69 transient diabetes was found on the occasion of a fracture. The woman had a heavy moustache and beard and eyebrows, and necropsy two years later showed total sclerosis of the ovaries, hyperplasia of the suprarenals, chronic thyroiditis, and various changes in the pancreas. Comparison of this case with those on record confirms the polyglandular nature of the

hirsutism; the glycolytic insufficiency is only a variable and inconstant element in the picture of feminine hirsutism.

Surgical Treatment of Angina Pectoris.—Jonnesco reports a second case in which he resected the entire cervical sympathetic chain on the left side to interrupt communication between the heart and aortic plexus and the nerve centers through the intermediation of the cardiac nerves originating in the first and second cervical ganglia. The immediate results were excellent; the interval since the operation in his first case is now over five years, and there has been no recurrence of the angina pectoris. In the discussion that followed, Vaquez remarked that the operation has more than a palliative action, as the fatal outcome is due to auricular fibrillation and heart block, or to reflex action. Suppression of the paroxysms of pain does away with the usual cause of the sudden death in the cases of aortitis affecting mainly the origin of the vessel, where the network of nerves is particularly close, and the pain exceptionally severe. Tuffier also reported three successful operative cases; in the last one he followed Jonnesco's technic. He noted some transient disturbance in circulation and breathing as he pulled on the ganglion in removing it, and suggests that regional anesthesia might be preferable. The operation was easy, and seemed to be harmless by either the cervical or thoracic route, but the latter gives better oversight.

Spinal Anesthesia.—In the experiences of Mériel and Lefebvre with spinal anesthesia in over 1,000 cases, the Delmas technic proved its superiority. There never were any mishaps, and since the practice has been adopted of a preliminary intramuscular injection of 10 c.c. of camphorated oil and 2 ampules of caffeine, there have been scarcely any instances of lipothymia. The "abdominal silence" is one of the great advantages of spinal anesthesia.

Dissecting Necrotic Pneumonia.—Two cases are described and the points are emphasized which distinguish this disease of the lung from a gangrenous process. No pneumococci were found and the few pneumobacilli or streptococci discovered seemed unable to explain the development of the large necrotic cavity in a few weeks.

Bulletin Médical, Paris

July 23, 1921, 35, No. 30

*Hypertrophy of the Prostate a General Disease. Pousson.—p. 595.

Hypertrophy of the Prostate a General Disease.—Pousson comments on the disturbances from resorption of the toxic products of the adenomatous prostate. This newly recognized element in the clinical picture of hypertrophied prostate explains its noxious action on the general health, when superposed on the disturbances from the inefficient elimination of waste products by the kidneys. Even when the urine can be properly voided, the hypertrophied prostate is a source of danger easily done away with by prostatectomy.

July 30, 1921, 35, No. 31

Fasting in Treatment of Diabetes. M. Labbé.—p. 613.

*Tests for Glycemia. F. Nepveux.—p. 616.

*Surgery and Diabetes. H. Bith.—p. 620.

*Dieting in Diabetes. H. Chabanier, M. Lebert and C. L-Onell.—p. 622.

Estimation of Glycemia.—Labbé gives an illustrated description of the Bang micromethod.

Surgery and Diabetes.—Bith reiterates the necessity for preparing the diabetic for an operation. Local or regional anesthesia should be preferred, and denutrition and acidosis combated before attempting any surgical measures.

Carbohydrates in Diabetes.—Restriction of carbohydrates in diabetes does not modify the diabetes itself, unless possibly aggravating it, according to the research here reported. It seems to act exclusively on one secondary phenomenon, namely, the manner in which glucose is eliminated by the kidneys. It seems to fasten the threshold to the glycemia. The threshold follows the spontaneous variations of the glycemia. The "tolerance" of the diabetic, the writers declare, is a purely renal phenomenon, without any direct relation to the essential derangement which constitutes the diabetes. The same result can be accomplished in other ways: Anything that reduces the fluctuations of the threshold—if not injurious otherwise—seems to benefit in diabetes.

Bulletins de la Société Médicale des Hôpitaux, Paris

July 15, 1921, 45, No. 25

*Tubercle Bacilli in Duodenum. P. Carnot and E. Libert.—p. 1101.

*Relapsing Fever. A. Cawadias.—p. 1105 and p. 1107.

*Cerebromeningeal Syphilis. A. Florand and P. Nicaud.—p. 1110.

Pneumonia with Terminal Myelitis. Idem.—p. 1112.

Cerebral Rheumatism. R. Mignot and L. Marchand.—p. 1115.

Subacute Forms of Epidemic Encephalitis. H. Eschbach.—p. 1119.

*Cavity Sounds Propagated to Sound Lung. Salomon.—p. 1121.

Encephalomalacia in Acute Tuberculous Meningitis. L. Lortat-Jacob

and R. Turpin.—p. 1128.

Cerium Salts in Tuberculous Rheumatism. Oddo and Giraud.—p. 1131.

Syphilitic Fever. G. Gautier.—p. 1134.

Herpes in Epidemic Encephalitis. A. Netter.—p. 1135.

*The Epinephrin Thyroid Test. M. Garnier and S. Bloch.—p. 1137.

*Quinin Amaurosis. F. Rathery and Cambessédès.—p. 1142.

Mediastinal Dermoid Cyst. P. Duval and A. Clerc.—p. 1147.

Congenital Aortic Stenosis in Child with Inherited Syphilis. L. Quey-rat and Mouquin.—p. 1152.

Tubercle Bacilli in Duodenal Fluid.—Carnot and Libert found tubercle bacilli in the fluid obtained with the duodenal tube in three of seven cases. This testifies that tubercle bacilli are eliminated in the bile and pancreatic juice, as none of these three patients had tubercle bacilli in their sputum. Possibly a cholagog might have increased the positive findings. Repeated tests of eleven nontuberculous subjects failed to reveal any acid-resisting bacilli of any kind. They state that this *biliscopic* may prove of practical import.

The Hemorrhagic Form of Relapsing Fever.—Two cases are described of hematuria and three of hemorrhagic purpura in the course of relapsing fever, and a number of cases of extremely profuse epistaxis.

Brain and Meningeal Complications of Relapsing Fever.—Cawadias describes the complete meningeal syndrome noted in 3 per cent. of his numerous cases of relapsing fever in the Greek army. There was a mild meningeal reaction in fully 80 per cent.

Cerebromeningeal Syphilis.—The paralysis of the third pair in the young woman was accompanied with left hemiplegia and hemianopsia. Under specific treatment all subsided but the hemianopsia, except that partial hemiplegia persisted.

Physical Findings in One Sound Lung.—Salomon relates that tuberculous cavities in one lung frequently propagate adventitious sounds to the healthy lung. They may be so pronounced that artificial pneumothorax is apparently out of the question, when in reality the lung is sound.

The Epinephrin Test.—Garnier and Bloch obtained a positive response to Goetsch's test in twenty-six of forty-eight subjects, confirming the hypersensitiveness to epinephrin during transient or permanent excessive functioning of the thyroid. As functioning returned to normal, the response to the test veered to negative, but it could be elicited anew by giving thyroid extract.

Quinin Amaurosis.—A man of 41 with old malaria took eighteen 0.5 gm. powders of quinin one day, and complete amaurosis followed. Vision up to two thirds was slowly regained in the following weeks. The central scotoma with normal peripheral visual field differs from the usual picture from the toxic action of quinin on the eye. The papilla was impressively blanched from the first. Other features of the quinin poisoning included hemoglobinuria for two days and a long period of polyuria.

Médecine, Paris

July, 1921, 2, No. 10

*Nutritional Diseases in 1920. L. Lortat-Jacob.—p. 741.

*The Acidosis of Fasting. M. Labbé.—p. 752.

*Tuberculous Cirrhosis of Liver. G. Roque.—p. 757.

*Dyspepsia or Gallstones? F. Ramond.—p. 763.

*Oxalic Acid Gout. M. Loeper.—p. 768.

*Endocrine Glands and Functional Syphilis. P. Merklen.—p. 774.

Syphilitic Cirrhosis of Liver. F. Saint-Girons.—p. 779.

*Medicinal Gastritis. E. Agasse-Lafont.—p. 785.

Bile Salts in Liver Disease. Chabrol and Bénard.—p. 791.

Hourglass Stomach. A. Cain.—p. 794.

*Clinical Features of Pituitary Polyuria. E. Schulmann.—p. 799.

*Treatment of Strangulated Hemorrhoids. G. Leven.—p. 805.

Dyspepsia and Nutritional Diseases in 1920.—Among the advances realized last year, Lortat-Jacob mentions blocking of the splanchnic nerves to arrest the gastric crisis of tabes, as Pauchet, Carnot and others have done. It is not constantly effectual, but the result has often been excellent and

the method, he says, is harmless and can be applied extemporaneously, at the bedside, by any operator. The needle, 12 cm. long, is introduced at the lower edge of the twelfth rib, four fingerbreadths from the median line, pointed toward the body of the vertebrae, at an angle of 45 degrees to the median axis of the body. After the needle touches the bone, it is withdrawn half its route, and is pushed in again pointed farther forward, so that it passes at a tangent to the vertebra and 1 cm. beyond. The tip is then in the region of the solar plexus, and about 25 c.c. of a 1 per cent. solution of procain, with a little epinephrin, is injected to lase the plexus. The procedure is then repeated on the other side. He says that the technic is not difficult nor distressing for the patient. Toxic phenomena need not be apprehended even notwithstanding the large dose of the anesthetic used. The pain is relieved in a few moments, and the procedure can be repeated the next day or the following days at need. He regards this as a most interesting innovation the benefit from which might usefully be extended to solar crises whatever their nature. Syphilitic radiculitis in the gastro-intestinal sphere causes a more continuous pain than tabes; and syphilis as a causal factor in gastric ulcer has been demonstrated in some cases. Lortat-Jacob describes the present status of the digestion hemoclasia test of liver functioning, which is an index of the proteopexic power of the liver, that is, its ability for fixation of heterogenous albumins brought to the liver by the portal vein. Any insufficiency of the liver in this line is revealed by the drop in the number of leukocytes in the blood after ingestion, fasting, of 200 c.c. of milk. This induces the *choc colloïdalique*, described by Widal, Richet and others, and duly chronicled in these columns. The test seems to be more sensitive than others. Another recent test of liver insufficiency to which he refers is Chiray's induced glycuronuria, estimating with a colorimeter the proportion of glycuronic acid in the urine after ingestion of 1 gm. of camphor in a gelatin capsule. This has also been duly chronicled recently. He refers further to fever as the only symptom of syphilitic disease of the liver; it is high, irregular and prolonged. Netter has reported a case with fever for eighteen years.

The proteopexic shock test of the liver has confirmed the highly toxic action of chloroform and of arsphenamin for the liver. His verdict on the fasting treatment of diabetes is that it may improve conditions temporarily but is dangerous in certain cases of acidosis and denutrition. Recent research has apparently established that diabetic coma may be the result of both acidosis and of some other toxic action from disturbance in the metabolism of albuminoids. When due to acidosis alone, it can be controlled by alkaline treatment, but otherwise all our treatment is impotent.

Fasting Acidosis.—Labbé states that the importance of the acidosis which develops during fasting has been much exaggerated. Pathologic acidosis tends to subside under fasting; there is nothing to be apprehended from fasting, therefore, in diseases presenting acidosis.

Tuberculous Cirrhosis of the Liver.—Roque declares that the liver is affected almost constantly in tuberculosis; there may be specific lesions or merely fatty or amyloid degeneration. When the liver is suffering from the action of alcohol besides, then the tuberculous cirrhosis becomes extensive and grave, and we behold the Laennec and the Hanot types of cirrhosis. It is alcoholic cirrhosis because it cannot develop except in alcohol drinkers, but it is primarily tuberculous, he emphasizes. The tuberculous nature of the process is sustained by the nature of the ascitic fluid, inoscopy and inoculation of animals with the fluid and with scraps from the cirrhotic liver.

Dyspepsia or Cholelithiasis?—Ramond shows the great similarity between the pains from actual stomach disease and those induced in the stomach region by irritation of the common nerve supply from gallstones. At first there is excessive gastric secretion, as a rule, but then hyposecretion follows. Radioscopy is not decisive; at most the displacement of the painful gallbladder-pylorus point on change from the reclining to the erect position. With gallstones, the pain spreads; a painful point at xiphoid process with a tender point over the gallbladder is instructive; also spreading of the pain to the esophagus, with dysphagia, and to the cecum

and appendix. The latter has been responsible for many cases of phantom appendicitis. A painful point in the right sternocleidomastoid fossa is practically constant with cholelithiasis, but in the left fossa it is a sign of stomach or duodenal disease. Auscultation of the lung is also instructive; painful pathologic conditions in the stomach have no action on the respiratory system. With liver disease and gallstones, the vesicular murmur on the right side is diminished while it is found normal on the left side. Morphine relieves the pain with gallstones; atropine the pain of dyspepsia. He is now studying still another sign of cholelithiasis, the pain on pressure of the perforating branches of the intercostal nerves.

Oxalic Acid Gout.—Loeper has published numerous articles on this subject in the last ten years, and his experience has demonstrated more and more the pathologic action of retention of oxalic acid. It affects injuriously the liver, the muscles and the nervous system, but the joints suffer first and foremost. It induces a deforming arthritis with hypertrophy, involving mainly the small joints of the hands and fingers, settling in connective tissue and bone rather than the cartilage and periarticular tissue for which uric acid displays a predilection. Uric acid gout is accompanied by vasomotor congestion and high blood pressure; oxalic acid gout by low pressure and anemia, but in both the excess may be cast off in time by a freshet through the kidneys. Oxalemia may entail neuralgia or myalgia, asthenia and demineralization; its equivalents include asthma, facial neuralgia, eczema and certain prurigos, melancholia, and neurasthenia. The more common disturbances from the oxalemia, however, are gastro-intestinal and urinary on account of the injury during elimination of the calcium oxalate crystals. The bones become porous from loss of calcium. Treatment should include abstention from rhubarb and chocolate, purins and nucleins, giving stimulants for the liver and kidneys, with phosphorus for its antitoxic and remineralizing action, and magnesium preparations as antidotes for the oxalic acid.

Functional Syphilis and the Endocrine Glands.—Merklen ascribes to the intermediation of the ductless glands the asthenia of syphilitic origin which is one of the purest types of functional syphilis. He advises investigating the endocrine system and examining for traces of syphilis, and combining organotherapy with specific treatment, especially in inherited syphilis. Certain viscera or groups of viscera are doing inferior work although no definite lesions can be detected in them, and the functional or meopragic syphilis is responsible for this.

Medicinal Gastritis.—Even when the symptoms suggest gastric ulcer or cancer, the possibility that they may be traceable to the drugs the subject has been taking should never be forgotten. In one extreme case of self-drugging, the man had taken antineuralgia tablets for ten years, a total of 20,000, at an expense of 7,000 francs and the ruin of his health. Patients are often inclined to increase the prescribed dose and continue the medicine too long, and the druggist may dispense drugs with impurities. The resulting gastritis may be accompanied by hypersecretion at first, but hyposecretion early or late is more common. The pain and vomiting from it may be attributed to the primary affection when in reality the medication is responsible, and they subside as it is suspended. Abuse of sodium bicarbonate may induce cachexia. Patients should be warned, Lafont adds, that the widely advertised remedies are active, and, being taken by large numbers of persons, some few of them actually benefit, as the remedy is temporarily adapted to their condition. These few proclaim this transient benefit, and this assures the success of the remedy. But to take it indiscriminately not only exposes to the danger of taking drugs absolutely unadapted for the condition, possibly aggravating it, and losing time when proper treatment might prove effectual, but it exposes also to the danger of excessive drugging, the pernicious effects of which may be irreparable in time.

Pituitary Polyuria.—Schulmann explains that with polyuria from other causes there is retention of certain elements of the urine, but with pituitary polyuria the kidneys are normally permeable. The only abnormality is the flood of water. Some of his patients in this category do not seem to suffer from their diabetes insipidus. One has been under observa-

tion for five years, and the only disturbance is the necessity for drinking from 15 to 20 liters of water a day or else severe disturbance follows.

Strangulated Hemorrhoids.—Leven expatiates on the relief that follows keeping the patient in bed, without food, for one or two days, allowing nothing but a few spoonfuls of sweetened water every hour to a total of 200 or 300 gm. Hot compresses are kept on the protruding hemorrhoids; later they are painted every second day with a weak alcoholic iodine solution.

Paris Médical

July 16, 1921, 11, No. 29

*Diphtheric Paralysis of Accommodation. Poulard.—p. 57.

*Artificial Pneumothorax. C. Saugman.—p. 59.

*Streptococcus Gastritis. A. Cange and E. Michelean.—p. 64.

Diphtheria Paralysis of Accommodation.—Poulard states that the sudden loss of near vision from diphtheric paralysis of accommodation subsides in a few weeks without leaving a trace. Syphilis affects one eye alone as a rule, and there are usually other manifestations of the syphilis. In diphtheria the motor neurons of the ciliary muscle are attacked simultaneously by the diphtheric toxin but the accommodation reflex is not abolished. A similar condition has been observed in epidemic encephalitis, although not so pure. Botulism and atropin poisoning are also liable to induce it.

Artificial Pneumothorax in Pulmonary Tuberculosis.—A similar article by Saugman was reviewed in these columns, March 26, 1921, p. 903.

Streptococcus Gastritis.—Postoperative erysipelas developed after an operation on the lacrimal sac of a woman of 50, with consecutive fatal ulcerative and hemorrhagic streptococcus gastritis.

Presse Médicale, Paris

July 13, 1921, 29, No. 56

Benefit from Vaccine Therapy of Pulmonary Disease. Minet.—p. 553.

*The Blood and the Extravascular Circulation. J. Le Calvé.—p. 554.

Interchanges Between Blood and Extravascular Circulation.—Le Calvé refers to the fluids in the serous cavities, etc., as the extravascular circulation, and shows how it can be modified by hot baths, ligation of the legs, rubbing the chest, cupping, and inhalation of amyl nitrite, with resulting interchanges between the blood and this extravascular circulation. The easiest and simplest means to study this is by tying off the legs and analyzing the fluid obtained by tapping a pleural effusion or ascites. He tabulates the findings in a number of cases under the vasomotor changes thus induced. Chief among them is a loss of water, urea and chlorid from the blood. These are poured out in turn into the interstitial spaces and serous cavities. If the fluid in these cavities is then siphoned out, we thus relieve the system of a comparatively large amount of these elements. Hence measures to stimulate vasomotor function, for example, applying a ligature to each leg, may prove a useful preliminary half an hour before tapping.

July 23, 1921, 29, No. 59

*Relations Between Alopecia and Syphilis. R. Sabouraud.—p. 581.

*Nature of Epilepsy. P. Pagniez.—p. 582.

Relations Between Alopecia Areata and Syphilis.—Sabouraud mentions that in 1 or 2 per cent. of his cases of alopecia areata it could be traced through two or three generations, but there was nothing to suggest syphilis. Alopecia areata is also so frequent in exophthalmic goiter that it seems to form part of the clinical picture. The disturbances at the menopause are also liable to entail *la pelade*. He has encountered three cases in which the irruption of a wisdom tooth seemed to have started an alopecia areata process on the same side, along with local edema of the neck, etc. In none of these three groups was there anything to suggest syphilis, but the proportion of patients with inherited syphilis among the alopecia areata cases is too large for a casual coincidence. Sabouraud's numerous experiences with the cure of alopecia areata in children under treatment for syphilis corroborate the relations between them.

Nature of Epilepsy.—Pagniez compares the recent literature on this subject with his own observation, all sustaining the assumption that the immediate cause of the manifestations

of epilepsy is some vasomotor disturbance in the circulation, but that the seizures can be influenced by measures in the line of protein therapy. The latter, in addition to the fact that intercurrent febrile disease suspends the seizures as a rule while it lasts, suggests that there is some humoral element involved which can be modified by diet and by some form of protein therapy. Instead of being a nervous disease, epilepsy seems to belong more to the category including gout.

July 27, 1921, 29, No. 60

*Operative Indications and Contraindications with Gastric Ulcer. P. Le Noir, C. Richet, Jr., and A. Jacquelin.—p. 593.

The Colloids in Therapeutics. W. Kopaczewski.—p. 594.

Indications and Contraindications for Operative Treatment of Gastric Ulcer.—The conclusions of this comparative study are that an operation should be considered when the pains, hemorrhage and stenosis persist after a regular course of repose and medical measures. Everything else being equal, the indications for operative treatment are more decided when the ulcer is on the lesser curvature than when at the pylorus. The prognosis is grave when there is insufficiency of kidneys, even slight, or insufficiency of the liver. In short, insufficiency of the kidneys is a relative or absolute contraindication to operative measures. Chloroform should be avoided in such a case and the intervention should be limited to what is strictly necessary. After any intervention on the stomach, the patient should be kept long under medical supervision.

July 30, 1921, 29, No. 61

*Deep Roentgen-Ray Therapy. H. Vaquez, Bordet and Schrupf-Pierron.—p. 601.

*Statistic Nosology. M. Jullien.—p. 602.

*Test of Kidney Functioning. H. Kummer.—p. 603.

Sodium Cacodylate in Treatment of Contracture. L. Cheinisse.—p. 605.

Deep Roentgen-Ray Therapy.—The present status and the principles underlying deep roentgenotherapy are reviewed and the importance of a medical training for the radiologist is emphasized. "It is an anachronism to allow the nonmedical person to apply such a powerful therapeutic agent as the roentgen rays when it is against the law for him to prescribe even 1 mg. of morphin."

Statistic Nosology.—This is a reply to Rist's article summarized pp. 72 and 409.

Induced Chloriduria Test for the Kidneys.—Kummer has been using this test for two years with constantly increasing satisfaction. The subject is kept on a salt-free diet until it is impossible to reduce the chlorids in the urine any further. He is then given 10 gm. and then 20 gm. of sodium chlorid for several days in succession. Then all salt is dropped again until the output is at the same height as before the test. This excess of salt is generally borne without harm, but strict supervision is necessary and the salt should be dropped if there is any disquieting retention. In the normal, in three or four days as much salt is eliminated as is being ingested. If the outgo does not equal the intake after the fourth day, this is regarded as a sign of slight impermeability of the kidneys. The rhythm of the elimination plus calculation of the amount retained, and comparison with the elimination of the urea during the same period, throw instructive light on the functional capacity of the kidney beyond anything attainable in any other way, he says. In repetitions of this test chloriduria in ten healthy subjects, the proportion of urea eliminated grew smaller as the proportion of salt eliminated increased, or vice versa, this antagonism being a physiologic phenomenon, the more pronounced the higher the total concentration of the urine. When the curves of elimination kept parallel or varied independently, the kidneys were always found seriously pathologic. The elimination of both was calculated for the period of the surcharge only, or daily average. Even the normal kidneys may take three or four days to eliminate the test dose of salt. When an average of over 4 gm. of sodium chlorid is retained daily, the prognosis is grave. In 15 cases of prostatic enlargement the rhythm was of the normal type and all bore the operation well, while 7 died of the 8 presenting the pathologic type of response. Among the 15 with normal response there were some in such an apparently serious condition that operative intervention would not have been considered if it had not been for the encouraging response to this induced chloriduria test. The phenolsulphonephthalein test and the Ambard ureosecretory

index seemed to indicate severe renal insufficiency. None died of those with retention of 3 gm. of salt or less, and all died of those with retention of over 4 gm. A typical case is described in which there was average daily retention of 5.4 gm. but the general condition seemed good, and all the other functional tests gave satisfactory findings, so that Kummer gave his consent to the prostatectomy, but necropsy revealed advanced interstitial nephritis. The course of the elimination of salt and urea had failed to show the physiologic antagonism.

Schweizerische medizinische Wochenschrift, Basel

July 14, 1921, 51, No. 28

- Wounds from Flobert Pistols. J. Dubs.—p. 645.
Magnesium Sulphate by Rectum in Tetanus. A. Hotz.—p. 651.
*Aplasia of Suprarenal. K. Schnyder.—p. 652.
Case of Ileus from Ascarids. A. Steinegger.—p. 654.
*Urine Test for Tuberculosis. J. v. Bergen.—p. 655.
*Diphtheroid Bacilli. H. U. Hartmann.—p. 657.

Addison's Disease with Aplasia of Suprarenal.—Schnyder has found six cases on record in which the right suprarenal capsule was missing, and in two of the cases Addison's disease developed as the other suprarenal developed tuberculosis. He has recently encountered a third case of aplasia of the right suprarenal. The patient was a man of 68, with cancer of the larynx. The skin showed extensive bronzing and there were brown spots in the buccal mucosa, but the blood pressure was not especially low. Twenty-four years before he had been treated for scurvy, and the journal record added "plus Addison's disease." Necropsy showed apparently congenital absence of the right suprarenal, but the single one found seemed to be normal. The diagnosis of Addison's disease, Schnyder thinks, is thus disproved.

The Own Urine Test for Tuberculosis.—Von Bergen mentions that the specific gravity of the urine should always be determined first, as the specimen will have to be evaporated to 1:8 or up to 1:20 according as the specific gravity is high or low. He describes the arrangements for distillation in a vacuum, and states that the experiences with his tests of 400 specimens of urine have demonstrated that the substance inducing the reaction is a thermostable, dialyzable, biuret-free substance, soluble in alcohol and resembling tuberculin. It is not a protein in the ordinary sense.

Pseudodiphtheroid Bacilli.—Hartmann queries whether *Mycobacterium smegmatis* is a separate species or only a pseudodiphtheroid coryne bacterium. He inclines to the belief that there are two forms of smegma bacilli, one that can be cultivated and one that cannot.

Annali d'Igiene, Rome

April, 1921, 31, No. 4

- Toxicity of Antirabies Vaccines. V. Puntoni.—p. 201.
*The Water in Colloids, etc. A. Scala.—p. 214.
The Bacteriophagum. V. Puntoni.—p. 250.

The Water in Living Beings and in Colloids.—This is a critical review by Scala of what is known to date in regard to the rôle of the water in the organism and in colloids in general.

Clinica Pediatrica, Modena

1921, 3, No. 4

- *Osteopsathyrosis and the Endocrine Glands. E. Giorgi.—p. 117.
Hospital Epidemic of Measles. G. Zadra.—p. 137.

Osteopsathyrosis.—The remarkable fragility of the bones in the 10 months infant was associated with chronic diffuse interstitial inflammation of the hypophysis and hypoplasia of the testicles. The hemorrhage in the suprarenals was evidently a late acute process. The child seemed healthy until the first fracture appeared. This was followed by profound and continuous autointoxication from the cytotoxicity. The mother had both tuberculosis and syphilis.

Pediatria, Naples

July 1, 1921, 29, No. 13

- *Albumin Content of Blood Serum. E. Mensi.—p. 577.
*Protein Therapy. G. Milio.—p. 614.

The Albumin Content of the Blood Serum in Children.—Mensi gives over fifteen pages of tables showing the refractometer findings in the serum from 382 children. In the

normal, the proportion was about 6 per cent. under 6 months of age, and after this about 7 or 8.5 per cent., that is, the average figure in older children and adults. It was below normal with retention of water and salt from kidney disease, also in acute infectious diseases and cachexia, but it was above normal in diabetes, in uremia, jaundice, spasmophilia, syphilis, rachitis, and above all in tuberculosis. In the latter the albumin content was above normal at all ages, often reaching 8 or 10 per cent. and in one case 12.25. He regards this as an important aid in the differential diagnosis in dubious cases, corroborating the response to tuberculin tests. The refractometer index was determined more than once in some of the children, the total number of tests being 477, plus the frequent parallel skin and intradermal tuberculosis tests. He followed Nast's technic, and theorizes to explain the characteristic findings in the various pathologic conditions.

Protein Therapy.—Milio concludes his review of the present status of protein therapy with the statement that it is being used more and more and with encouraging results in constitutional diseases and diatheses. But in infectious diseases, vaccine therapy seems preferable.

Policlinico, Rome

July 18, 1921, 28, No. 29

- The Malarial Complexion. G. Jona.—p. 971.
Stab Wound of Pulmonary Artery. A. Miliani.—p. 976.
*Differentiation of Smallpox and Chickenpox. E. Romanelli.—p. 978.

Differential Diagnosis of Variola.—With smallpox there is usually a period of fever for several days before the eruption, while with chickenpox this prodromal period is less intense and lasts at most only a few hours to a day. The eruption with smallpox develops all at once; with chickenpox there may be pustules of different ages, and the pustule matures much more rapidly than in smallpox. Umbilication is not absolutely pathognomonic of smallpox. The localization is more instructive. In 3,500 cases of smallpox in the last three years, in over a third the eruption predominated on the face and limbs, sparing the trunk; in less than a third it was diffuse, but the trunk was mostly free. In all the varicella cases the trunk was the region mainly or exclusively affected. The variola was hemorrhagic in 300 cases. Variola may be confused with impetigo, measles, scarlet fever and syphilitic skin lesions, besides varicella. The danger is naturally greatest with unusually mild variola and grave and anomalous varicella.

July 25, 1921, 28, No. 30

- *Hemolysins in the Urine. L. Condorelli.—p. 1003.
*Polyserositis. B. Maggesi.—p. 1008.
The Hearing of the New-Born. O. Waltan.—p. 1010.
Paraffin Tumor in Testicle. L. Caforio.—p. 1012.

Hemolysins in the Urine.—Condorelli presents here a second report on his research on hemolysins and antihemolysins in the urine. He found two of the latter and one of the former in every specimen of normal urine, so that normally the antihemolytic action predominates. He describes his technic and the way he estimates the antihemolytic index in health and disease. It may be normal in mild nephritis, but is always reduced and hemolysins may predominate in grave uremia and anemia.

Polyserositis.—In the case described, slight paresis of the right side had been left by epidemic encephalitis in the man of 50 but he seemed otherwise well, when intense abdominal pain suddenly developed accompanied in a few days by insistent vomiting. This kept up for a week, but the general health did not seem to suffer as with ileus, which otherwise seemed unmistakable. Under simple pituitary treatment, bowel functioning was restored, but slight fever persisted, with dyspnea and slight cyanosis, and a bilateral effusion in the pleura soon became evident. This was speedily and harmlessly absorbed. The acute onset suggesting ileus and calling for a laparotomy, and the harmless subsidence of the triple serositis were striking features of the case.

Aug. 1, 1921, 28, No. 31

- Hygiene Propaganda and the School. A. Scavo.—p. 1035.
*Calculus in Ureter. A. Catterina.—p. 1040.
Arsphenamin Injected in Varicose Vein. S. Pulvirenti.—p. 1043.
Priority in Urine Mercuric Nitrate Test. E. Pittarelli.—p. 1045.

Calculus in Pelvic Ureter.—The calculus had been causing disturbances for twelve years, but the pains had been

attributed to hemorrhoids. Divulsion of the anus had been done three times before radioscopy revealed the calculus, which was then removed by cutting down to it, suturing the incision in the ureter. Ten other Italian cases of ureter calculi are compared with this.

July 1, 1921, 28, Medical Section No. 7

*Pleural Effusion with Artificial Pneumothorax. F. Dumarest and F. Parodi.—p. 281.

*Laryngospasm and Tetany in Adults. G. Frontali.—p. 301.

*The Mechanics of the Skull and the Physics of the Brain. F. Pedrazzini.—p. 310. Conc'n.

The Pleural Effusion with Artificial Pneumothorax.—Dumarest and Parodi discuss the pleuritis which may develop in the course of an induced pneumothorax. The tuberculous toxins from the compressed focus spread to the pleura which reacts with an effusion. Small lymphocytoid acidophile cells are found in the effusion when the reaction is mild. Macrophages are a sign of bacillary lesion of the pleura, and are never found in the mild reaction pleuritis. A colored plate reproduces the blood cells characteristic of the idiopathic, the tuberculous and the septic type of effusions found with artificial pneumothorax. Large eosinophils are found in the idiopathic form, and small ones in the mild tuberculous form.

Laryngospasm and Tetany in Adults.—Frontali witnessed attacks of tetany in the young woman, the recurrences always in the winter or spring, some without apparent cause, others after excitement, and two followed coryza and were characterized by laryngospasm. Once the latter was so severe that intubation was required, the spasm lasting for several hours and then suddenly disappearing. There was retention of calcium to 37.73 per cent. of the amount introduced in an average of three days. A few days afterward, tests with pilocarpin and atropin induced a pronounced reaction, while epinephrin elicited scarcely any response. The vagus was extremely excitable, with notable vagotony.

The Mechanics of the Skull.—This long critical and experimental study analyzes the physics of the brain as modified by the mechanical conditions of the skull. Pedrazzini illustrates with concrete examples the various points he seeks to emphasize.

Riforma Medica, Naples

July 2, 1921, 37, No. 27

*Syncopal Pernicious Malaria. R. Leone.—p. 626.

Ectopic Testicle with Hernia. E. Busa Lay.—p. 629.

Genital Tuberculosis in the Female. E. Aievoli.—p. 631.

Classification of Mild Persisting Fevers. I. Jacono.—p. 632.

Dante from Anthropologic Standpoint. B. De Vecchis.—p. 643.

Syncopal Pernicious Malaria.—Death occurred from paralysis of the heart in the two young men presenting the syncopal form of pernicious malaria, but the heart seemed to be normal at necropsy. Thrombosis of the capillaries had evidently shut off the nourishment from the intracardiac nerve system, and thus had entailed the syncope.

July 9, 1921, 29, No. 28

*Inflammation Around the Bladder. D. Taddei.—p. 649.

*Acidosis in Kidney Disease and Uremia. G. Poggio.—p. 652.

Joint Complications of Influenza in Children. G. Roello.—p. 654.

Constitutional Hypotony of Blood Vessels. A. Ferrannini.—p. 656.

Pericystitis and Prostatitis.—Taddei applied local heat in treatment of the case described, striving to induce resolution of the inflammatory process around the bladder and prostate of manifestly blood-borne origin. The onset had been acute and stormy, with high fever and pains, predominantly in the hypogastrium, in the man of 25. The hypogastrium bulged slightly and the skin was adherent to the tissues below along the median line and the umbilicus. Palpation revealed a hard resistance which seemed to form part of the rectus muscle, a triangular mass with the apex at the umbilicus and the base at the pubis. This mass could be moved a trifle sideways but not up and down, and it could be palpated through the rectum. The temperature gradually declined after three or four days and there was no further fever after fifty days. Puncture was negative, the bladder normal.

Acidemia and Acidosis.—Poggio discusses the practical application of what we have learned in regard to the power of the blood to maintain its alkaline reaction.

Rivista di Clinica Pediatrica, Florence

February, 1921, 19, No. 2

*Chronic Recurring Fever with Lymphogranulomatosis. A. Lorenzini.—p. 65.

Criticism of Endocrinology. G. Frontali.—p. 101.

Periodic Pyrexia with Lymphogranulomatosis.—Lorenzini gives the details of a case of the Cardarelli-Pel-Ebstein type of undulant fever in a girl of 10 with hemolytic jaundice and enlarged spleen, the enlargement of other glands finally confirming the diagnosis of lymphogranulomatosis. The coincidence of the recurring pyrexia with the waves of glandular enlargement demonstrate the close connection between the fever and the granulomatous process. The differential diagnosis may be difficult if the granulomatosis is restricted to deep and inaccessible glands. In his case the disease ran a nearly three years course. The first manifestations had been limping from recurring pains in the left knee, accompanied by high fever for two or three days, the whole returning at intervals of from two to four weeks or more. Gradually the attacks grew longer and the intervals not more than eight or ten days, but there was no chill nor sweating, merely the pain in joints and lumbar region. The only glands enlarged at first were a few of the supraclavicular glands and some in the axilla and groin. The few cases on record are compared with this, from Cardarelli's report in 1888 to Abrahams' in 1919. None of the measures applied seemed to display any efficacy in Lorenzini's case, but there was no opportunity to try radiotherapy.

April, 1921, 19, No. 4

*Culture Medium for Diphtheria Bacillus. F. Pellini.—p. 193.

*Rachitic Deformity of the Thorax. P. Brusa.—p. 210.

Tardy Scurvy in Infant. A. Cantilena.—p. 228.

Culture Mediums for Diphtheria Bacilli.—Pellini's colored plate shows the characteristic cultures of the diphtheria bacilli in various new mediums, and especially the unmistakable growth with Pergola's egg-serum medium. The bacilli develop in this much more rapidly than on the Löffler medium, while the growth of other bacilli is checked so that the diphtheria bacilli are in nearly pure cultures, and with a peculiarly characteristic growth. The medium is easily prepared and keeps well. For the technic he refers to Pergola's description in the *Annali d'Igiene*, 1918, No. 3.

Rachitic Deformity of the Thorax.—Brusa has been making a special study of the way in which the respiratory organs are hampered in their functioning by deformity of the chest wall induced by rachitis. He compares the clinical course and respiratory anomalies with the necropsy findings in one infant of 15 months and in a child of 5. In three other children an inflammatory process recurred from time to time in the portion of the lung most hampered by the deformity. The inflammatory process in such cases displays a marked tendency to sclerosis. It usually starts near the spine, as the lung is most impeded in its functions here and most inclined to stasis, particularly in infants.

Archivos de Cardiología y Hematología, Madrid

June, 1921, 2, No. 6

*Congenital Bradycardia. Louis Calandre.—p. 225.

*Recurring Malaria After Splenectomy. R. Jiménez and G. Pittaluga.—p. 233.

Congenital Bradycardia.—Calandre's patient was a young man of normal aspect whose pulse had never been known to be over 40. The mother also had persisting bradycardia, but had not seemed to suffer from it. She died at 25 from pulmonary tuberculosis. Calandre is inclined to accept the case of the young man as one of intermittent heart block due not to interference with the transmission of the impulse but rather to anomalous production of the impulse.

Malaria Recurs After Splenectomy.—The woman of 31 had been apparently long cured of the tertian malaria but it flared up anew after removal of the enlarged spleen.

Brazil-Medico, Rio de Janeiro

July 2, 1921, 1, No. 27

*The Muscular Reflexes. M. Ozorio de Almeida.—p. 343.

*Prophylaxis of Tuberculosis. A. Fontes.—p. 344.

Muscular Reflexes.—Ozorio has been studying the muscular reflexes in frogs. They could be elicited by direct electric stimulation, but he never succeeded in inducing muscular reflex action with a chemical stimulus. Mechanical stimuli proved most effectual, and there was usually some coordination in the response.

Prophylaxis of Tuberculosis.—Fontes reproduces some Italian official decrees, that date from 1699, respecting the management of cases of tuberculosis. Large fines were imposed for concealing cases and for selling garments worn by the tuberculous. He concludes his historical review and the plan for a general campaign with comparative statistics. They confirm the gradual decline in the death rate from tuberculosis. In Rio de Janeiro it has shown a steady drop from 10.78 per thousand inhabitants in 1860 to 3.88 in 1905. Since then it has risen a little; having been 4.12 during the five years ending with 1919. In S. Paulo it has dropped from 2.09 to 1.21 per thousand. He ascribes this decline to acquired immunity from infection early in life.

Gaceta Médica de Mexico

August-December, 1921, Fourth Series 1, No. 7, Mexico City. First Half

Radiography in Diagnosis. U. Valdés.—p. 395.

*Agglutination Test in Typhoid. E. Cervera.—p. 408.

Diagnostic Import of Headache. A. A. Loeza.—p. 414.

*Trachoma in the Tropics. J. Santos Fernández.—p. 419.

*Carbon Dioxid Snow in Lupus. J. González Urueña.—p. 424.

*Physiologic Glycemia. J. J. Izquierdo.—p. 438.

Incessant Crying of Infants as Sign of Inherited Syphilis. S. Ramírez.—p. 474. Idem. F. Ocaranza.—p. 504.

Agglutination in Typhoid.—Cervera emphasizes the necessity for selecting an agglutinable strain.

Conmalignancy of Trachoma in the Tropics.—Santos Fernández says that the out-of-door life the year around, and the fact that wage-earners are not crowded so closely together in their work, tend to render trachoma less serious in tropical regions than elsewhere, although the disease in itself is the same. When water is scant and hygiene neglected, trachoma is as virulent in the tropics as in other zones. It would disappear everywhere, he says, if hygiene and an ample water supply were enforced among the working classes.

Carbon Dioxid Snow in Treatment of Lupus.—González Urueña reports very favorable results to date, up to eight months, in six cases of erythematous lupus treated with carbon dioxid snow.

Physiologic Glycemia.—Izquierdo tabulates the findings in regard to the sugar content of the blood in thirty men and thirty women in Mexico City. The altitude is 2,268 meters and the average barometric pressure 568 mm. of mercury. He found the glycemia range to be from 0.08 to 0.15 per cent., the average 0.12. He theorizes to explain the variations in the sugar content of the blood and the adaption of the organism to altitude.

Revista Española de Medicina y Cirugía, Barcelona

May, 1921, 4, No. 35

*Nasopharyngeal Fibromas. R. Botey.—p. 267.

*Sympathetic Anesthesia for Surgery of Stomach. V. Carulla Riera.—p. 272.

Technic for Removal of Nasopharyngeal Fibromas.—Botey explains that ordinary forceps do not grasp the fibroma firmly enough to allow complete torsion, and has devised a forceps for the purpose. The blades are broad, and the outer ends twist independently of the blades proper. The fibroma can thus be drawn out through the mouth, the patient in the Rose position. When access by this route is impossible, he prefers what he calls the transmaxillonasal mode of access.

Regional Anesthesia for Operations on the Stomach.—Carulla has become firmly convinced of the advantages of splanchnic anesthesia as he has applied it in thirty cases. The operations included some of an hour or more up to an hour and forty minutes. He followed Naegeli's technic, introducing the needle along the anterior margin of the first lumbar vertebra. There were no mishaps of any kind, but he warns that the abdominal wall has to be anesthetized separately, the anesthesia of the sympathetic not extending to include the muscular wall.

Semana Médica, Buenos Aires

June 2, 1921, 28, No. 22

*Chlorids in Pathogenesis of Eclampsia. R. Mestre.—p. 629.

Febrile States. J. P. Garrahan.—p. 636.

Addiction to Opium. J. A. Domínguez.—p. 646.

Chenopodium in Treatment of Hookworm. T. Padilla.—p. 653.

Rôle of Chlorids in Pathogenesis of Eclampsia.—Mestre cites data which seem to demonstrate that the nervous system is a point of lesser resistance during a pregnancy, and that retention of chlorids is frequent, and that the chlorids retained are liable to induce symptoms like those caused by retention of urea. Widai and Lemierre induced convulsions in a nephritic given considerable salt, and cured them by forbidding all salt. The diastolic blood pressure has always been found high in eclampsia, testifying to obstruction of the kidney filter. This hypertension is responsible for the headache, hemorrhages, etc., in eclampsia. Recent research has demonstrated that retention of chlorids as well as of urea is liable to send up the blood pressure, but when this is due to retention of chlorids, dropping salt from the diet sends the pressure down again. For these and other reasons, Mestre argues that retention of chlorids is the basis on which eclampsia develops. Kidney functioning is hampered by the enlarging uterus, and it mechanically impedes the circulation in the viscera. Another circumstance which exaggerates these factors is the erect position. One reason, he explains, why gravid animals do not have eclampsia is because their kidneys and other viscera lie in a horizontal plane. Treatment of eclampsia should aim to eliminate the chlorids and toxins generally, and improve mechanical conditions in the abdomen to promote the circulation and the functioning of the kidneys, and the intake of chlorids should be reduced.

Grèce Médicale, Athens

April, 1921, 23, No. 4

*Siraud Technic for Femoral Herniotomy. T. Asteriadès.—p. 37.

*Symptoms of Sympatheticotonia. Papastratigakis.—p. 41.

Cerebellar Complications of Malaria. Idem.—p. 41.

Radical Cure of Femoral Hernia.—Siraud sutures the pectineus muscle to Poupart's ligament, taking long U stitches of stout catgut. The stitches embrace nearly the whole of the muscle, and draw it up behind the ligament while the reverse stitches draw the ligament down over the muscle. Aponeurosis is sutured over this, and the femoral ring is thus solidly closed without cutting or tearing any tissues.

Sympatheticotonia.—Papastratigakis protests against some recent publications which have stated that pilocarpin exerts a tonic action on the pneumogastric, and the sweating crises do not form part of the actual sympatheticotonic set of symptoms. He explains that the bradycardia after injection of pilocarpin is not due to a tonic action on the pneumogastric but merely to an upset of the balance between the sympathetic and the pneumogastric, leaving the latter predominantly in control.

Deutsche Zeitschrift für Chirurgie, Leipzig

June, 1921, 164, No. 1-3

*Osteomalacia and Fibrous Osteitis. H. Naumann.—p. 1.

*Spontaneous Hemorrhage in Bed of Kidney. A. Sohn.—p. 48.

*Consequences of Ligation of Artery. Wieting.—p. 93.

*Syphilitic Disease of the Stomach. R. Sparman.—p. 136.

*Glandular Tuberculosis. W. Drügg.—p. 165.

*Injury of Liver from Anesthetization. Balkhausen.—p. 190.

*Operation on Nose Without Incising Skin. J. F. S. Esser.—p. 211.

Spastic Ileus. A. Sohn.—p. 218.

Osteomalacia and Fibrous Osteitis.—Three cases are described with minute detail and the views of different clinicians compared as to the origin of nonpuerperal osteomalacia. In one typical case there seemed to be a combination of deforming fibrous osteitis with the osteomalacia, all the bones showing this pathologic transformation. The primary factor may have been early rachitis, nutritional disturbances or psychopathic taint, but mechanical and traumatic factors evidently cooperated.

Spontaneous Hemorrhage in Bed of Kidney.—Sohn reviews the history of circumrenal hematomas from Raye's case in 1839 to date. Tuberculosis and cancer have been responsible for the hemorrhage in some cases; in others the bursting of an aneurysm or hemophilic bleeding into a muscle, but in others no cause for the hemorrhage could be discovered, the

bleeding occurring inside and rupturing the capsule. He reports a case of this kind in a woman of 64. Låwen's two cases were in men of 18 and 49. Arteriosclerosis was evidently the cause of the rupture of the vessel; the woman died soon after from cerebral hemorrhage. The operation in all these cases had been on a mistaken diagnosis. Sudden intense pain in the kidney region is the first symptom, then signs of severe internal hemorrhage, and bulging in the retroperitoneal region. In the personal case described the intense pain was the only symptom. It was as sudden, he says, as a stroke of lightning, but in some of the cases published by others there had been preceding slight attacks of pain a few hours or months beforehand. Sometimes the pain spreads to the hip, back or inguinal region, and in two cases the pain occurred in the shoulder. The pain may even begin in the umbilicus or inguinal region or in the hip joint, or left lower abdomen. The sudden onset is more instructive than the site of the pain. Reflex vomiting is common, and in two cases paralysis of the bowel induced fecaloid vomiting. The operation generally has been done on the diagnosis of ileus. In one case on record blood was passed in the stool, but the urine in nearly all the cases seemed normal, free from blood. Treatment can be only surgical, and should be as early as possible. One case is described in a woman of 54 in which the perirenal hematoma had been spontaneously absorbed several weeks before the woman's death from other causes. Necropsy showed that the thickened fibrous capsule had acted like an effectual tampon. The intercapsular hemorrhage had been very small in this case, probably not over 100 c.c. and, in addition to arteriosclerosis and contracted kidney, there was a tendency to hydronephrosis. Twenty-three articles on the subject are compared.

Consequences of Ligation of an Artery.—Wieting refers to the common carotid in particular, and emphasizes that the consequences of ligation must be considered both at the point of the ligation and in the terminals of the artery. The details of ten cases in wounded soldiers are given. In three other cases he ligated the carotid loosely in an attempt to relieve epilepsy, but without effect, and also without harm. A simple ligature is better than complicated procedures if the vessel cannot be sutured. It is not the ligation so much as infection that renders the results grave. Experience shows that it is better to ligate a few cubic centimeters from the bifurcation. The danger from ligation of the carotid is magnified if there is anemia, or if the blood is of poor quality or infected, or the patient advanced in years, or the heart too weak to pump the blood effectually. A tendency to spastic contraction of the blood vessels is another factor that militates against success. In the eight cases described there were no symptoms from the brain in four, and transient symptoms in one. The conditions in the other cases were too grave for recuperation.

Syphilitic Disease of the Stomach.—Sparman remarks on the comparative frequency of cases in which supposed malignant disease of the digestive tract is said to have retrogressed under iodid or arsenic treatment, thus correcting the diagnosis to syphilis. The syphilitic disease has no characteristic features unless possibly nocturnal exacerbations, but syphilitic ulceration is frequently multiple. Fränkel has reported a case with 13 ulcers in the stomach and Bittner one with 7 in the anterior wall, while 31, 34 and 54 ulcers, developing from gummas, have been found in the small intestine. These syphilitic ulcers are usually large, and gastric secretion is generally more or less reduced. The specific treatment usually has to be supplemented by operative measures. In a case described in a woman of 31, there had been symptoms of a gastric ulcer for nine months, rebellious to the usual ulcer treatment. After blocking the splanchnic nerves, the stomach was resected by the Billroth II method, but the patient died the third day. Necropsy revealed numerous small ulcers in the entire duodenum.

Glandular Tuberculosis.—In Drügg's seventy-five cases of glandular tuberculosis, glands in the axilla were affected only twice and in the inguinal region and elbow only once. Before the war, surgical tuberculosis formed only 4.3 per cent. of the total, but during and since the war the proportion has increased to 12.4 per cent. which he theorizes to explain. He reiterates that glandular tuberculosis requires general treat-

ment for the whole body the same as tuberculosis in any organ. It is even more necessary, he adds, as we have to stimulate the body to insure the resorption of the pathologic tissues.

Injury of the Liver During General Anesthesia.—Balkhausen calls attention to the resemblance between the symptoms sometimes observed after chloroform or ether anesthesia and the symptoms with acute yellow atrophy of the liver and of phosphorus poisoning. There is usually an interval of twenty-four hours before the symptoms develop. When the injury of the liver is reparable, the jaundice, somnolency, diarrhea, etc., may subside in time. The very slightest form of the injury is manifested merely by bile pigments in the urine. Conditions of debility, infection, repeated anesthetics and the congenital weakness of the liver in women are contributing factors.

Plastic Operations on the Nose Without Incising the Skin.—Esser's fifty-two photographs show the correction of disfigurement and deformity of the nose by a plastic operation through the roof of the fornix in front of the gum, turning back the nose along with the upper lip and part of the mobilized cheeks. A dentist's cast is then made embracing the cavities in cheeks and nose, working through the mouth. This cast is then covered with Thiersch flaps from the thigh and it is then pushed into the cavities and sutures taken to hold it. The flaps heal in place in about a week and the cast is removed, leaving the raw surfaces covered with skin. The cavities are then packed with gauze until the Thiersch skin is less sensitive. Then a definitive prosthesis can be used or a bone framework provided for the nose. This method is proving particularly successful for a sunken-in saddle nose, but syphilis, lupus and war wound cases are also amenable to it.

Mitt. a. d. Grenzgeb. d. Med. u. Chir., Jena

1921, 33, No. 4

*Tuberculosis of the Thyroid. K. Nather.—p. 375.

*Surgical Tuberculosis. L. Schönbauer.—p. 405.

*Surgical Complications of Influenza. Wildegans.—p. 429.

*Hemorrhagic Purulent Colitis. P. J. de B. P. van Amstel.—p. 448.

*Water Test of Gastric Ulcer and Cancer. Gundermann and G. Düttmann.—p. 480.

*Cytology of Duodenal Tube Findings. I. Rothman-Manheim.—p. 497.

*Exophthalmic Goiter. E. O. Schmidt.—p. 512.

Tuberculosis of the Thyroid.—Nather's review of what has been published on this subject and his own research and five clinical cases compel the acceptance of three forms of tuberculous bacillema, the typhobacillosis type, acute miliary tuberculosis, and tubercle bacillus septicemia. The blood-borne form of tuberculous disease of the thyroid either forms part of acute miliary tuberculosis, or is a sign that there has been tuberculous septicemia at some time. The septicemia may have run its course without symptoms, and the infection may have been so mild that the changes in the tissues healed spontaneously. If the interval before removal of the goiters in his five cases had been a little longer, there might not have been a trace of any lesions when the thyroid was examined under the microscope. Guinea-pigs injected in the peritoneum with colloid or extracts from the goiter, mixed with a scrap of tissue, developed fatal tuberculosis the same as the controls without the addition of the goiter colloid or juice. This testified to the lack of any protecting influence from the thyroid.

Conservative Treatment of Surgical Tuberculosis.—Schönbauer has been applying the mercury quartz lamp in 1,000 cases of bone, joint and glandular tuberculosis at Vienna. In 42.1 per cent. of the cases of superficial processes and in 52.8 per cent. of the glandular processes, a cure was realized. The advantage of this form of radiotherapy, he states, is that it is harmless and can be applied by any practitioner. Tuberculous processes in joints were cured or much improved, with satisfactory function. Tuberculous processes in the hands, feet and ribs were amenable to this artificial heliotherapy, and it materially hastened the cure. Hip joint and vertebral processes and those in the feet cannot be given out-treatment, as they require institutional care and proper dietetic and climatic treatment. He adds that the Swedish Red Cross has organized a sanatorium in Switzerland for children with surgical tuberculosis, but the children cured therein are exposed to new dangers of infection when they return home.

where other members of the family may be scattering infection.

Surgical Complications of Influenza.—Wildegans relates that pleural empyema developed in 101 cases of the influenza cases in Eiselsberg's service, but the findings a year or two later in the forty-one cases reexamined are surprisingly good. The earning capacity is unimpaired in all but two.

Hemorrhagic Ulcerative Colitis.—Van Amstal says that the blood, mucus, pus and scraps of tissue in the stools easily differentiate purulent hemorrhagic colitis. It is liable to be mistaken for chronic dysentery. In Mummery's and Pitt's cases the colitis was the work of the pneumococcus. The reports of treatment of the colitis by various measures are compared. They demonstrate that surgical treatment is rarely needed, a cure being generally realized under persevering treatment by repose, dieting and charcoal or its equivalent. High injections through the rectum generally allow local medication without the necessity for an artificial opening above. Rectoscopy is indispensable to exclude cancer of the sigmoid and below, notwithstanding that some warn against it as liable to induce perforation from the "stretching" by the instrument. He cited five fatalities from this cause in different clinics. There was no history of dysentery in van Amstal's cases. The colitis seems to be an independent infectious disease sui generis. He applied an autovaccine with good results in several cases, and a polyvalent vaccine in one.

Elimination of Water as Test for Ulcer and Cancer.—Gundermann has found that the elimination of water and of salt proceeds so differently with gastric ulcer, cancer and gallstones that it aids in differentiating these conditions. With gastric ulcer, ingestion of 1,500 gm. of water, fasting and no further fluids during the day, is followed by ample output of salt, while only a small proportion of the water is voided. With cancer, only a small proportion of the salt is eliminated; water is voided freely for a short time and then there is retention. Chronic gallbladder disease does not seem to influence the test elimination of water and salt. With empyema of the gallbladder, water is eliminated freely but not the salt. Elimination of both water and salt is reduced with jaundice and obstruction of the bile ducts. His conclusions are based on seven gastric ulcer and four gastric cancer cases, all in good salt balance to start with, and he reviews a further group of duodenal and other ulcers on which his conclusions are not decisive as yet.

Cytology of Duodenal Tube Findings.—In Rothman-Manheim's tests the bile contained very few cells in the healthy, even after provocative injection of 30 c.c. of a 5 per cent. solution of peptone into the duodenum. With the clinical diagnosis of cholecystitis or cholangitis, the bile contained numerous leukocytes. The bile from the gallbladder can be separated from other bile by the peptone test. This reveals also obstruction in the common bile duct. With catarrhal conditions, epithelial cells are numerous.

Exophthalmic Goiter.—Schmidt rejects the seven current theories in vogue as to the etiology of exophthalmic goiter, and declares that the evidence to date seems to indicate that the thyroid secretion becomes changed in some way which increases its power of dispersion. Owing to this extreme dispersion, the follicles are damaged, and regenerative proliferation of epithelium follows. The microscope and chemical tests for colloids confirm the essential difference between exophthalmic goiter and simple hyperthyroidism. Operative reduction of the thyroid reduces the secretion to correspond, and the hampered circulation may modify the dispersion property. The operation, however, is liable to flood the blood temporarily with this substance from the thyroid, but under the modifications induced by the operation it may become more of a gel. In hyperthyroidism, the thyroid secretion is an unfinished product, but it exerts a toxic action. In exophthalmic goiter, on the other hand, the secretion is an overdeveloped, overripe substance. The findings with the colloid chemical tests are tabulated from a large number of cases, especially the different characteristic responses to treatment of the blood serum with potassium iodid and silver nitrite, followed by a hydrochinon photographic developer. Also the diverse behavior of the freezing point in hyperthyroidism and in exophthalmic goiter.

Münchener medizinische Wochenschrift, Munich

June 30, 1921, 68, No. 26

- The Skin in Relation to Constitution. H. v. Hoesslin.—p. 797.
Value of Therapeutic Methods in Syphilis. Spiethoff.—p. 801.
Gonorrheal Tumors of the Adnexa. L. Zill.—p. 803.
Intestinal Obstruction from Retroperitoneal Hematomas. Kaiser.—p. 805.
Hemoglobinuric Relapses in Retrogressive, Acute, Hemorrhagic Glomerulonephritis. A. Bittorf.—p. 807.
Speed of Sedimentation of Red Corpuscles in Infancy; Especially in Congenital Syphilis. P. György.—p. 808.
Blood and Metabolism Tests under Radium. J. Hauenstein.—p. 809.
Roentgenotherapy in Carcinoma of Mouth. W. Baensch.—p. 810.
Early Diagnosis of Spondylitis. R. Schwank.—p. 810.
Treatment of Rachitic Kyphosis. L. Aubry.—p. 811.
Luminal for Nocturnal Emissions. J. Donath.—p. 812.
Secondary Infection with Diphtheria Bacilli in Condylomas in Children with Hereditary Syphilis. W. Hedrich.—p. 813.
Influenza with Hemorrhagic Pleural Effusion. Krayn.—p. 814.
Edema in Infancy. K. Ochsenius.—p. 815.
Percussion Phenomena as Supported by Auscultation. Wiener.—p. 815.
Treatment of Malaria. B. Nocht.—p. 816.

Therapeutische Halbmonatshefte, Berlin

May 1, 1921, 35, No. 9

- Treatment of Lupus in General Practice. Engwer.—p. 257.
Functional Treatment of Bone Fractures. G. Magnus.—p. 264.
Protein Therapy in General Practice. P. Kaznelson.—p. 266.

Wiener klinische Wochenschrift, Vienna

June 30, 1921, 34, No. 26

- *Treatment of Carcinoma of the Uterus. L. Adler.—p. 312.
Surgical Treatment of Destructive Lung Affections. Denk.—p. 313.
Calcium Metabolism and Internal Secretions. Bauer.—p. 314.
*Roentgen Irradiation of Pointed Condylomas. R. O. Stein.—p. 315.
Pemphigoid Skin Eruption in Lymphatic Leukemia. Sachs.—p. 317.

Treatment of Carcinoma of the Uterus.—Adler states that, for the present, every operable carcinoma should be operated on. In view of the fact that the lasting results of both methods are much the same, the question as to whether laparotomy should be performed or whether the vaginal route should be chosen depends in the main on the personal technic of the operator, unless a contraindication to one or the other method exists. Personally, Adler prefers the extended vaginal operation as being less dangerous and yielding equally as good results. Every carcinoma that is operated on should receive prophylactic after-treatment with radium and roentgen rays. He regards the plan of introducing radium immediately after the operation as a promising feature of modern treatment.

Roentgen Irradiation of Pointed Condylomas.—Stein reports the results of roentgen irradiation in fourteen cases of condylomata acuminata. In six cases a complete cure was effected; marked improvement in five; two patients were not benefited materially, and one received only the initial treatment. The rapidly growing, moist tumor-like warts, resembling cauliflower and with broad base, the surgical removal of which from the external genital organs has often proved difficult on account of severe hemorrhage and extensive post-operative scar formation, were found to react promptly to roentgen irradiation. On the other hand, small pointed warts, whether single or in groups, were rather resistant to roentgen rays, and their surgical removal is to be preferred.

Zentralblatt für Chirurgie, Leipzig

July 2, 1921, 48, No. 26

- *"Surgery of the Stomach." E. Schwarz.—p. 926.
Modified Type of Wire Frame Splint for Leg. Münstermann.—p. 931.
Spring Paper-Clasp in Place of Arterial Clamp. Hofmann.—p. 933.

"Surgery of the Stomach."—This is a critical comment on O. Orth's article with this title in the *Deutsche Zeitschrift für klinische Chirurgie*, 161, No. 1-2.

Zentralblatt für innere Medizin, Leipzig

July 2, 1921, 42, No. 26

- Arneth's Qualitative Blood Theory. E. Becher.—p. 521

Finska Läkaresällskapets Handlingar, Helsingfors

May-June, 1921, 63, No. 5-6

- *Syphilis of the Central Nervous System. J. Hagelstam.—p. 223.
*Visceral Syphilis. H. C. Jacobæus.—p. 241.
*Tertiary Syphilis of the Liver. T. W. Tallqvist.—p. 261.
*Action of Gymnastic Exercises on Metabolism. D. Rancken.—p. 277.

Syphilis of the Central Nervous System.—Hagelstam compares the various theories in regard to the pathogenesis, etc., of neurosyphilis, his article being one of the principal addresses at the recent Scandinavian Internal Medicine Congress mentioned in the Helsingfors Letter, p. 750. He comments on the frequent intensity of the meningeal reaction to the syphilis; in one of his cases a man of 22, previously healthy, had had a urethral discharge for two months. During the last three weeks there had been severe headache, most intense in the night and toward morning, with dizziness when he tried to sit up, and he vomited everything he ate. The neck was not stiff and the reflexes were normal. Numerous small hard glands could be palpated in the groin and back of the neck. The Wassermann test was negative but lymphocytes were numerous in the lumbar puncture fluid which was under high pressure. No benefit was derived from antipyrin or caffeine but all the symptoms subsided under potassium iodid. He was given later a course of inunctions and has had no return of symptoms during the seven years to date. Syphilitic meningitis generally runs an afebrile course, but one young woman developed meningitic symptoms and a remittent fever under mercurial treatment, both persisting in spite of energetic mercurial treatment until a change to arsphenamin finally brought about a cure. Hagelstam has not been able to find but one other case on record in which meningeal symptoms developed in the course of mercurial treatment, and in a recent trip to Germany could not learn of any instance of recurring neurosyphilis in connection with mercurial treatment. This makes it the more remarkable that in his own 121 cases of cerebral and cerebrospinal syphilis, since 1913, in twenty-six the first symptoms of it had developed during or at most within six weeks after the close of the course of specific mercurial treatment, sometimes plus one or two injections of neo-arsphenamin. He says that the alleged nonexistence of tabes and general paresis in Turkey has been disproved by Fleischmann's experience during two and a half years there during the war. War conditions modified the customs so that the foreign physicians were not kept at such a distance. Previously it had been considered a religious duty to keep the mentally sick away from the infidel physicians. A Japanese reported at the recent neurology congress at Paris a somewhat similar experience. Hagelstam quoted Catsaras to the effect that a congenital or acquired nervous predisposition can be detected in every instance of the neurotropic manifestations of syphilis. Stern has reported that 50 per cent. of all his patients with tabes or general paresis were of the asthenia universalis type, and a further 35 per cent. showed abnormal thyroid functioning. General paresis seemed to affect preferably the thyroid insufficiency cases.

Visceral Syphilis.—Jacobæus discussed the differential diagnosis and the clinical picture of syphilitic disease of the different internal organs. He said of the lungs that this is the most uncertain field of research in syphilis; even the absence of tubercle bacilli from the sputum and benefit from specific treatment for syphilis are not decisive. In one of his own cases a man with a history of syphilitic infection twenty years before had a febrile pulmonary affection with localization in the upper half of one lung and in the apex in the other; no reaction to the Wassermann test; no tubercle bacilli in the sputum. Chronic pneumonia was assumed by the consultants, but under tentative treatment for syphilis the whole subsided in a month or two. In a second similar case but without known syphilis in the antecedents, although the luetin reaction was positive, Wassermann negative, treatment as for syphilis was followed by slight improvement but only at first. Necropsy a few years later disclosed conditions which might be assumed to testify to syphilis but there were also processes containing tubercle bacilli. There may have been a combination of both diseases. He cites a case in which a supposed tuberculous cavity in the upper lobe was treated by artificial pneumothorax. It induced some improvement, but treatment as for syphilis was tried and the lesion promptly healed; he explains the case as originally a gumma which broke down into a cavity.

Syphilitic Disease of the Liver.—Tallqvist relates that syphilitic disease of the liver was found in one female and in 7 male adult cadavers among the 2,117 inspected during

the ten years ending with 1919, a proportion of 0.38 per cent. In a practice registering 24,433 patients in twenty-five years there were 16 men and 12 women with tertiary syphilitic disease of the liver. They formed 0.88 per cent. of his total syphilitic patients, and in his private practice, with 11,000 patients, 0.06 per cent. Between infection and the first symptoms the interval ranged from three to thirty-two years, with an average of eighteen. The ages ranged from 23 to 67, and in the youngest patient the syphilis was inherited. In 3 cases husband and wife were affected. Neurosyphilis practically never accompanied the syphilitic hepatitis. Loss of strength, of weight and of appetite, and dyspepsia without secretory or motor derangement of the stomach were common, and the liver was enlarged in 75 per cent. of the cases. There was spontaneous pain in 50 per cent., simulating gallstone attacks in a few patients. Tenderness on deep pressure is instructive but less common. The spleen was enlarged in 31.4 per cent. and a still larger proportion was found at necropsies. There was irregular fever in 50 per cent. In one case this fever was the first and only symptom for a time in the previously apparently healthy woman. The peak was towards evening, with sweats. After futile treatment on the presumptive diagnosis of influenza, typhoid and malaria for two and a half months, miliary tuberculosis was assumed, from the lack of subjective and objective findings in any organ, until the Wassermann reaction gave the clue. The third day after potassium iodid had been given the fever disappeared.

Influence of Exercise on Metabolism.—Rancken's research was done on a physician of 45, the gaseous interchanges and other metabolic findings being recorded before, during and after series of gymnastic exercises according to special systems, marches, dancing, and during repose. His conclusion is that the influence on the metabolism of gymnastic exercises has been overestimated and the participation of other factors underestimated.

Hospitalstidende, Copenhagen

June 29, 1921, 64, No. 26

Superiority of Alcoholic Solutions of Silver Salt in Treatment of Gonorrheal Urethritis in Men. H. Haxthausen.—p. 401. Conc'n. Pathogenesis of Paralysis Agitans. V. Christiansen.—p. 406.

July 6, 1921, 64, No. 27

*Defective Vision in Schoolchildren. E. Holm.—p. 417.

*Sigmoid-Bladder Fistula. S. V. Bagger.—p. 424. Conc'n No. 28, p. 433.

Schoolchildren with Defective Vision.—Berlin, Strasbourg and Mülhausen have special schools for children whose vision is 5/24 or below in their best eye after correction. Holm reports the results of an inquiry among the schoolchildren of Copenhagen to find whether the number with defective vision justified arrangements for a special school of the kind. Only 0.032 per cent. were found, while the proportion in Berlin is 0.048 and nearly a fifth have extreme myopia. No child was found with defective vision from this cause in Copenhagen.

Fistula Between Bladder and Sigmoid Flexure.—Bagger discovered a fistula of this kind in two cases, evidently the result of chronic sigmoiditis. Air and feces in the urine and urine in the stools occur at times, and the irritation sets up cystitis, urethritis and possibly pyelonephritis, with pains at micturition and frequent desires, etc. Spontaneous recovery is known in a few instances and in one case the fistula healed under conservative measures, tonics, dieting, posture, enemas, lavage of bladder, etc., but the general advice is to operate and as early as possible to ward off further complications.

Ugeskrift for Læger, Copenhagen

June 30, 1921, 83, No. 26

*Clinical Research on the Capillaries. II. K. Secher.—p. 863.

July 7, 1921, 83, No. 27

Butter-Flour Soup in Infant Feeding. V. Poulsen.—p. 891.

*The Pressure in the Capillaries. III. K. Secher.—p. 899.

Influenza Statistics. A. Arnold-Larsen.—p. 903.

Research on the Capillaries.—In this second article, Secher describes the aspect of the capillaries under various conditions of the circulation, etc., giving illustrations of the capillariscope findings. In the third article he reports research on the pressure in the capillaries.

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MULTIPLE RENAL CALCULI, UNILATERAL AND BILATERAL

SOME OBSERVATIONS*

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BALTIMORE

It is generally admitted that a single calculus, either in the ureter or in the kidney, which is of sufficient size to render impossible its spontaneous expulsion, should be removed by operative procedure unless there is some definite contraindication.

It would be inadvisable to attempt the removal of a calculus in a patient suffering from active pulmonary tuberculosis or advanced chronic nephritis unless some urgent complication demanded relief. In most cases of bilateral single stone, a careful study of the case will enable one to arrive at very definite conclusions regarding the line of procedure best adapted to cure the patient and secure the best functional result, both immediate and ultimate. Most urologists are agreed that in cases of bilateral renal calculus the stone should be removed from the better kidney first, except in cases wherein urgent symptoms demand immediate intervention on the other side. This view, however, cannot be followed too literally. This opinion holds true only when one kidney is almost completely destroyed and the other has a fair or good function. While in many cases the function will be the guide as to which side shall first be operated on, the position of the stone and the degree of obstruction which it is producing will be the determining factors. As an example, when on one side a stone is free in the pelvis and is causing intermittent blocking, or when a stone is impacted at the ureteropelvic junction with marked impairment of function, and on the other side a calculus which may lie in the renal tissue at a point where it is not causing destruction of renal function, the indications are clean cut to remove first the stone which is causing the rapid destruction of the kidney. In cases with an impacted ureteral calculus on one side, especially if associated with infection and a renal calculus on the other, the ureteral calculus should be removed first, provided only one side is to be operated on at the time. It has been our experience that with the reduced resistance of the patient to infections following a major operative procedure, a low grade

chronic infection in the presence of obstruction may develop rapidly into an acute pyonephrosis requiring immediate operation. The possibility of this complication arising in any given case should be given due consideration in the selection of the side to be first operated on.

The special problem which we desire to discuss in this paper is that presented by cases of multiple renal calculi and the so-called coral or staghorn calculi, either unilateral or bilateral. When there are present multiple stones scattered throughout the kidney substance, and when, to attain any possibility of total removal, a complete nephrectomy would be necessary, it has been our experience that such a kidney should be left undisturbed. If the symptoms are such, either because of infection or pain that relief is necessitated, a nephrectomy should be done, provided, of course, the condition of the opposite kidney does not contraindicate this procedure. Complete nephrotomy is an operation attended with grave risk because of the danger of secondary hemorrhage, which may occur as late as the third week, as it did in one of our cases. In this case the nephrotomy was closed with two layers of chromic catgut by which the hemorrhage was completely controlled. On the twenty-first day following operation the patient suffered a sudden and almost fatal hemorrhage. Because of the necessity of suturing the kidney to control hemorrhage, extensive destruction of renal tissue occurs and a functional impairment results which might not be produced by the renal calculi in a long period of time. If the nephrotomy is done in the presence of infection, it will result in even greater damage to renal tissue; for to the destruction resulting from the mattress suturing is added that of impaired drainage of infection in the areas included in the suture. The probability of incomplete removal of multiple calculi, particularly in those cases having many small stones, adds to the difficulty of securing a good functional result with this operative procedure in this type of case. Finally, persistent urinary fistula is a not uncommon sequela and probably results from the subsequent dislodgment of small calculi overlooked at operation which result in obstruction requiring another operation for its correction.

We would not be understood as advising against operation for the removal of multiple stones in all cases. There are certain cases in which the stones are of a size and occupy a position which renders feasible their removal through a pyelotomy, through several small nephrotomy incisions or a combination of the two. Careful preliminary consideration of the number, size and position of the calculi, their relations to the pelvis and calices, and the presence or absence

* From the Brady Urological Institute, Johns Hopkins Hospital.

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

of an extrarenal pelvis, will usually enable one to determine the feasibility of removal by a conservative procedure. In a recent case in which there were five calculi in four distinct portions of the kidney, it was possible, by means of pyelography, to show their presence in the dilated ends of the calices. There was also present a somewhat dilated extrarenal pelvis. The pyelography was followed by a slight renal colic which resulted in the dislodgment of two of the smallest stones into the renal pelvis. This suggested the possibility of dislodging the remaining calculi by producing mild renal colic, which was attained by overdistending the pelvis. The three remaining calculi were expelled into the renal pelvis after two dilatations. They were then removed through a simple pyelotomy incision, the roentgen ray at the present time showing an absence of calculi. The urine, which was previously infected, is now sterile.

Occasionally in cases of multiple calculi in which under ordinary circumstances operation would be inadvisable, a calculus may be dislodged into the pelvis or ureter, resulting either in great discomfort or in a serious destruction of the kidney. Under such conditions the obstructing calculus should be removed and no attempt made to remove the multiple calculi in the kidney substance. This should hold true particularly if the other kidney has a low functional value.

Case 1 is illustrative of this situation:

CASE 1.—A man, aged 45, seen in April, 1916, gave a history of a pyuria for a period of six years. The year previous a large irregular calculus was removed from the left kidney. The right kidney had a bacillary infection and a phenolsulphonophthalein excretion of 25 per cent. in one-half hour. The left kidney had a coccus infection and a phenolsulphonophthalein excretion of only a trace in one-half hour. Roentgen-ray examination revealed three stones 0.5 by 1.5 cm. in diameter scattered throughout the lower half of the right kidney. No operation was advised at this time. Eight months later the patient had a severe right sided renal colic. Examination following this revealed a stone in the upper ureter but no change in the position of the three shadows in the kidney substance. The stone in the ureter was removed, and no attempt made to locate the three calculi in the kidney substance. It has now been five years since this operation, and the patient has enjoyed excellent health. His total phenolsulphonophthalein excretion is 40 per cent. for one hour, this being his output for one hour when first seen. Roentgen-ray examination at the present time shows the renal shadows in about the same position without any increase in size.

There is another group of cases in which the kidney is literally filled with calculi, frequently of considerable size. In the majority of these cases the kidney will be found to be a mere shell with an extremely low function. If the condition just cited is unilateral and the opposite kidney of good functional value, a nephrectomy is usually indicated. When, however, the renal lesion is bilateral, as not infrequently occurs in this type of case, experience has shown that removal of these calculi, through a nephrotomy, has not led to any appreciable improvement in function, as the destruction is of such extent as to render impossible any regeneration. When a pyonephrosis supervenes, usually the result of a stone getting into such a position that it seriously interferes with drainage of the kidney, surgical interference is justified even in extreme cases. The procedure employed in such cases will vary with the position of the stone causing the obstruction. If this lies in the ureter, one might pos-

sibly be content with the removal of this stone alone, the stones in the kidney being left undisturbed. If, however, it is necessary to open the kidney, which is usually thin walled, a rapid and complete removal of all the stones can usually be carried out quite effectively. When the acute infection has rendered the kidney practically functionless, it is surprising how frequently the establishment of drainage is followed by a marked improvement in function.

Cases 2 and 3 are cited to show the marked improvement following the establishment of drainage:

CASE 2.—A man, aged 53, seen in October, 1919, had had two attacks of left renal colic some years before, during each of which a stone was passed. Roentgen-ray examination disclosed the right kidney filled with large calculi, filling the calices and pelvis. Another larger stone was present in the lower end of the right ureter. In the left kidney there were seen five small calculi scattered throughout the kidney. Ureteral catheterization revealed pus and cocci in the urine from each kidney, and a phenolsulphonophthalein excretion from the right side of 20 per cent. in one-half hour, and from the left side 4 per cent. was excreted in the same period of time. It was thought advisable to remove only the stone in the lower end of the right ureter. This was followed by marked improvement in the patient's general condition and comfort. There was also a considerable improvement in the renal function. Examination in May, 1921, revealed an excretion of phenolsulphonophthalein of 35 per cent. for the first hour and 15 per cent. for the second. This patient depends for his renal function on the right kidney, which is filled with calculi, the function from the left side being negligible.

CASE 3.—A man, aged 50, seen in December, 1914, had a recent increase in pyuria, some loss in weight, and an impairment in general health. There was no history of pain in the region of either kidney. Roentgen-ray examination disclosed several large irregular calculi and numerous smaller ones in each kidney. Ureteral catheterization revealed thick pus from the left kidney, with an excretion of a trace of phenolsulphonophthalein for one-half hour. The urine from the right kidney was turbid, containing pus, bacilli and cocci, and the phenolsulphonophthalein output for one-half hour was 11 per cent. The right kidney was explored and found to be greatly enlarged and with a thin cortex. A long incision was made through the renal cortex, and all of the calculi were steadily removed from dilated calices, the partitions between the calices being divided. The kidney was not sutured, but the bleeding was controlled by packing and a large tube was carried down into the pelvis. There was a rapid improvement in the patient's condition, and the blood urea dropped from 0.822 gm. per liter to 0.523 gm. One month later when the operative wound was almost healed, the patient suddenly developed fever with increasing blood urea. Ureteral catheterization obtained clear urine from the left kidney with a phenolsulphonophthalein excretion of 8 per cent. in one-half hour, while from the right kidney only thick pus appeared. The right kidney was explored, and the findings were similar to that previously noted on the left side. The same procedure was carried out as had formerly been employed on the left. The patient had a stormy convalescence, but eventually he recovered. Four months after the operation the patient's weight was normal and his general condition excellent. He had a total phenolsulphonophthalein excretion of 22 per cent. for one hour. He remained in fairly good health for almost four years, when he gradually became uremic and died.

This case illustrates very well the value of operating in this type of case when an acute pyonephrosis develops, and the possibility of prolonging life by relieving the pyonephrosis. It is advisable in these cases to control hemorrhage if possible by packing around a large tube rather than to use sutures, as a better functional value will be maintained. In order to pack successfully in such cases, the nephrotomy

incision should not extend from pole to pole, as usually all of the calculi can be removed through a large incision in the midportion of the kidney.

STAGHORN, OR BRANCHING CALCULI

The treatment of staghorn, or branching calculi deserves special consideration. The calculus to which we refer is one which fills the pelvis and calices, the roentgenogram resembling very closely a pyelogram. They are practically never the cause of renal colic and seldom give rise to more than slight uneasiness or discomfort in the kidney region, and their existence is frequently an accidental discovery. It has been our experience that the function of these kidneys is usually surprisingly good even in the presence of infection. We have observed one case during a period of eight years with this type of calculus associated with a mild infection. The function of this kidney when first seen, as determined by phenolsulphonephthalein, was only slightly impaired and remains the same today. This type of stone is only exceptionally the cause of obstruction resulting in hydronephrosis or pyonephrosis. When these complications do occur, they will usually be found to be the result of downward extension of the stone into the ureter.

The removal of these calculi always necessitates a complete nephrotomy, and the renal impairment resulting will usually be greater than would be produced by the stone over a period of years. Furthermore, in the removal of the calculus, small or even fair sized fragments may be overlooked, which, if they do not result in the production of a permanent urinary fistula, will certainly lead to the reformation of calculus. These kidneys should rarely be operated on, and when operation is necessary, nephrectomy should usually be done.

CONCLUSIONS

In deciding on operation in any given case, one is influenced by factors of immediate or remote importance. The development of an acute pyonephrosis, a complete ureteral block or other conditions may require immediate interference. In the other cases the possibility of preventing the development of future complications which may lead to renal destruction may justify the removal of the calculi. In any case, one should carefully consider whether the removal of the calculi will cause greater renal destruction than will result from the presence of the stones. One should further consider whether the improvement in the kidney condition which will follow the removal of stones will justify the operative risk. And lastly, one should consider the feasibility of the complete removal of all the calculi. A conservative attitude in the handling of many of these cases will be found to lead to better results as far as concerns the comfort of the patient and his duration of life.

ABSTRACT OF DISCUSSION

DR. FRANCIS R. HAGNER, Washington, D. C.: The dislodgment of calculi in the pelvis by overdilatation of the pelvis facilitates the removal of these calculi without injury to the kidney stroma. I feel sure that Dr. Geraghty is right in regard to the large stones. These patients should not be operated on unless they have obstruction. Every patient should be regarded as an individual case. The use of the roentgen-ray catheter when there are stones, bilateral or

otherwise, and pyelograms are most important when the calculi are in the stroma. It is much safer to remove the stone by pyelotomy than by opening the kidney. Formerly we did not hesitate to split the kidney from pole to pole for the removal of calculi, but now we know we should save as much of the kidney structure as possible by making a small incision for removal of the calculi. I have observed two or three cases in which the kidney has been split from pole to pole. This procedure destroys at least one third of the excreting structure of the kidney. If there is a constant backing up of pus and blood into the pelvis of the kidney, the only thing to do is to remove the kidney. Sometimes these patients are in a very precarious condition. In a few cases I was afraid to remove the kidney at the primary operation. On draining the pus and blood the patients at once began to improve and when there has been a low phenolsulphonephthalein output, the function has improved. I have gone in subsequently and removed the shell containing the remains of the kidney structure. I have done this also in cases of kidney tuberculosis when drainage only was performed on account of the critical condition of the patient and followed at a later date by an intracapsular operation. I did this operation in one case about ten years ago. The patient is in very good condition.

DR. JOHN H. CUNNINGHAM, Boston: Bilateral renal stones are found much more often than we suspect them to be present. A patient has symptoms of renal calculi on one side and we often find stones on the other side. It is most important, for that reason, to pay especial attention, in the diagnosis, to the possibility of stones on both sides. We should, as a rule, operate in cases of bilateral stones on the kidney that is proved to be the best, and establish the function of that kidney to the best degree possible before attacking the other kidney. Naturally, this rule applies only to kidneys, both of which are giving symptoms. When bilateral renal stone exists, and the symptoms are unilateral, this kidney should be attacked first, and often we never touch the other kidney because no symptoms develop within it. Regarding the complication of stones in the ureters, we are apt to encounter a condition that requires bilateral operation simultaneously because of anuria. If the patient's condition permits, both stones may be removed simultaneously. On the other hand, if the patient's condition is critical, nephrotomy is the operation of choice in bilateral renal obstruction due to stone because it is more easily done. Some years ago I did some experimental work on the excretion of urine and dyes from kidneys following nephrotomy. The problem was raised by doing a nephrotomy on a patient with a single kidney which contained stone, the other kidney having been removed for stone by another surgeon. There was anuria for several hours following the operation. This suggested to me that an operation on a kidney might disturb its function for an indefinite period. In this connection we carried out a series of experiments on rabbits, doing a nephrotomy, and after the animals recovered and became normal we operated on the other kidney, draining some through the parenchyma, others through the pelvis. In every instance there was a temporary cessation of renal function. The matter of drainage proved something. Those drained by rubber tube through the parenchyma drained quicker than did those drained by gauze, and those drained through the pelvis drained quicker than did those through the parenchyma, and a rubber tube was preferable to gauze. If it is convenient at the moment to drain through the pelvis, we should do so. If we drain through the parenchyma, we should drain with a tube and not with gauze.

DR. FRANK HINMAN, San Francisco: I have a great deal of hesitancy in differing with Dr. Geraghty, but I feel that patients with bilateral stone should be operated on in almost all instances. I have had three patients who had these large staghorn stones, with a very low phenolsulphonephthalein output who have had successful operations done in two stages, and the phenolsulphonephthalein output is now normal or nearly so in all. One has been well for four years. He had had pyuria for twenty years. This persists, but it is nothing to what it was before the calculi were removed, and his renal function has recovered to nearly normal. The kidney that is infected in association with stone will continue to be

infected, and destruction will be progressive unless the stones are removed and the only stone that should not be removed is the small one that is silent, lying up in some calix unassociated with kidney infection. The amount of functional recovery renal tissue will show when given free drainage, and the demand for it by bilateral insufficiency is sometimes unbelievable. Decision for delay in operation in these bilateral stag horn stone cases should be regarded always as temporary and never as final. Preliminary nephrotomy is often indicated or necessary in order to carry these patients through operation. If the kidney is drained by nephrotomy before the large stones are removed, it has recovered function sufficient to carry the patient through the next step of the operation.

DR. WILLIAM E. STEVENS, San Francisco: I think that almost every one will agree with Dr. Geraghty that an attempt should always be made to preserve both kidneys in the presence of bilateral nephrolithiasis. An interesting case of bilateral calculous pyonephrosis came under my observation some years ago. Both kidneys showed diminished function, and the urine contained a large number of pus cells. The worst kidney was operated on first. The upper and lower lobes of this organ were mere shells, and these, together with a portion of the greatly dilated pelvis, were resected. Seven stones were removed from the pelvis at the same time. Two months later, the opposite kidney was exposed and presented the same picture. The upper and lower poles were resected, and six stones were removed from the pelvis of the kidney. Although the urine from both kidneys contains a number of pus cells, the patient suffers no discomfort and is able to follow his usual occupation, that of a barber. He was operated on nine years ago. I think that partial nephrectomy should be considered in cases of this type.

DR. EDWARD L. KEYES, JR., New York: At present I feel myself in more difficulty in coordinating successful treatment in those cases than in other cases. That is, I try harder to do it right and actually come out more often wrong. Dr. Geraghty made one statement that should go into the textbooks: that the better kidney should be operated on first. If there is not much choice between them and if obstructive conditions exist, relieve that obstruction first. That may not improve the patient's condition much, but it will help. I do not agree with Dr. Geraghty about the coraliform stones. That type of stone you do well to take out. I differ with Dr. Geraghty about one thing, with regard to pyelograms of stones that fail to come down, shaking them out of the calices. I think that one can shake them out better when operating on the kidney. One can shake them out with forceps or even with the finger or, as Dr. Caulk said yesterday, tap them out. Do not pack kidneys; put in a tube.

DR. A. J. CROWELL, Charlotte, N. C.: The pyelogram is of infinitely greater value in locating small stones in the kidney pelvis than in assisting to force the stone out of the calix into the pelvis. I want to agree with Dr. Geraghty regarding the bilateral stag horn stones. Leave them alone if painless, and the kidney is free from infection and its functional activity good. Considerable parenchyma destruction will be produced by their removal through cortical incision, and reformation is almost certain. When we can remove a stone through a pyelotomy opening without producing undue trauma, it is quite well to do so, even though they are bilateral. As to which you should remove first—we all have our ideas about that, but when there is infection and you can remove a stone through a pyelotomy opening, the stone should be removed. But if we have to go through the parenchyma it is better to leave it alone.

DR. EDWIN BEER, New York: The silent bilateral large stone filling the kidney should be left alone. Why? Because every one agrees that they reform. So, in addition to the trauma to the kidney you have the reformation of stones. I remember one case in which I had to do five operations on the remaining kidney for calculus. I do not believe any kidney with fair function should be removed. If the kidney structure is so nearly destroyed that there is no value to the kidney, it should be removed. In view of the fact that the patient has bilateral involvement, it is always safer to pre-

serve any kidney tissue possible. In the course of these stone operations, the ureter should be temporarily occluded with a band of catgut close to the pelvis so that no fragments slip down the ureter. That often happens and leads to secondary uroterolithotomy. About closing the incision: If you use the usual mattress stitch you are liable to cripple a lot of tissue. During the last few years I have used a straight needle double threaded and underpin the knots with fair sized pieces of fat taken from the wound. This is particularly useful in decapsulated kidneys. It prevents cutting through and strangles less parenchyma.

DR. JOHN R. CAULK, St. Louis: The stone problem is a very complicated one. My conception is that a stone in the kidney is actively or potentially a menace—actively, if accompanied with infection; potentially, if not. Even if the silent stone is not subjecting the kidney to retention, there is a certain amount of resistance to the outflow from the kidney tubules. We often get a false impression of kidney function when there is a foreign body; and it is so well known that many kidneys have such good function after removal that it is my policy to remove all stones, whether silent or not. If there is no infection at the time of operation, sooner or later it will develop. While experiments seem to indicate that nephrotomy sacrifices a lot of renal tissue, it has been my impression that that is not true. In the removal of a stone by a clean cut incision, not such a large wound is necessary; and it has been my experience that these kidneys, even though they have low function, after you have removed the stones and nephrotomized them, come back to good function. We should conserve the kidney; and while it may be conservative to leave these stones in, my conservative policy is to take them out wherever they are.

DR. RICHARD F. O'NEIL, Boston: I was interested to hear Dr. Geraghty comment on the very good renal function sometimes observed in the presence of these large branched calculi. That has been my experience. I have recently seen a man at our clinic who had large bilateral stag horn calculi and a surprisingly good renal function. In spite of this, however, I feel that an operation on either of the kidneys would be so destructive to the renal substance as to be entirely contraindicated.

DR. JOHN T. GERAGHTY, Baltimore: I do not believe that Dr. Hinman or Dr. Caulk disagree with me very much. I agree with Dr. Caulk that any patient with bilateral calculi who is septic should be operated on. There is no chance without operation, but there is some chance with operation. There is no function after chronic destruction of the kidney, but only before the tubules are destroyed. I agree with Dr. Hinman that there are cases in which operation should be performed. Some patients should be operated on because the calculus occupies only one part of the kidney, and operation always should be attempted in the presence of an acute condition. The thing that will make you operate in any given case is the feasibility of getting all the stones, particularly when multiple stones are scattered throughout the kidney. If you will investigate those stag horn calculi you will find frequently that multiple fragments are scattered through the calices, and very rarely do we get all the fragments out in any case.

Colles' and Profeta's Laws.—In 1837 Colles dedicated his *Practical Observations on the Venereal Disease to Sir Astley Cooper*. In an interesting chapter on "Syphilis in Infants," he says (p. 285): "It is a curious fact that I have never witnessed nor ever heard of an instance in which a child deriving the infection of syphilis from its parents has caused an ulceration in the breast of its mother." This statement, which was found to be true, afterwards passed current as "Colles' Law," though it is sometimes called Baumes' law; as Baumes noted the same fact in 1840, three years after Colles had enunciated it. It was not until 1865 that Guiseppe Profeta pointed out that "a healthy child born of a syphilitic mother can be suckled by her or by a syphilitic wet nurse with impunity," which is Profeta's law.—*Brit. Jour. of Surg.*

PROSTATECTOMY IN BAD SURGICAL
RISKS *H. G. BUGBEE, M.D.
NEW YORK

If one has the greatest interest of the patient at heart, the first consideration in dealing with a pathologic condition is to relieve the lesion in such a manner that the patient's life will be preserved; second, that function will be restored, and third, to accomplish such a readjustment in a way that entails the minimum of pain and inconvenience.

The slow evolution of the various methods employed for the relief of prostatic obstruction has brought us to the point where we all agree that the object in view is the removal of the obstruction, so far as this is possible. Our most satisfactory results are obtained in the adenomatous enlargements. The indication here is to remove the prostate. Various contraindications to this operation have been brought forward—and rightly so, in view of the manner in which the operation has often been performed in the past. The present technic of prostatectomy, step by step, has removed many of these contraindications. During the past two years patients have been carried through this operation and placed upon their feet, with urinary systems properly functioning, whom formerly I would have looked on as sure mortalities—and I believe many of them would have been.

We do not have to go back many years to find speed of operation given as the greatest factor in the success of the removal of the prostate. It was thought that this pathologic condition, which had slowly progressed, often over a period of years, and which had resulted in interference with the working of a system whose function it is to eliminate poisons from the body, the progress of such a pathologic condition endangering the immediate organs involved and poisoning the entire system, must be relieved by an operation which, if not performed at once, and if not executed in a few minutes, would certainly eventuate in death. This is not logical. A condition arrived at through the slow progress of a pathologic entity, with far-reaching complications, cannot be relieved at once. The time necessary for its relief will be more or less in proportion to the time involved in the culmination of the pathologic process in the final condition.

We may talk of two-step prostatectomy—I myself do not care how many steps there are. The objects in view are as few shocks as possible during the readjustment, and a live patient at the end.

METHOD OF TREATMENT

The prime indication with these patients is to improve elimination. The first consideration is to prevent absorption from the bladder and to relieve the kidneys; the next is to promote elimination in other systems which are laboring under the unusual amount of work thrown upon them. To prevent further absorption from the bladder and to relieve the kidneys of back-pressure, drainage of the bladder is indicated. Too sudden institution of this measure is often disastrous. I have seen patients in a uremic state for days after a complete emptying of the blad-

der at one sitting by catheterization, and I have often seen this after suprapubic drainage when retention of urine has been complete or incomplete but of long standing.

In a patient with retention, carrying over 6 ounces of residual urine, the bladder is never emptied at the first examination, if he has not been catheterized before. In so-called clean cases, those free from infection, the patient is seen several times, a number of days apart, draining off a little more each time, unless it is possible to place him in bed at once. With a markedly overdistended bladder, as long as two weeks have been allowed to elapse before completely emptying the bladder.

There are very few cases that cannot be catheterized by using a local anesthetic in the deep urethra, by employing the proper type of catheter for the individual case, and by exercising care and patience in manipulation. Rarely a suprapubic puncture, with its relief of the pressure, will make it possible to pass the catheter when, at first attempt, pressure and spasm made this impossible. When the catheter has been introduced, fasten it in and slowly draw off the urine, a little at a time, replacing part of the bulk each time with boric acid solution, finally emptying the bladder. In these cases the catheter should be retained until the patient shows no signs of uremia; a suprapubic drainage may then be established. Even after catheter drainage this step will often result in a decided return of uremic symptoms, showing that suprapubic drainage is more complete than that by urethral catheter.

Patients with incomplete retention, or those who have been accustomed to catheterization, may usually be drained at once suprapubically.

It is entirely possible to establish suprapubic drainage without completely emptying the bladder at the time the drainage is established. In fact, the bladder may be emptied a little at a time, in exactly the same manner as by urethral catheter.

Suprapubic drainage is carried out preferably under local anesthesia, which does not interfere with the intake of food and fluids, and causes less disturbance than even gas-oxygen anesthesia. The incision is made to the bladder, and the peritoneal fold is carefully raised. The bladder, being filled, comes up into the wound. It is carefully walled off, seized with toothed clamps, and, being well steadied, is opened by a small puncture wound made completely through it. The Pezzer catheter is quickly inserted, being stretched over an introducer. As soon as the mushroom is in the bladder and the catheter is released from the introducer, it is clamped; the tube completely fills the opening in the bladder wall, and there need be no leakage alongside. A suture on either side insures a tight closure, and the tube, clamped off, can be released from time to time, and as much or as little urine as desired be allowed to escape.

While bringing the patient to this stage, much may be accomplished by giving fluids by mouth and by rectum, in as large amounts as can be assimilated. Free elimination by the intestinal tract is important. A mild cathartic for the upper tract, and colon irrigations below, will maintain a free exit and prevent absorption. It is well to have the patient out of bed as much as possible; this aids the circulation, strengthens the patient, and improves the morale.

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

The gastro-intestinal symptoms, a clean tongue, the absence of distention, and an appetite, are fair indications of the patient's condition. A high blood pressure is to be preferred to an abnormally low one. The pressure often fluctuates, and is an important index of the circulation and renal condition. The intravenous administration of gum glucose may prove to be a valuable aid in its stabilization.

Renal function tests are important during this stage, while the patient is slowly acquiring a new balance. The actual figures on blood chemistry, phenolsulphonephthalein output, and specific gravity, are not as important as ascertaining the fact that a new level has been established which shows little variation. When this level has been established, whether the phenolsulphonephthalein output be 12 or 50 per cent., blood urea 18 or 40 mg., if they remain stationary on repeated estimations, if the tongue is moist and clear, if the patient takes nourishment in sufficient quantity and assimilates properly, one may enucleate the prostate.

The difficulties of enucleating the prostate through an old sinus are much exaggerated. Operation under gas-oxygen anesthesia, with previously administered anodyne, or possibly sacral anesthesia, in a patient in a stabilized condition, does not require great rapidity. If the drainage wound has been placed in the center of the abdominal scar, the sinus may be slightly enlarged below. The peritoneum may be avoided easily, and, except in fat individuals, the enucleation may be executed with one finger when the prostate has been lifted up from below by an assistant's fingers in the rectum. The greatest difficulty may be in the removal of a large lobe through the sinus after enucleation. This is best accomplished with special forceps. The special sound is now passed through the urethra, the urethral tube of the Pilcher bag fitted over the end of the sound, and the bag, as it is filled with water, drawn down into position. Tight traction is rarely required to control the bleeding, and with slight traction bladder drainage takes place at once through the urethral tube. It is now my plan to pack loosely around the margin of the bag in the bladder, and with the same strip to pack the sinus loosely, using as a rule but one silk-worm-gut suture partially to close the small external wound.

In this manner, with little traction on the bag, tenesmus is slight or absent, the dressing above is dry, and only a small sinus remains. The patient is soon placed in a sitting position in bed, and is filled with fluids. The pulse rarely goes up, and drainage continues as before.

The following day the one strip of packing and the bag are removed, leaving a bladder free from clots. A mushroom catheter is then inserted with an introducer, through the suprapubic sinus; the sinus rapidly contracts down upon the tube, and often, with no leakage, the patient is dry at once. The scrotum is kept elevated, and as a rule the bladder is not irrigated. The flushing comes from the freely accelerated kidney elimination. The bowels are kept clear by irrigation and mild catharsis.

As soon as the patient feels equal to it, often the following day, he is placed in a chair. The wound is largely healed; in fact, it is for the most part an old scar, and thus there is no danger of a weak wound.

For a time I thought that the sooner the sinus healed the better; but I have learned by experience that slower healing is more to be desired. While the prostatic cavity is filling with granulations there is less danger of epididymitis if drainage is maintained above. Often, even with the Pezzer catheter in position above, the patient begins to void about the seventh day. The catheter is retained about eight days, when a soft urethral catheter is inserted by means of an introducer, and retained while the suprapubic sinus is packed to the bladder wall, usually with balsam of Peru gauze. The packing is changed and shortened every two days, the sinus in this way healing solidly from the bottom, is closed off, on the average, in two weeks and healed to the surface in another week.

In this way patients recover; they have not gone through an operation but a period of readjustment and repair. Such a technic has made it possible to go through a period of two and a half years with but two deaths, each from pulmonary embolus during the period of convalescence.

REVIEW OF CASES

A brief review of several of these cases will show that many of the patients, at first, were in a desperate condition, patients who, I am sure, would never have survived any sudden change or shock.

CASE 1.—M. R., aged 69, had had increasingly frequent, difficult urination for years; for eleven months, retention, and led a catheter life. There was great pain and distress in the bladder; loss of weight, and emaciation. The temperature was 102 F.; pulse, 110. There was a large, adenomatous prostate, involving the lateral and median lobes. The bladder contained 40 ounces of foul urine, loaded with pus. There was a vesical calculus the size of an English walnut. The patient refused open operation; litholapaxy was performed, with catheter drainage; one month later, suprapubic drainage, followed by uremia. The patient was very sick for three weeks, with temperature ranging to 104; pulse, poor; blood pressure, 220; abdominal distention, vomiting, coated, dry tongue; phenolsulphonephthalein output too low to estimate; blood urea, 67 mg. After three months of drainage, the general condition markedly improved; phenolsulphonephthalein fixed at 20 per cent.; blood urea, 40 mg. The prostate was enucleated, with no reaction whatever. The suprapubic sinus was closed in ten days. The patient is well today.

CASE 2.—J. K., aged 78, who had been under observation for six years, had increasing difficulty, and frequent urination. There was a large, adenomatous prostate, involving the lateral and median lobes. The patient was feeble; there was a valvular heart lesion and marked myocarditis. Kidney function was poor. The blood pressure ranged from 95 to 105. In 1919, there was retention while on a motor trip. The patient was catheterized, infection and epididymitis resulting. He had been on a partial catheter life for one year; then suprapubic drainage was instituted, which was followed by uremia, with its characteristic symptoms; also drop in blood pressure, irregular pulse, and poor heart action. After three weeks of drainage the patient's condition seemed to be stabilized, and the prostate was enucleated. A stormy course ensued, with pneumonia, extremely weak heart, and bilateral phlebitis. The wound was closed in four weeks, the patient had a steady convalescence, and is in better health today than for many years. Two points are paramount in this case: Slow procedure and absence of hemorrhage made a successful outcome possible.

CASE 3.—V. S., aged 90, under observation at intervals for three years, when first seen, in 1917, presented an adenomatous prostate with three large lobes, and a bladder containing six calculi. The patient refused open operation. The calculi

were removed by litholapaxy, and to render catheterization easier, a furrow was cut through the median lobe. During 1920 he returned with more calculi. Although myocarditis and poor kidney function were present in a very old man, operation was advised. The bladder was drained suprapubically and the calculi removed. Uremia, poor heart action, and low blood pressure (95) supervened. The phenolsulphonephthalein excretion was unreadable; blood urea, 65 mg. Two months of drainage were required before stabilization was established. At this time the phenolsulphonephthalein output averaged 13 per cent., and blood urea 38 mg. Enucleation of the prostate was followed by no reaction. The sinus closed in ten days, and the patient journeyed alone to his home, 1,500 miles away, three weeks after operation.

CASE 4.—E. S., aged 68, had had increasing frequency and difficult urination for years; there was complete retention one month before he came under observation in May, 1920. When he was first admitted to the hospital, the bladder contained 54 ounces of foul urine, so thick with pus that it was evacuated through the catheter with difficulty. Double epididymitis was present. The temperature was 105, the pulse 124 and of poor force; the patient was septic; renal function was low; phenolsulphonephthalein unreadable; blood urea, 56 mg. Catheter drainage, with bladder and colonic irrigation, for four weeks, was followed by suprapubic drainage. The blood pressure was low (100), the heart action weak; there were symptoms for two weeks. After two months of drainage, the patient became stabilized. The phenolsulphonephthalein output was 16 per cent.; urea nitrogen, 36 mg. Enucleation was followed by no reaction. The suprapubic sinus closed in eleven days. The patient today is in better physical condition than in years. Bladder function is normal.

CASE 5.—J. T., aged 78, who had had increasing frequency, with difficult urination and hematuria for ten years, with retention for two months, had a large, adenomatous prostate, with three definite lobes. The blood pressure was 340. There was a valvular heart lesion, with dilatation. Suprapubic drainage was followed by uremic symptoms. After four weeks of drainage, the patient's condition became stabilized. The blood pressure was 170, the heart action improved; phenolsulphonephthalein, 28 per cent.; blood urea, 32 mg. Hiccup after establishing drainage lasted ten days. Enucleation of the prostate was followed by uremia, with hiccup for three weeks. The wound closed in eighteen days. The patient has been well to date.

CASE 6.—E. C., aged 79, who came under observation in May, 1920, had had retention and overflow following urinary symptoms of many years. There was median lobe enlargement. The bladder was well above the umbilicus. The blood pressure was 100; there was a valvular heart lesion, and myocarditis. Three weeks were allowed to elapse during complete emptying of the bladder by an indwelling catheter. With the first complete evacuation the patient became uremic. He improved rapidly, and one week later suprapubic drainage was instituted. Again uremic symptoms were present; the heart action, poor. Ten days later, the phenolsulphonephthalein output was 19 per cent.; blood urea, 22 mg. The patient has been out of bed throughout. Enucleation of the prostate was followed by no reaction. The sinus closed in eight days. The patient has been well to date. The bladder function is entirely satisfactory.

CASE 7.—J. C., aged 76, had increasing frequency and difficult urination, resulting in retention in June, 1920. There was a large, adenomatous prostate, with three definite lobes. The mental condition was poor; myocarditis and valvular heart lesion, and well marked nephritis were present. Catheter drainage was performed for two weeks, during which the patient had daily chills. The mental condition at times was difficult to control. Suprapubic drainage was followed by moderate uremia; the mental condition remained unchanged. Ten days later the prostate was enucleated, the patient refusing to wait longer. After prostatectomic enucleation the patient was irrational for four weeks. The condition was diagnosed as epidemic encephalitis by Drs. Tilney and Collins. There was improvement of the mental and the renal condition. Closure of the sinus occurred twenty-one days after opera-

tion. The mental symptoms slowly disappeared; the patient is now in good condition.

CASE 8.—W. E., aged 66, had had increasing difficulty and frequency of urination, and failing health for years. There had been retention for one year. He was refused operation for the removal of a large, adenomatous prostate by an able surgeon because of poor physical condition and bad renal function. When he first came under observation the patient was septic, the temperature ranging to 103 F.; poor heart action, myocarditis advanced; gastro-intestinal and renal functions low. There was complete retention, the bladder loaded with foul urine. Suprapubic drainage was followed by uremia. Six months' drainage was necessary before the patient's condition warranted an enucleation of the prostate. The phenolsulphonephthalein output was now 21 per cent., and urea nitrogen 33 mg.; heart action regular. Removal of the prostate was followed by a reaction due to kidney insufficiency which lasted ten days. The recovery was progressive, the sinus closing in twenty-three days. The bladder function is now normal. There is good drainage of two pyonephrotic kidneys, and the patient is able to be about in comparative comfort. The heart action is decidedly improved.

CASE 9.—J. T., aged 69, first seen in July, 1920, had complete retention of urine; the bladder was greatly overdistended; the urine was loaded with pus. The patient was septic. Arthritis involved all the joints of the extremities, so that the patient was helpless. The heart sounds were not audible over the pericardium. Suprapubic drainage was followed by slow improvement in sepsis, heart, joints and kidney function. Six months of bladder drainage showed, on the patient's return, no fever; fair gastro-intestinal function, and heart action weak but more regular, dropping every fourth or fifth beat. The phenolsulphonephthalein output was 13 per cent.; blood urea, 29 mg. The prostate was enucleated, with little reaction. For six days the heart action was weaker but steadier. The kidney function did not become worse, and the patient went on to an operative recovery, the sinus closing in twenty-eight days. Last reports from this patient, six months after operation, are that he is able to be about some on his feet, to feed himself, has little pain in the joints, and the bladder function is satisfactory.

COMMENT

These cases were as poor surgical risks as I have seen. I could go on citing others, with various types of complications, some with very high blood pressure, others with very low, various degrees of cardiac and renal insufficiency, etc., but these illustrate what may be accomplished by a technic such as I have outlined.

SUMMARY

Old age is not, in itself, a contraindication to operation, and has probably been overestimated as a risk.

Even in the presence of advanced cardiac and renal complications, prostatectomy may be carried out with success by a step-by-step process, improving the local condition of the urinary organs with each step, and giving much attention to the patient's general condition as one progresses. Hemorrhage should be avoided at the enucleation of the prostate, much of the shock and renal insufficiency being thus prevented.

The mortality resulting from such a procedure will be slight. Pulmonary embolus is always a possibility, and probably a more frequent occurrence than after most other types of operation.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

DR. HERMAN L. KRETSCHMER, Chicago: I was glad to hear Dr. Bugbee emphasize the exercise of care in emptying these bladders. It has been one of the old rules in genito-urinary

work to empty the bladder slowly. Since the introduction of prostatectomy I think we have largely lost sight of that fact. Many times one sees a bladder emptied at operation by simply making a large incision and letting all the urine out. Some of those patients have died and the verdict has been: "He was in such bad condition that he could not stand any sort of operation." I wonder whether some of the deaths were not due to too rapid emptying of the bladder. If it is wrong to empty an overdistended bladder rapidly with a catheter it is doubly wrong to do so by operation, because the patient then has the added trauma of the operation. Dr. Bugbee says he takes into consideration not only the blood chemistry and the functional tests, but also the general condition of the patient, and that is sound logic. The clinical findings should be corrected with the functional tests. I like the use of his term, "when the patient becomes stabilized." I should hesitate to get the patient up the next day. I do not think he should be kept in bed too long, but I believe he should be kept in bed more than one day. I never get patients up the next day—usually about the fifth. The author mentioned some patients having died of embolism and I wondered whether getting them up so early had anything to do with this. We do not get them up so early in other operations because of the possibility of emboli. We know this is true in operations on the female. Formerly, we did not pay much attention to the blood pressure, until Peacock, seven or eight years ago, reported a drop in blood pressure following suprapubic drainage, and that has been our experience. The largest drop I can recall now was 120 mm., without having any deleterious effect on the patient.

DR. BRANSFORD LEWIS, St. Louis: I am heartily in accord with the sentiment of this paper as well as with the specific expressions. I believe the keynote of the paper is embodied in the word "preparation," and that is where the great progress in the advance of prostatic surgery has been effected in the last ten or fifteen years. I wish to support Dr. Bugbee's statements with regard to the innocuousness of the urethral catheter as a means of preliminary drainage. It is easily borne by most patients and for an indefinite period. I drained one patient for nine months by urethral catheter before I was able to bring myself to operate on him, and in the meantime he went through a number of different complications and disorders connected with the intestines, kidneys, heart and other organs of the body, and finally, after nine months, we got him into such condition that we thought he could go through suprapubic removal of the prostate. We did this in two stages, and he is living today, over 80 years old. A point about this drainage and its connection with suprapubic cystotomy is that the drainage effect and the improvement should be attained before the suprapubic cystotomy. One can get urethral drainage just as effectively as he can by suprapubic cystotomy. He can control the case better in this way, can have an ambulatory patient who can at least get around in a wheel chair while wearing the catheter and can be in the park in the sunlight, and can keep this up for two or three weeks. The first step of the suprapubic operation should not be done until the drainage has been carried out, for that is the first stage of the operation. Then under short general anesthesia you can do the suprapubic cystotomy, after which the patient is in just as good a condition as when he went on the table; and then within a week or so you can finish the operation and have good results.

DR. ROBERT H. HERBST, Chicago: I was pleased to hear attention called to the importance of supporting the scrotal contents immediately following prostatectomy. Many of these old prostatics have a coexistent infection in the seminal vesicles, and during the enucleation of the gland we are likely to force some of the infected material down the vas, producing an epididymitis. The patient whose scrotum is well supported is rarely troubled by this painful complication. I usually attach a sling to the abdominal binder, which supports the scrotum better than the commonly used suspensories.

DR. HERMON C. BUMPUS, JR., Rochester, Minn.: I was much interested in what Dr. Bugbee said about the decompression in these cases. We have used the method described

by Van Zwalenburg in more than thirty cases, and have found it most satisfactory. The method consists of inserting a catheter clamped at the end to prevent the escape of urine from the bladder. To the end of this catheter is attached a rubber tube 6 or 8 feet long filled with boric acid solution; at the distal end of this is a "U" tube, which is slowly brought down until the pressure of the bladder is equalized by the column of boric acid in the rubber tube. At this point the urine is allowed to run over into a receptacle hung at the foot of the bed, the receptacle being lowered an inch each day. Sometimes it takes a week or more to bring the receptacle down to the level of the patient, when there is much retention; at other times it takes only three or four days. Since we have been using this method we have had no bad results.

DR. A. M. WOSE, Syracuse, N. Y.: These bad surgical risks are the most trying cases, and the success we have with them is due to careful detail and well aimed interference. I agree with Dr. Lewis that prolonged drainage is an essential point. My idea is the perfected drainage, and in that connection I would say, Not much antisepsis in the irrigation of the bladder. I think we are given to do a little too much in working on these bladders. We come to find out that Nature is protecting these bladders by immunization, and we do more harm by going in and attempting to clean them out. In my opinion, drainage with the catheter, if possible, is the main thing in these bad surgical risks. Then, if we do not meddle in our preliminary catheter drainage, we are apt to do our cystotomy too soon. Dr. Bugbee made it clear that uremia follows haste. Remember that these patients are mentally, organically and many times clinically fatigued and we have to do everything we can to fortify that situation. I am not in sympathy with the two-stage operations in these cases. In my judgment, the drainage is the first stage and then the adenoma can be enucleated thereafter. A preliminary cystotomy proves often to be a last resort from which these patients do not rally. Thus we wear out the old men before we have them on the road to recovery. I know what the advocates claim for it, but notwithstanding that I still cling to the one-stage operation. Then when you come to the second stage of these bad surgical risks, you may regret that you have taken the second stage, for there may be fibrosis and the patient's life may be snuffed out on that account. I think we all, sooner or later, do regret attempting the suprapubic prostatectomy in fibrotic cases. The perineal operation is the better choice for the small, hard prostate.

DR. ARTHUR L. CHUTE, Boston: The thing that impresses me most is that Dr. Bugbee has been using gradual drainage by catheter for the prostatics with overdistended bladder. The two-stage operation interested me very early, and, for the most part, I have followed that method in the last few years. That procedure gives excellent results in most of the cases of overdistended bladder with low gravity urine; but every once in a while one of these patients' kidneys shuts down and I cannot get them to start. Dr. Bugbee's procedure has been very successful in his hands in meeting this situation, and yet it is pretty much the same thing that we were doing ten or twelve years ago and gave up for the two-stage operation because it was not invariably successful. In the light of Dr. Bugbee's experience I shall be encouraged to take up preliminary catheter drainage again, but I fear that there are some of these patients whose bladders are overdistended, with light gravity urine, whom we shall lose no matter what method we follow.

DR. JOSEPH HUME, New Orleans: The fact that it takes so long to stabilize some of these patients is because we overlook some bilateral kidney infection. After the preliminary drainage I do the first stage under local anesthesia, and then, in that stage, I practice catheter drainage about once or twice a week through the wound, washing out the kidneys. In many instances many of these patients can be saved by this procedure.

DR. GEORGE R. LIVERMORE, Memphis, Tenn.: Drainage is most important in preparing these patients for operation. When you have diminished the amount of fluid in the bladder

each day, when uremic symptoms develop, if you will increase the amount of fluid you last put in you will decrease these symptoms. In the second step, if we make a lateral incision through the fascia it makes a more open incision and prevents the possibility of tearing through the peritoneum. Of all the points following operation, hemorrhage is the most important, and every means possible should be employed to prevent it. Many patients die of uremia because of the fact that they have lost more blood than they could possibly stand, and these patients are said to have died from uremia when the death was really due to hemorrhage. High blood pressure seems to be no contraindication to removal of the prostate. Dr. Bugbee's plan of getting his patients up early is good. He probably does not mean that he gets all patients up the day following operation, but selects his cases. The change of position in these patients is of great importance so that hypostatic pneumonia will not set in. Also, we should keep them warm, particularly when carrying them through the operating rooms and hallways back to bed, so as to prevent the development of pneumonia and shock.

DR. LEO BUEGER, New York: I believe it usually advisable to give preliminary treatment with permanent urethral drainage through the retention catheter. This is not always feasible. I do not agree with those who would do the prostatectomy immediately after catheter drainage. At least three cases that have convinced me of the incorrectness of this procedure. A man had a temperature of from 102 to 104 F., with a zero output of phenolsulphonephthalein. He looked anemic, and had toxic symptoms in spite of catheter drainage. At the end of three weeks he still had a zero phenolsulphonephthalein output. I then decided that a suprapubic cystotomy should be done and, following this course, was able to do the enucleation without any trouble three weeks later. That case led me to make a study of the specimens after operation, and I came to the conclusion that the so-called back pressure was due merely to urinary renal retention and not to actual back pressure. I studied a number of bladders obtained at postmortem in which there was enormous hypertrophy of the bladder wall with considerable elongation of the ureter in its intramural course. In none of the cases was I able to demonstrate any enlargement of the ureter at the orifice as we see it in congenital hydro-ureter hydronephrosis. I tried to force the bladder contents upward through the ureter by pressure and was unable to force a single drop into the ureter. I believe that the enormous hypertrophy of the bladder with marked thickening of the bladder musculature and the constant muscular tonus around the intramural ureter makes for a sort of sphincter action. This closes the ureter and we thus get the distention of the ureter and renal pelvis. As soon as you cut the bladder in the suprapubic cystotomy, relaxation of the bladder wall throughout is obtained and the constant or frequent vesical spasm is abolished. Then drainage of the kidney and ureter occurs. This is why I believe that suprapubic cystotomy is a good deal better than catheter drainage. I have been able to prove clinically that, where phenolsulphonephthalein excretion did not rise after several weeks of catheter drainage, it improved immediately after cystotomy. In suprapubic cystotomy the first stage is more dangerous than the second. In looking over my records of more than 300 cases my mortality for suprapubic cystotomy was a good deal higher than from enucleation of the prostate. My mortality after suprapubic prostatectomy is due to embolism or some other remote complications. Other than these I have had no deaths following the second stage, but I have had deaths within seventy-two hours three, four, five or six days after the first stage. I have no apprehension regarding the gravity of the second step any longer, for, if these patients get along well after the first operation, they are apt to go through the second. But I still fear the opening of the bladder in some of the cases in which it becomes imperative, even though this is done under local anesthesia, as is my custom.

DR. FRANCIS R. HAGNER, Washington, D. C.: Infection of the kidneys in these cases is of the utmost importance. I did not hear whether Dr. Bugbee mentioned the use of salt solution. I feel sure that we save more of these patients

with salt solution or sal-glucose solution than by anything else we can use; not by beginning this when they are moribund, but as soon as they show symptoms of toxicity. I would rather see a patient with high temperature than with subnormal temperature as those with the subnormal temperature are the most critical type. A number of years ago I devised a bag for controlling hemorrhage and many of my friends said that it was an ingenious device but we did not need it because these patients do not bleed. Almost every man in this discussion has spoken of the danger of hemorrhage.

DR. VINCENT J. O'CONOR, Chicago: I followed the blood pressure very carefully in fifty-five successive cases two years ago. I found that it is not so much a question of the degree of systolic pressure as it is one of developing a stability of the blood pressure in relation to the renal function after primary drainage has been established. In other words, in many cases which have been drained by urethra or suprapubically the blood urea and phenolsulphonephthalein are normal but the blood pressure continues to go down, with a corresponding decrease in the pulse pressure. These patients, if operated on at this time, suffered a still more marked reduction in pulse pressure. Therefore, we adopted a routine of disregarding, to a certain degree, the time of return of renal function, except in relation to the blood pressure. If this remains stable for four or five days, then the patient can be operated on for removal of the obstruction and there will be practically no decrease in systolic pressure, regardless of a moderate amount of hemorrhage during the operation. If you watch the blood pressure carefully in conjunction with the renal function after primary drainage, it will not matter whether there is 200 mm. of mercury of systolic pressure so long as the blood pressure remains in the state of equilibrium, and you will have practically no drop in the systolic or pulse pressure at operation.

DR. HENRY G. BUGBEE, New York: I did not mean to infer that all patients are allowed out of bed the day following operation. Discretion must be used in this the same as in all other steps in this procedure. If a patient has had urethral drainage for a time and then had suprapubic drainage, the enucleation of the prostate entails very little shock, and these patients do better if allowed to be out of bed at once. In cases in which there has been drainage for only a short period of time, we keep the patients in bed longer. The question of embolism has bothered us considerably. One took place ten days after operation and the second three weeks afterward. Both patients had been out of bed for some time. Both were very stout men, weighing over 250 pounds, and both had a very high blood pressure. The question of suprapubic drainage is an important one. The best proof of the difference between catheter and suprapubic drainage is the way in which the patient acts. If catheter drainage is used, there is comparatively little shock if the bladder is emptied slowly. When a patient has been drained for two or three weeks by catheter, and suprapubic drainage is instituted, there is often a very severe reaction, which shows that the suprapubic is much more thorough than the urethral catheter drainage. The blood pressure is important. The maintenance of a level blood pressure by means of intravenous injections of glucose, as has been suggested, may prove of much value. Throughout my paper I tried to emphasize the importance of administering fluids to these patients at all times, from the day they first came under our care to the end of the treatment.

Malaria in Portuguese India.—The Portuguese maintain a bacteriology institute in the Nova Goa district on the west coast of southern India. Their possessions in India contain not much over half a million inhabitants. The bacteriologic institute publishes the *Arquivos Indo-Portugueses* in parallel Portuguese and French text. The first number of the fifth volume contains an exhaustive study of the mosquitoes of the region, with illustrations, and a study of the endemic malaria, the whole forming a profusely illustrated volume of nearly 200 pages. Dr. Froilano de Mello is professor in the Nova Goa medical school and director of the bacteriology institute.

THE TOXIN TREATMENT OF DERMATITIS VENENATA*

ALBERT STRICKLER, M.D.

PHILADELPHIA

This paper has for its aim the investigation of three problems:

1. What curative influence does the toxin of *Rhus toxicodendron* possess on the symptoms and course of dermatitis venenata due to poison ivy or oak?

2. Is it possible to desensitize individuals against dermatitis venenata produced by poison ivy, oak or sumac?

3. What is the probable duration, and what constitutes, the best method of obtaining desensitization?

A study of these problems appears important, not that dermatitis venenata caused by various plants constitutes a serious or fatal affection, but its rapid cure as well as its prevention in those who are highly susceptible would not only be a distinct economic gain, but would also enable many to enjoy the beauties of nature which otherwise would be prohibited.

The most recent authoritative work shows that the active principle of poison ivy or oak is a substance of glucosidal nature. This poison is nonvolatile even when mixed with acetic acid or alcohol.

In brief, the method of isolating this glucosidal substance consists in gathering the fresh leaves of poison ivy, for example, and extracting with absolute alcohol, filtering and precipitating. The precipitate is dried and extracted in Soxhlet extractors for ten hours. The extract obtained is dried at low temperature. The toxin is carefully weighed and dissolved in absolute alcohol, to which a certain amount of sterile water is added to make it nonirritating. By this method the poisonous principle of ivy or sumac used in these investigations was obtained.

In 1918 I advocated¹ the toxin treatment of dermatitis venenata due to poison ivy or oak as a method to be employed in very severe cases. An extended personal experience, as well as that of Petch at the Letterman General Hospital, San Francisco, and of H. E. Alderson of the Leland Stanford Junior University School of Medicine has convinced me that intramuscular injections of the toxin of *Rhus toxicodendron* should be employed in all cases of poison ivy of moderate and extreme severity. The almost magic rapidity with which the amelioration of the itching associated with this affection occurs, the rapid subsidence of the lesions, the uniformity with which good results are obtained, and the avoidance of uncomfortable moist applications recommended under the old method of treatment suggest that this method marks a distinct advance in the curability of dermatitis venenata due to *Rhus toxicodendron*.

Earlier in the investigations, an endermic test was advocated to determine whether the offending substance was the toxin of *Rhus toxicodendron* or *Rhus venenata*, before beginning treatment. Experience seems to point to the fact that, while the endermic test is of scientific interest, yet the treatment can be carried on without waiting for its results. The endermic

test is performed by injecting 0.05 c.c. of each of the glucosidal vegetable toxic solutions ivy, sumac and also the diluent under the epidermis. A tentative opinion can be reached in twenty-four hours, but the final judgment requires forty-eight hours. A positive reaction is indicated by a papule, redness and tenderness at the site of injection.

Those toxins which show positive findings are the ones used in the treatment, and in the desensitization of patients with this affection. A study of the records of thirty patients on whom endermic tests were performed shows a distinct preponderance of the toxin of *Rhus toxicodendron* as the causative agent. In a very few instances the toxin of the sumac was found to be responsible, and in some instances the toxins of both ivy and sumac proved to be the responsible factors.

At present it is my practice to question patients as to whether they were subjected to poison ivy or poison sumac or to both, and be guided in giving the first dose by the answer. When the patient is unable to furnish any information relative to the causative toxin, the first dose consists of both ivy toxin and sumac toxin in the proportion of two thirds of the former and one third of the latter.

The dose of the diluted toxin varies from 0.5 c.c. up to 1 c.c., although as high as 2 c.c. can be given. The injection is given intramuscularly either in the outside of the arm or in the buttock. These injections can be given every twenty-four hours. Usually two injections are all that is needed, but at times three or even four injections have to be given. As a rule the itching is relieved within twenty-four hours after the first injection. I have treated thirty patients by this method without a failure in any instance, and in no case was any local application of any kind used.

REPORT OF CASES

CASE 1.—Miss McD. had dermatitis venenata for eighteen days, developing into an eczema. The endermic test was positive for ivy. *Rhus* toxin, 0.3 c.c., was given intramuscularly. Two days later she received 0.5 c.c. of *Rhus* toxin, and was discharged cured two days after the last injection.

CASE 2.—L. B. had dermatitis venenata of ten days' duration, which involved the hands, ear and legs. The endermic test was positive for *Rhus* toxin. The patient was given 0.5 c.c. of *Rhus* toxin intramuscularly. The itching subsided and the lesions dried up. No local treatment was given. The patient was discharged, cured.

CASE 3.—H. L. had had dermatitis venenata of two days' duration involving the neck, chest, fingers, arms, lips and genitalia; the attacks were recurrent. The endermic test was positive for sumac. The patient was given sumac toxin, 0.3 c.c., intramuscularly. On the next visit, which was three days after the first, the patient stated that all the swelling was gone, there was no more itching, and the eruption had dried up. He received no local treatment.

CASE 4.—Miss P. suffered from dermatitis on the right leg, which developed one week after the patient was in this country. It was pronounced dermatitis venenata and she was given directions for local applications by two physicians. When she consulted me, her leg was red and the skin itchy. The endermic test was positive for sumac. She was given 0.5 c.c. of sumac toxin, intramuscularly. Two days later, the eruption was paler and more scaly and the itching had subsided. She was given 0.7 c.c., and on the occasion of her next visit, which was two days later, the condition had become normal. No local treatment was prescribed.

CASE 5.—S. L. (referred by Dr. Finck) had dermatitis venenata involving the arms, chest and thighs. Itching was

* Read before the Section on Dermatology and Syphilology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Strickler, Albert: J. Cutan. Dis. 36: 327 (June) 1918.

very marked. The lesions were still present. The patient had had local applications which influenced the lesions slightly, but not the itching. This attack was contracted when the patient passed a wooded area containing poison plants. The endermic test was positive for ivy and weakly positive for sumac. The patient was given ivy toxin, 0.4 c.c., and sumac toxin, 0.3 c.c. The next day the itching was gone and the lesions were drying up. In three days after the first visit the patient was well. At my request the patient continued to walk through the same woods, and remained free of any attacks of dermatitis venenata all summer.

CASE 6.—M. McC. had dermatitis venenata of twenty-four hours' duration involving face, forearm and neck. The face was markedly swollen and the eye closed. The endermic reaction was positive for ivy. He was given 0.5 c.c. of rhus toxin and no local treatment. The next day, the swelling markedly improved and the itching was almost gone. In two days after the injection he was cured and discharged.

CASE 7.—D. S. had dermatitis venenata involving the entire body; the face was markedly swollen; the eyes were closed; there was marked itching. The endermic test was positive for sumac. He was given 0.5 c.c. of sumac toxin, intramuscularly, but no local treatment; on the next day the swelling of the face and eyes was gone; lesions were still present on the arms. The following day he was given 0.5 c.c. of sumac toxin. The vesicles and redness were still present on the arms. Owing to some crusting, phenolated petrolatum was prescribed. Four days after the first injection, the patient presented absence of swelling, no lesions and no itching, but a few crusts were still present on the arms.

CASE 8.—A. A. had dermatitis venenata of three days' duration affecting the right hand, which was swollen and studded with vesicles. The endermic test was positive for sumac. The patient was given 1 c.c. of sumac toxin. The next day the swelling and the vesiculation were lessened. The improvement continued and in four days after the injection he was discharged cured. He received no local treatment.

CASE 9.—B. K. had dermatitis venenata of two days' duration involving the face, arms, ears, legs and genitalia. The endermic test was positive for rhus toxin. He was given 0.7 c.c. of rhus toxin, intramuscularly, which was followed by great improvement. On the next day he was given 0.5 c.c. of rhus toxin, and when he reported the following day, the swelling and itching were gone. Vesicles were drying and erythema was still slightly present. The patient received no local treatment.

CASE 10.—A. D. L., had had dermatitis venenata from four to five weeks involving the hands and legs, which were red and presented vesicles having a linear arrangement. Subjectively there was considerable itching. The condition had recurred yearly for three or four years. The endermic test was positive for ivy toxin. The patient was given 0.7 c.c. of rhus toxin, and the next day the itching and redness were entirely gone and the patches became scaly. Two days following the first injection he was given 0.5 c.c. of rhus toxin. There was no local treatment. Four days after the first injection, the patient played golf among poisonous weeds and had no recurrence, although on every previous occasion, when playing in that particular field, he had developed a dermatitis venenata. On occasion of this visit he was given 0.5 c.c. of rhus toxin intramuscularly, and 0.5 c.c. on the next day also. My reason for administering the last two doses was to get an idea as to how many treatments were necessary to desensitize this patient and how long this desensitization would last. For one month he was free from dermatitis venenata, although frequently exposed in such a manner as to favor an attack; but at the expiration of the month, he developed another attack of dermatitis venenata.

CASE 11.—T. A. U. had had dermatitis venenata on the hands and arms for two days. The endermic test was strongly positive for sumac and weakly positive for rhus. He was given sumac, 0.5 c.c., and rhus toxin, 0.4 c.c. The next day the itching was gone and he was given sumac toxin, 0.5 c.c. Four days after the first injection all lesions had disappeared. He was given two more injections, and although he exposed himself again, he had remained free from an attack of dermatitis venenata. No local treatment was prescribed.

CASE 12.—W. L. (referred by Dr. Meyer Solis-Cohen) had had generalized dermatitis venenata, of two days' duration, contracted while picking ivy leaves. He had had three previous attacks. There was marked swelling and vesiculation and itching. Local remedies were applied for two days without any improvement either in the subjective symptoms or the objective phenomena. He was given 0.6 c.c. of rhus toxin intramuscularly. The next day the swelling was reduced considerably and the itching was much less. There was no local treatment. He was given 0.7 c.c. intramuscularly; on the following day 0.8 c.c. was given intramuscularly. By this time the patient was convalescent, and this was only on the third day following the first injection. Five days after the first visit the patient was absolutely normal.

CASE 13.—J. F., a boy, aged 10 years, suffered repeated attacks of ivy poison which lasted from eight to fifteen days. The last attack was well advanced when the patient received his first intramuscular injection of rhus toxin, dose 1 c.c.; within twenty-four hours the second dose, 1 c.c. of rhus toxin, was administered. The symptoms were not only checked, but had entirely disappeared on the next day.

CASE 14.—R. K., aged 7 years, had had generalized dermatitis venenata for five days, involving the arms, legs and face. The condition was associated with extreme itching. Endermic test: ivy, 3; sumac, 1; control, negative. Ivy toxin, 0.3 c.c., and sumac, 0.1 c.c., were given intramuscularly; next day, ivy toxin, 0.3 c.c.; sumac toxin, 0.1 c.c., intramuscularly. On the following day the patient was well.

CASE 15.—S. R., aged 17, had dermatitis venenata for one week. The hands were markedly involved. Endermic test: ivy toxin, 3; sumac toxin, 2; control, negative. July 1, 1920, rhus toxin, 0.3 c.c., sumac toxin, 0.2 c.c. were given intramuscularly; July 3, ivy toxin, 0.2 c.c.; sumac toxin, 0.1 c.c. July 4, the patient was well.

CASE 16.—J. C., a man, aged 22, was subject to dermatitis venenata; he had attacks almost yearly, the last attack occurring several years ago. The average duration of the attacks was from three to four weeks. The present attack began while he was visiting a cemetery where he was cutting some weeds. This occurred, May 28, 1921. In the evening of that day the patient noticed some itching of his hands. This was soon followed by marked swelling of the hands and arms, associated with intense itching and with the development of vesicles and blebs. The patient presented himself, May 31, on which day he received 0.1 c.c. of ivy toxin. On the following day the intense itching had subsided, but no difference could be seen in the lesions. On that day he received his second injection, of 0.1 c.c. of ivy toxin. June 2, the lesions were beginning to dry, and on that day he received the third dose, of 0.1 c.c. of ivy toxin. June 3, the patient received the fourth dose, of 0.15 c.c. of ivy toxin. June 4, the lesions were practically all dry and the epidermis was beginning to exfoliate. During the course of this treatment the patient received no local application whatsoever.

COMMENT

Petch treated more than fifty cases of dermatitis venenata due to poison oak. Alderson writes: "Captain Petch has used the poison oak toxin in over fifty cases. None of these failed to show improvement after the first injection. One case required three doses (0.5 c.c.) at twenty-four hour intervals. Four required two injections. There were no failures, and in all cases recovery occurred in a few days."

Alderson² says:

The poison oak cases constituted only the more severe examples, the ordinary cases being taken care of by the ward surgeons. In this condition we had great success with intramuscular injections of an alcoholic extract of the poison plant as described in an article by Strickler.¹ Dr. Strickler very kindly sent us a sample of his preparation, but some of it was lost, and the rest soon used up, so we asked George Brommel . . . to prepare some, which he did. In over thirty acute cases, many of them quite severe, one or two

2. Alderson, H. E.: Notes on Skin Diseases Observed at the Letterman General Hospital, California State J. Med. 18: 353 (Oct.) 1920.

intragluteal injections (1 to 2 c.c.) of this solution caused rapid amelioration of the local distress within twenty-four hours, and in a day or so the dermatitis subsided markedly. Practically all cases cleared up within a week. Naturally where the skin reaction had been severe, return of the skin to normal was slower, but in these cases the specific oak dermatitis itself was promptly relieved after the injection. From our experience we feel that Dr. Strickler has made a valuable contribution to the therapy of dermatitis venenata.

Schamberg³ advocates the mouth treatment of dermatitis venenata caused by poison ivy. The formula he suggested consists of: tincture of rhus toxicodendron, 1 c.c.; rectified spirit, 5 c.c.; syrup of orange, sufficient to make 100 c.c. He advocates taking a dose three times a day after meals. Starting with 2 drops after breakfast, 4 drops after lunch, and 6 drops after dinner, then increasing 2 drops with each dose until 18 drops are taken; then he directs that one teaspoonful once a day be given diluted in water. It appears logical in the cases of dermatitis venenata due to the ivy toxin that the addition of the mouth medication to the intramuscular treatment should be an advantage. Though I have had no practical experience with the combined method, it would appear logical to recommend giving a patient with dermatitis venenata due to *Rhus toxicodendron* three intramuscular injections of ivy toxin at twenty-four hour intervals, at the same time giving the tincture of rhus toxicodendron by mouth, according to the method suggested by Schamberg.

By this manner we would not only alleviate the distress and suffering quickly, but would also make a distinct advance in establishing a desensitization for the patient which would probably last for the rest of the summer.

There is considerable testimony pointing to the probability of establishing a desensitization to poison ivy and poison sumac by the injections of the glucosids of these plants. Dakin⁴ records an observation of laborers chewing the leaves of poison ivy and so securing desensitization. The late Wendell Reber related to me that he secured desensitization from poison ivy by chewing the leaves of *Rhus toxicodendron*; this he did daily during his stay in the Adirondack Mountains, during the summer months. Eye witnesses have told that Indians and other residents of New Mexico habitually eat the leaves of ivy each spring so as to avoid poisoning during the summer.

The question as to whether any method of treatment confers desensitization is one that is at all times difficult to answer, and particularly is this true of ivy poisoning. From my experience I may state that it is possible to confer desensitization by the injection method of ivy toxin. A very striking example came under my observation last summer:

Mrs. H. T. F. had been subject to dermatitis venenata every summer of such severity that she was confined to bed for a period of four to six weeks. During last summer she was given five intramuscular injections of rhus toxin dose, 0.5 c.c. every third day. After this course of treatment and subsequently she went out in the woods and even picked the ivy leaves without suffering any ill effects.

In this connection I quote from an unpublished communication of H. E. Alderson, by courtesy of the author:

A young woman had acute dermatitis on her face and extremities of two days' standing caused by exposure to poison oak. The usual dose of 1 c.c. was injected intragluteally. Next day her condition was somewhat improved. She was then given another injection (1 c.c.). Within three days after the first dose all her lesions had subsided to a great extent, and within two more days she was practically well. Locally a zinc oxid starch lotion was used.

To test her "immunity" two months later, she deliberately rubbed some poison oak leaves into her skin. The results were most favorable. No dermatitis venenata resulted. Always previous to this experience she was very susceptible to the effects of poison oak. This test seems to prove that immunity has developed.

Particularly in reference to desensitization it appears logical that the combined method, one in which the intramuscular and the mouth treatments are used, present an ideal method for obtaining desensitization.

It is my impression that in all probability the desensitization obtained from poison ivy or poison sumac is a tissue immunity and one that has to be frequently renewed. That it is possible to produce desensitization to poison ivy seems to be also the impression of both Schamberg and Alderson.

It is apparent that the determination of the question of obtaining desensitization to poison ivy must rest upon a larger experience; however, all facts point strongly to the belief that such desensitization can and has been obtained.

My interest in this problem was aroused by the results achieved by Dr. Jay F. Schamberg in desensitizing patients by the internal administration of minute and ascending doses of *Rhus toxicodendron*, to which more detailed attention has been given.

CONCLUSIONS

As a result of my experience, and also that of Alderson and Petch, it can be concluded that:

1. The intramuscular injection of the toxin of *Rhus toxicodendron* or the toxin of *Rhus venenata* can cure the dermatitis produced by poison ivy, oak or sumac.

2. As a rule, the subjective symptoms associated with this affection either disappear or are greatly modified within twenty-four hours after the first injection is given.

3. No more than four injections are necessary to produce a cure, but that number of treatments are seldom necessary, two injections as a rule being sufficient.

4. These injections are best given intramuscularly at twenty-four hour intervals.

5. The results of our series were obtained by the use of the intramuscular injections alone, and without the use of any local applications whatsoever.

6. It appears highly probable, in view of the results obtained by various observers, that it is possible to establish a desensitization to ivy poison or oak poison. The desensitization is probably temporary in character, and one that has to be renewed from time to time.

7. In the treatment conducted for the purpose of obtaining desensitization, the use of the combined intramuscular and mouth method offers the most logical procedure, and the one best calculated for obtaining a most satisfactory result.

1408 Spruce Street.

3. Schamberg, J. F.: Desensitization of Persons Against Ivy Poison, J. A. M. A. 73: 1213 (Oct. 18) 1919.

4. Dakin: Am. J. M. Sc., 1829.

ABSTRACT OF DISCUSSION

DR. EVERETT S. LAIN, Oklahoma City: The treatment of *Rhus toxicodendron* eruption by immunizing the patient is not only rational but it will eventually prove to be the best treatment for this most distressing disease in susceptible individuals. I was interested to hear that perhaps certain races are immune or may acquire immunity. I have not seen a case of *Rhus toxicodendron* poisoning in the true African. I have for several years attempted to make some special study of skin eruptions among American Indians and twice have been associated with several thousand of them where they were camped for several days at a time. In this camp they were building their lodge for their old-fashioned sun dance. They brought green brush and trees out of the timber and assembled them for their lodge and individual residing places. I saw on a number of these lodges the *Rhus toxicodendron* vine. They handled it with their bare hands, cutting these vines with pocket knives, and were in constant contact with it, though to this day I have never observed a single case of *Rhus toxicodendron* poisoning in the full-blood Indian. They surely possess some inherent or natural immunity. If so, will not some method of repeated or gradual inoculations bring about an acquired immunity?

DR. WILLIAM ALLEN PUSEY, Chicago: This treatment of *Rhus toxicodendron* poisoning by producing immunity has always met with some doubt in my mind, for the reason that if there is such an immunity it is very slight; patients who are susceptible to this poison get one attack after another. So, *a priori*, I have been reluctant to accept the findings. At the present time McNair is publishing a very exhaustive study of rhus poisonings in the *Archives of Dermatology and Syphilology*, and his conclusions are that any immunity to rhus poisoning, any artificial or acquired immunity, is very doubtful. In the context it is evident that his work was largely done around San Francisco, at one of the universities. As long as experience is fallacious and judgment so difficult, I still reserve the privilege of being skeptical about the value of immunizing treatment of *Rhus toxicodendron* poisoning.

DR. HENRY H. HAZEN, Washington, D. C.: I have seen a large number of pure blooded negroes who have suffered from this disease very severely. I think it is not unusual for a patient to come in with ivy poisoning and get well within a week and have another attack. I had one patient come in with a very severe ivy poisoning who was almost cleaned up when I left home, and yesterday I had a letter from my associate saying that he had just returned with another attack. It seems to me that if it could recur so soon after a first infection, it is rather doubtful if we can immunize very effectively.

DR. ALBERT STRICKLER, Philadelphia: As I stated in my paper, the question of desensitization must not be confused with that of immunity. The whole problem of desensitization is not yet understood. It is in its infancy; but I feel that by this method we can arrive at a conclusion as to whether it is possible to desensitize these patients. No one man's experience is sufficient to say positively whether this can be done or not. If the method is used in various parts of the country it will mean much more. This method has accomplished more than any form of local treatment that I have ever seen in the treatment of severe cases of dermatitis venenata.

Nervous Communication Between Genito-Urinary and Digestive Organs.—A ganglion which they claim serves as a center of nervous influence for both the genito-urinary organs and the terminal nerves of the digestive tract has been discovered by S. Gil Vernet and F. Gallart Monés at the emerging point of the inferior mesenteric artery. They describe it with ten illustrations in the *Revista Española de Medicina y Cirugía*, 3:117, 1920. They theorize that this ganglion may be the center for the bladder-kidney, kidney-intestine, and other reflexes in this region. This ganglion seems to correspond in man to the inferior mesenteric ganglion in animals.

END-RESULTS OF RECONSTRUCTION
OPERATION FOR UNUNITED FRACTURE OF NECK OF FEMUR*

ARMITAGE WHITMAN, M.D.

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Before presenting the details of a new operation, one should be careful to explain the conditions responsible for its development, the class of cases to which one believes it adapted, and the postoperative results that may reasonably be expected, as determining its success or failure.

One of the most crippling injuries from which a patient may suffer is an ununited fracture of the neck of the femur. It is crippling not only in that it limits or does away with the individual's locomotive ability, but also that in addition it frequently insures them a life of constant pain.

Since fracture of the neck of the femur was first recognized, surgeons have been perplexed by the problem of the pseudarthrosis so frequently following it. In spite of the development of the abduction method of treatment, we may assume that a certain proportion of transcervical fractures, and fractures by decapitation, will not unite. In determining this proportion we may range between the reports of Campbell,¹ who

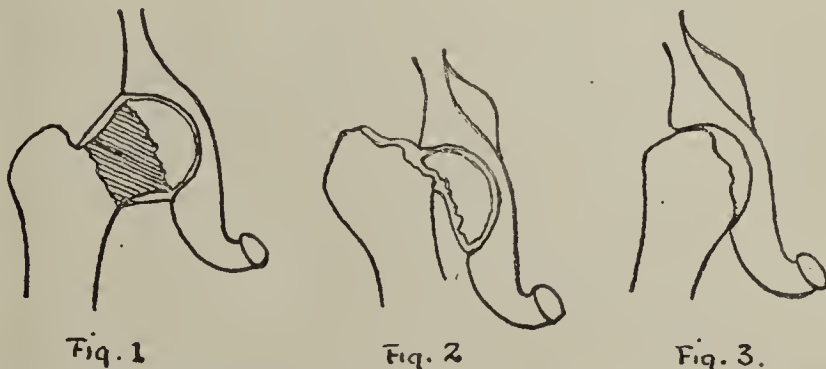


Fig. 1.—Area of the neck that is usually "absorbed" in ununited fractures of long standing.

Fig. 2.—Relation of the fragments in the ordinary type of ununited fracture: the shaft of the femur is displaced upward and adducted.

Fig. 3.—Disadvantages of implanting the trochanter in the acetabulum after removal of the head: poor adjustment, insecurity and loss of motion.

obtained union in 85 per cent. of this type of fracture, and Delbet,² who states that such fractures never unite under any form of treatment. We may also assume that for years to come many such cases will receive no treatment, or improper treatment, and that the unfortunate results will continue. Under the circumstances, there is for some time no likelihood of a dearth of pseudarthroses following this fracture.

The remedies hitherto at command consist in operations primarily designed to obtain union by assuring close coaptation of the fragments by artificial means. Those of longest standing are the simple nailing operation with an ordinary wire nail, the use of a tibial graft (Albee) or a fibular graft (Campbell-Delbet). These are supposed to hold together the ununited fragments. The advocates of the bone graft believe that it has distinct osteogenic powers. Delbet claims further that it enables the patient to bear weight anywhere

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Campbell, W. C.: *Ann. Surg.* 70:600 (Nov.) 1919.

2. Delbet, cited by Basset: *Les fractures du col du fémur*, Paris, Felix Alcan.

from ten to thirty days after operation. This point is doubtful, however, as his patients are described as getting about on the "appareil de marche à extension continue," which appears to be a modification of the ordinary caliper hip splint with traction, in which case, of course, no weight is borne upon the limb.

The type of operation varies from simple splinting through a small incision over the trochanter (Delbet) to arthrotomy through an anterior incision with exposure and freshening of the fragments, followed

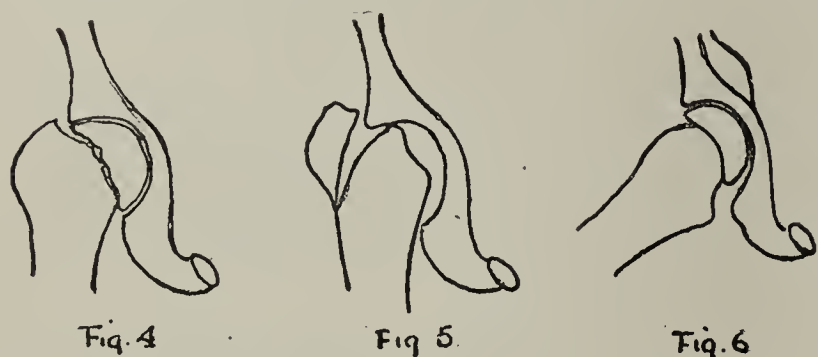


Fig. 4.—Fragments apposed for direct repair, illustrating contact of the trochanter with the rim of the acetabulum checking abduction and causing disability, even when union is obtained.

Fig. 5.—Trochanter displaced outward to permit inclusion of the neck in the acetabulum (Albee), illustrating the limited area of support, the limitation of abduction, and loss of muscular control.

Fig. 6.—Brackett's operation (from roentgenogram three months after operation, showing solid union between trochanter and head); the angle of abduction is about 40 degrees.

by introduction of the bone peg through a second incision over the trochanter (Albee). This appears a much more rational procedure, as one often finds the fractured surfaces so covered with fibrous tissue as to make their union, following simple approximation by any means, seem doubtful.

The objection to these operations, aside from their technical difficulties, lies in the fact that they depend for success on ultimate bony union—in other words, on the reparative powers of the patient himself. Enthusiastic as some advocates of the autogenous bone graft may be, and brilliant as may be their results, they could hardly deny that their operative efforts depended for success on the secondary reparative capacities of the individual. To put the case as generously as possible, there must always be a proportion of cases in which there will be failure of bony union, and in which the patient will have submitted to operation and probably six months of non weight-bearing to no end.

Aside from this consideration, one will encounter the large and more important class of cases in which the neck has been completely absorbed (Fig. 2). If the upper portion of the shaft and the head be brought together and unite, we have then obtained union at the expense of function, for it is obvious that from a neckless femur not much function, other than weight bearing, can be expected (Fig. 4). In some cases, indeed, it may prove impossible to bring the fragments together at all. In others, the head will be so hollowed and atrophied that it is little more than a shell, hardly strong enough to be relied on to provide a cartilaginous covering for the end of the graft. It is the view at the Mayo Clinic,³ that operation should not be done in these cases.

In fact, the statistics cited by reliable operators are not encouraging. Henderson³ had 38 per cent. good results in a series of twenty-six selected cases, which

represented 8.3 per cent. improvement of the 120 cases of pseudarthrosis in which relief was sought. Brackett⁴ found at the Massachusetts General Hospital one patient with a useful leg out of a series of twenty-four operated on—4 per cent. Delbet² had 52 per cent. good results, using exclusively the fibular bone graft. Speed⁵ is inclined to advocate excision, and more and more doubts the value of the bone transplant.

Dr. Brackett has devised an operation in which the denuded trochanter is placed in apposition to the denuded head, in cases in which the neck has been completely absorbed (Fig. 6). This also depends for success on ultimate bony union between the trochanter and the head. Brackett⁴ states that the method "treats the head as if it were a real sequestrum." There would also appear, from the diagrams accompanying the article, to be decided mechanical obstacles to success, as it would seem that reduction of abduction and placing the limb in a line with the body would be likely in course of time to cause a dislocation (Fig. 7). Leaving all such factors out of consideration, however, it is still clear that even this operation depends in the ultimate analysis on the reparative power of the patient.

We may therefore definitely state that Dr. Whitman developed the reconstruction operation first as applicable to the cases in which the neck has been completely absorbed, and in which bony union offers no solution to the subsequent problem of function; and second, in an effort to escape the percentage of hazard involved in operations trusting at all to the patient's ability to repair. Before this audience I need hardly observe that as a class these patients are not noted for their osteogenic powers.

The reconstruction operation removes the head of the bone. The trochanter is chiseled off in a line continuous with the remaining portion of the neck, with the aim of providing a broad, flat bearing surface. The surviving portion of the neck is thrust within the acetabulum to act as a new head, while the bone bared by removal of the trochanter forms, as it were, a new

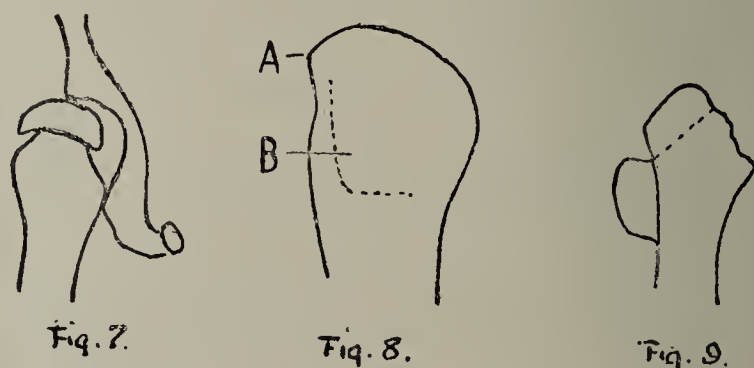


Fig. 7.—Brackett's operation: The limb has been brought into line with the body, suggesting insecurity, liability to subluxation and impairment of function.

Fig. 8.—Line of incision for reconstruction operation: A, anterior superior spine; B, trochanter.

Fig. 9.—Line of section of the trochanter and the point on the shaft to which it is to be transferred.

neck. All operations hitherto devised have disregarded the importance of the trochanter and the muscles attached to it. In this operation it is displaced downward upon the shaft of the femur as far as its muscular attachments will permit, and there secured. The muscles thus put on the stretch act as a sling to hold the end of the femur within the acetabulum, and

3. Henderson: Ununited Fractures of the Hip, Surg., Gynec. & Obst. 30: 145 (Feb.) 1920.

4. Brackett, E. G.: Boston M. & S. J. 177: 351 (Sept. 13) 1917.
5. Speed, Kellogg: Arch. Surg. 2: 45 (Jan.) 1921.

later, when the patient gets about, resume their normal functions of abduction and rotation—functions which are by no means lightly to be dispensed with (Fig. 12).

What, then, are the considerations influencing us to perform the operation?

The patient presents himself as seeking primarily the relief of pain. Once his pain was relieved he would be glad of a stable, weight-bearing extremity, such as might be assured by ankylosis. These two results obtained, he would be further gratified by the

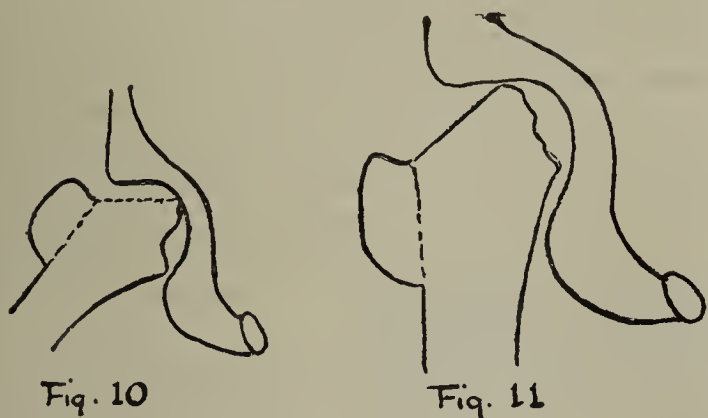


Fig. 10.—The reconstructed neck.

Fig. 11.—Relation of the reconstructed neck with the acetabulum in locomotion, and the leverage assured for the abductors. Contrast with Figures 3 and 4.

possession of sufficient motion to permit of his sitting down with comfort, and of going up and down stairs.

The symptoms we seek to relieve, therefore, are briefly: (1) pain; (2) disability. In estimating success or failure, we shall judge by (1) relief of pain; (2) a stable, weight-bearing extremity, and (3) ability to sit down and ascend or descend stairs.

The operation consists in a half U incision, beginning at the iliac crest about $1\frac{1}{4}$ inches posterior to the anterior superior spine, extending downward to about an inch anterior to, and below, the base of the trochanter, and then extending horizontally backward across, below it (Fig. 8). The fibers of the gluteus medius and of the tensor fasciae femoris muscles are separated by blunt dissection, and the capsule is exposed. The capsule is opened in the direction of its fibers. The head of the bone is then removed. Following the upper border of the gluteus minimus muscle, the base of the trochanter is reached and the trochanter with its attached muscles is chiseled off from the shaft in a direction outward, downward and slightly backward, so that the bone surface left by its removal corresponds with the inclination of the surviving portion of the neck (Fig. 9). The outer surface of the shaft of the femur is then exposed, and with the limb in sufficient abduction to insure the firm engagement of the neck within the acetabulum, the trochanter is pulled downward on the shaft as far as its muscular attachments will permit. At this point, with a wide chisel, a sufficient portion of the cortex is removed from the outer surface of the shaft to make a bed for its reception. It is then secured in place with kangaroo tendon, nail, graft or peg (Fig. 10). The wound is closed in layers and a dressing applied. A long spica, extending from the axillae to the toes, is then applied, holding the limb in the necessary amount of abduction, full extension, and midway between internal and external rotation.

The plaster is left on for about six weeks. It is then removed, and the patient, lying in bed is encouraged to have active and passive motions of the limb. When a fair degree of voluntary control has been

established, the patient may get up. The treatment from that time on depends upon the disposition—adventurous or otherwise—of the individual. If otherwise, a short spica is applied, and the patient is encouraged to bear weight upon the limb. The short spica is removed when the degree of the patient's confidence appears to warrant it. From that time on the rapidity of the improvement is directly commensurate with the effort of the patient.

It is perhaps unnecessary to say, in speaking of the class of cases for which this operation is designed, that giving the patient a painless, stable, weight-bearing hip joint, provided with motion enough to permit going upstairs and sitting down, is not equivalent to making him able to walk. He has to overcome the effects of months of disuse, of months of constant pain, of dread that any attempt to bear weight will result in collapse and still further pain. In short, many of these patients have actually forgotten how to walk, and the process of their reeducation is as difficult as if they had never known how. It is even more so, because walking having once been a practically automatic act, they are discouraged at the amount of attention necessary to relearn it. If there ever was a class of case to which the phrase muscular reeducation was properly applicable, this class is it. Paradoxical as it may seem, the very success of the operation is sometimes a drawback, as patients who have been sitting in pain for months or years are sometimes quite content to sit in comfort for the rest of their lives.

I have described the operation simply with reference to the one class of case for which it was originally designed—united fractures of the hip. Without wishing to seem hyperenthusiastic, it may be suggested that its use will eventually become expanded to a variety of other conditions, as its results are certainly equal to, if not better than, most arthroplasties. The amount of shortening, an inch to an inch and a half, is negligible, as compared with the superior freedom of motion and muscular control.

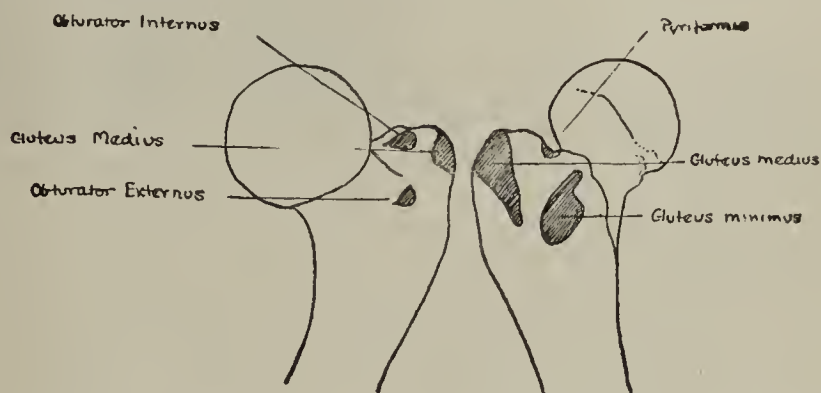


Fig. 12.—Attachment of muscles to greater trochanter (after Spalteholz).

I do not advocate the indiscriminate application of this operation to all types of disabilities of the hip joint. The operation is difficult and severe, although so far there has been but one death in Dr. Whitman's series, occurring suddenly on the tenth day, and probably due to embolism. Nevertheless, it should never be lightly undertaken, and never except by skilled operators. Furthermore, a good operation is but half the battle, as the retention apparatus, to be effective, must be comfortable, and permit of the patient's being turned in bed and moved about. The usual precautions against hypostatic congestion, bed sores, etc., must be religiously observed.

The first operation was performed, Oct. 10, 1916, on a woman, aged 60. It has since been performed on nine other patients—eight women and one man. In this series there has been one death, curiously enough occurring in the youngest patient of the series, on the tenth day, probably from embolism.

Space will not permit a history of each case. The first patient is walking with a barely perceptible limp, can go up and down stairs in the normal fashion, and has been at work—dressmaking—since six months after operation. A man with severe locomotor ataxia, totally incapacitated as a result of a fractured hip, is now getting about on crutches, and regards the operated limb as the most dependable one, in spite of having sustained a supracondylar fracture of the same femur since the operation. A woman with severe general rheumatoid arthritis regards the operated hip as the better of her two. All the patients have been relieved of pain. All are able to bear weight upon the affected limb. The amount of function varies directly according to the energy and persistence of the patient.

To sum up, I may say that those on the staff of the Hospital for the Ruptured and Crippled who have observed the progress of these cases are satisfied that to the patient desiring relief from the disabilities incumbent upon ununited fracture of the hip, the reconstruction operation offers relief of pain and a weight-bearing extremity. Given an energetic and persistent subject, ultimate function may become at least as good as what is generally regarded as a satisfactory result following union of the original fracture.

TREATMENT OF UNUNITED FRACTURES OF THE NECK OF THE FEMUR BY BONE TRANSPLANTS*

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Autoplastic transplantation of bone, combined with external immobilization, is generally accepted by experienced surgeons as the line of treatment most likely to produce osseous repair in ununited fracture of any bone.

It is unfortunate, so far as treatment is concerned, that so large a proportion of ununited fractures of the neck of the femur occur during the late years of life, at a time when operative interference is contraindicated, because of the danger to life from operative shock, prolonged immobilization and decubitus.

If the patient is a wage earner by his physical efforts, in good general health, in the productive time of life, it is a surgical problem for those responsible for his treatment to restore his self-sustaining ability and working capacity as an industrial unit at the earliest time consistent with safety to life.

Transplantation of bone is the indicated treatment for this type of patients.

The rigid adherence to the technical details which make bone-grafting successful, and to a definite plan of operation for the repair of this special ununited fracture, is necessary to obtain favorable results.

A segment of the fibula is best utilized for the transplant. It combines an ideal size and shape, together with the strength, elasticity and lightness of a tube. After the periosteum is removed, it presents a continuous, irregular surface of cortical bone covered by the cambium layer, which is rich in growing bone cells, available for grafting and osteogenesis. The transplant is obtained from the same extremity unless there is definite osteoporosis.

The ununited fracture is exposed through an anterior incision directly over the defect in the neck of the femur. Removal of fibrous tissue from the area between the fragments is indicated only when it is necessary to free the capital fragment to obtain better position for it. Fibrous tissue that can be preserved without detriment to position of the fragments will undoubtedly act as a framework for the deposition of new bone cells, and hasten rather than retard the formation of substantial osseous union between the fragments after transplantation.

It is not practical to maintain mechanical extension of the extremity while the transplant is being inserted. The neck of the femur has already been partially destroyed and absorbed by the process of grinding

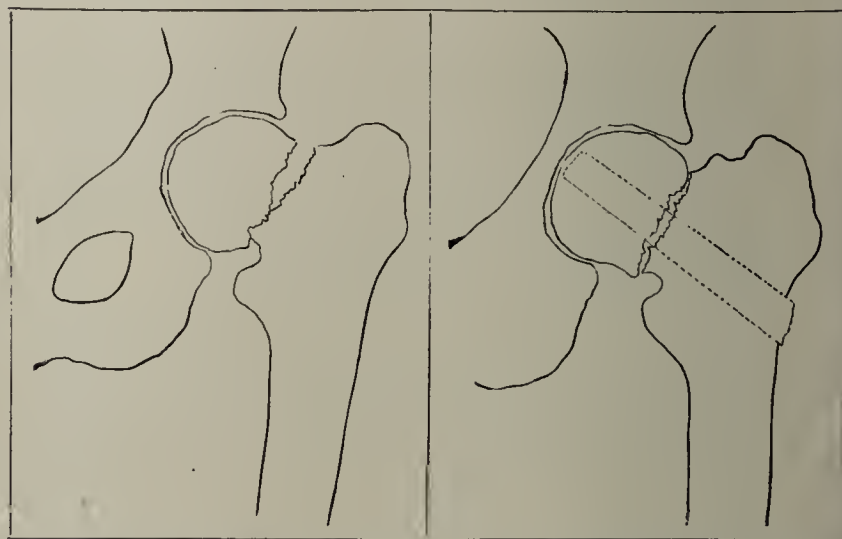


Fig. 1.—Roentgenogram tracing of an ununited fracture of the neck of the femur.

Fig. 2.—Roentgenogram tracing of an ununited fracture of the neck of the femur, showing the effect of abduction and showing the plan of bone transplantation.

together of the fragments by muscular action, and the extremity is permanently shortened in proportion to this destruction of bone. The muscles of the thigh are contracted to correspond to the bone defect.

If the transplant were inserted during mechanical extension, it would immediately be put under cross-breaking strain, equivalent to the amount of mechanical extension as soon as the extremity was released from traction. Under such a strain the transplant will either break at the fracture or cut through one of the fragments until the tension is relieved.

The transplant should be inserted while the thigh is in complete abduction, as that position, without traction, increases the length of the extremity, by changing the angulation of the fragments (Figs. 1 and 2).

For the introduction of the transplant, a second incision is made along the outer aspect of the thigh, exposing the shaft of the femur immediately below the greater trochanter, where an opening through the cortical bone of the outer part of the shaft is made accurately fitting the irregularities of the large end of the transplant. With the capital fragment held in proper position, a canal, smaller than the transplant, is

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

cut through to the articular cartilage of the head of the femur. The transplant is driven into this canal, across the line of fracture, until the end rests against the under surface of the cartilage of the capital fragment (Fig. 2).

To obtain union between the transplant and the fragments, it is imperative that all motion between them be prevented. Intermittent muscular spasm of the muscles attached to the trochanters, acting on the transplant, will cause it to break or to cut its way through one of the fragments to relieve the strain. Complete abduction of the thigh will cause the muscles attached to the lesser trochanter to pull the fragments solidly together in the long axis of the transplant, preventing any strain on the transplant.

Complete external rotation of the thigh will relax the muscles attached to the greater trochanter and prevent any cross-strain on the transplant.

External immobilization of the area of the transplantation is best accomplished by a plaster cast extending from the axilla to the toes, in the position of complete abduction and complete external rotation of the thigh. The opposite thigh is included to prevent shifting of the pelvis within the cast. The immobilization should be continued without change during convalescence, until roentgenograms show substantial osseous union between the fragments.

The transplant under favorable conditions grafts to the cortical bone of the lower fragment in a manner similar to the healing of wounds by primary intention.

In the live cancellous bone of the lower fragment, the process is different. It stimulates the healing of wounds by granulation. Under the stimulation of the transplantation, new bone cells are developed from the cambium layer of the transplant and from the cancellous bone of the host, both of them rich in osteoblasts, until the transplant is embedded in a solid mass of new bone.

In the partly devitalized cancellous tissue of the capital fragment, the process is much slower. The transplant furnishes the osteoblasts, while the surrounding cancellous bone acts as a scaffold into which the osteoblasts penetrate and develop, forming new bone which replaces the old cancellous bone as it is absorbed.

The medullary canal of the transplant is closed at each end by a thin plug of new bone, apparently produced from the endosteum. The development of new bone from all sources fills in the defect between the fragments of the ununited fracture, and produces a

substantial external callus especially thick and strong at the upper part between the neck and the greater trochanter (Fig. 3).

At the time of maximum development of new bone, the upper end of the femur between the cortical bone and the transplant is filled by a dense inelastic mass of new bone without cancellous demarcation. As time goes on, measured in years, both the transplant and the new bone are absorbed and modified toward cancellous bone until there is physiologic compensation between elasticity, strength and function. After removal of the plaster, even with solid repair of the ununited fracture, substantiated by stereoscopic roentgenograms, full body-weight bearing should not be allowed until the functional movements of the hip and knee joints have been well restored by systematic massage and passive exercises.

The length of the neck of the femur has been largely destroyed before the patient comes to operation for nonunion, and it is not reproduced by transplantation; consequently, after repair of the ununited fracture the extremity is correspondingly short. The movements of the hip-joint which depend on the length of the neck of the femur for normal completion, as abduction of the thigh, are correspondingly limited.

CONCLUSIONS

1. Transplantation of a segment of fibula is an effective method of treatment for ununited fracture of the neck of the femur when the patient is physically able to assume the burden of the operative procedure and the subsequent confinement.

2. It is especially applicable in young and middle-

- aged subjects who belong to the wage-earning class.
3. It is contraindicated in old people, because of the shock of the operation and the prolonged immobilization.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. WHITMAN AND DAVISON

DR. E. G. BRACKETT, Boston: With a damaged joint the problem is to bring this joint back to its best possible working condition. There are cases in which no operative measures should be attempted, either because of the good functional result, or because of contraindications due to age or general condition. In the older individuals, when there is still a good head, good articular lines, nearly normal cartilage surfaces, and a joint free from osteoarthritic changes, it would seem most reasonable, with the essential structures of the joint in such good condition, to use them with the attempt to bring back the joint into as nearly as possible a working condition; in other words, to preserve the articular surfaces for use. It is necessary to look on the remaining head as a

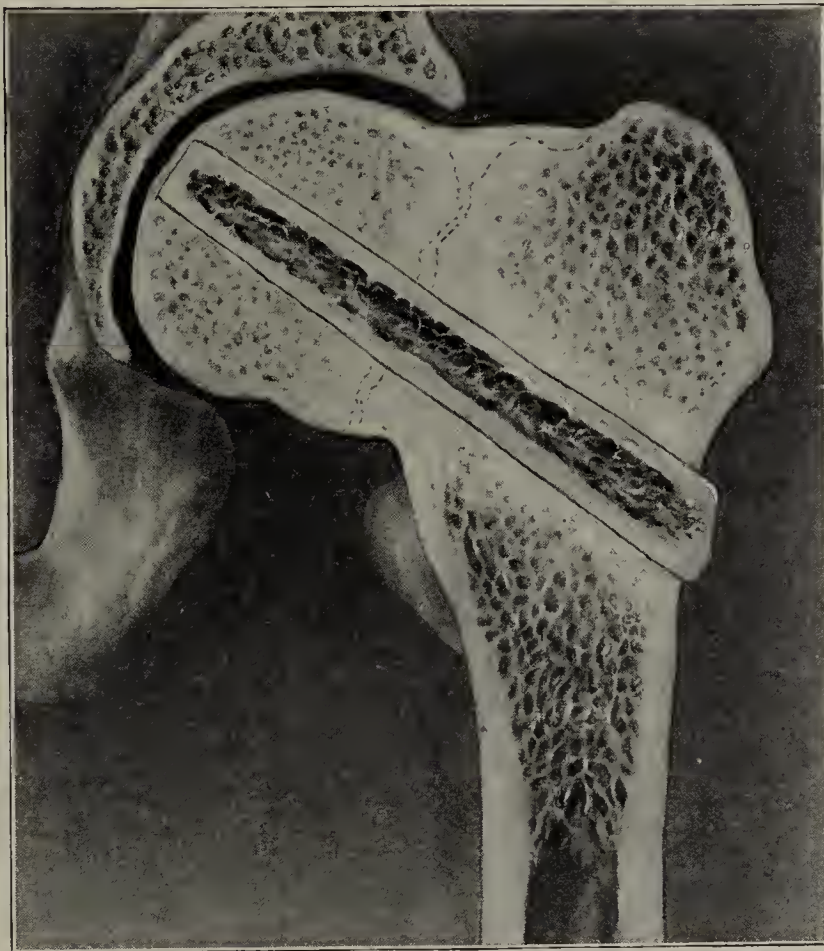


Fig. 3.—Diagrammatic vertical section of transplantation of fibula for ununited fracture of the neck of the femur, based on roentgenogram studies, one postmortem examination, and animal experimentations, showing the areas of new bone infiltration and location of callus.

partial sequestrum, for its nourishment cannot be complete in its detached position and, therefore, the problem is to graft this on the shaft by the method which will give the greatest possibility for a firm and strong union. The opportunities for such union are best met by putting cancellous tissue to cancellous tissue, without intermediary aid from extraneous material of any kind. This can be done by the method of grafting the head on the upper and inner portion of the trochanter, concaving the remaining head until cancellous tissue is found, and rounding off into a convex surface the upper and inner portion of the trochanter, so that it will fit into this concavity which has been made in the femoral head. By a distinct but not extreme abduction of the leg, from 65 to 75 degrees, the muscle pull strongly forces the trochanter into its place in the head, and one has the ideal conditions for a union of these two surfaces. The results in these cases justify this operation. It is not a particularly severe operation, and the patient has a firm weight-bearing leg, with a joint capable of good function. The limitation of motion is not marked. Flexion is usually easily obtained to beyond a right angle, and both abduction and adduction are usual. When normal joint structures are absent, such an operation is contraindicated. In these cases, the operation for pseudoarthrosis is indicated, using the trochanter by placement into the acetabulum either alone or with additional structures, preserving all the muscles so that they may hold the bone in place, and thus give a useful joint, although with more limited function, than in one in which the structures are normal. When neither of these operations is advisable, either because of the large amount of destruction of the joint structures, the occupation of the individual, or because of other reasons which contraindicate the use of the remaining head in the acetabulum, or the attempt at pseudoarthrosis, arthrodesis is often indicated. The choice of position is important: One must compromise between the best walking and the best sitting positions. As a rule, flexion from 15 to 25 degrees is advisable. In spite of the shortening, it is wiser to have a few degrees of adduction, rather than of abduction.

DR. FREDERICK J. COTTON, Boston: There are a certain number of cases of ununited fracture of the hip in which the patient does very well without treatment, and in which one has no right to do anything. The patients to be operated on are the ones who are disabled from physical disability or from pain. Whitman says that all his operations resulted in osteogenesis of the bone. I have had a number of cases in which various repair operations have been done in which osseous union has failed. I do not recall any case in which the disability has not been in large measure done away with. If there is any kind of a head left I like to try to utilize it. But if the head is a thin shell I waver in what I ought to do. The results are satisfactory in Brackett's operation, except that the patients are run down pretty badly when they get to us. There is a class of patients in which that is a debatable matter. If the operation and convalescence is short and it is a young patient originally robust, I do the Brackett operation most satisfactorily. In the rundown cases Whitman's operation should be considered. It should be called, however, a destructive, not a reconstructive, operation, an operation in which the head is no longer an asset, and should be done when we discover that our bony asset does not seem promising. We should recognize that bone operations on the hip, whatever the technic, have not been uniformly successful.

DR. MELVIN S. HENDERSON, Rochester, Minn.: We cannot any longer consider cases of nonunion of the hip as hopeless, provided the patient is not too old and is in good general condition. I believe we can restore over 50 per cent. of these patients to function so that they can walk without crutch or cane. The several methods advocated are of value. I have had no experience with the Whitman operation, but have used the Albee, Brackett and Davison methods, and they are all good. In the pegging operation, there must be sufficient of the neck of the femur left to make good apposition to the head of the bone. The roentgenogram is apt to be deceptive and should be taken with the foot in inversion and eversion. I remember that some years ago Ryerson showed me a roentgenogram in which the neck of the femur seemed to

be almost completely absorbed, and at operation he found the neck to be very little absorbed, and the bone peg driven through restored the hip to practically normal appearance. We must be careful not to traumatize too much. We should do as little dissection as possible. Very free dissection, although it gives you a beautiful exposure, leads to considerable stiffness of the hip afterward owing to adhesions about the joint.

DR. HUBLEY R. OWEN, Philadelphia: There is no hard and fast rule for treatment of fracture of the femur; we have to select the appropriate treatment for each case. I do not agree with Dr. Whitman that his cast is easy to apply, for I find it is not easy and I believe the bad results are due to the fragments slipping while we are applying the plaster of Paris. In the application of the plaster of Paris, Whitman states that he seldom had to go over and apply it to the other thigh. Practically always I apply the cast to the other thigh. There is difficulty with a stout person in applying it properly otherwise. I usually take the upper shell of the cast off after eight weeks and start massage and passive movements of the knee. It has always been a question in my mind just when we are justified in going ahead with an open operation. I have confined my operations for nonunion to the method of Albee and have always used the tibia and never the fibula. The trouble I have had with the bone peg operation is that I have not always gotten the peg in where I want it. Different ways have been devised for being sure of the direction of the peg. I do not see why the fluoroscope should not be used after the small pin is put in to see whether you have the proper direction and angulation.

DR. JOHN RIDLON, Chicago: All the claims made by the essayists can be substantiated, but there is one thing so far unsaid, and that is: what to do in the cases of so-called ununited fracture of the neck of the femur in which one cannot do these operations. In one such case I put the leg in full abduction and put it in a plaster cast; caused the man to walk on it, and got a good solid union at the end of eight months. This method of treatment should be used at least eighteen months with the patient walking before it is considered a case of nonunion—unless you want to operate for the sake of saving time.

DR. FRED H. ALBEE, New York: As to the source of the graft, that is unimportant. It is a question of the technic. In this particular condition above all others we wish the maximum number of osteogenic bone cells in the graft to live, and as this depends largely on accuracy of technic and fit, automatic electrically driven tools are essential. Accuracy of technic cannot be too strongly emphasized. The bone graft peg offers the most satisfactory anatomic and functional results. This is the most ideal operation, but it cannot be done when the neck has been largely eroded. The next choice is an operation in which the dead femoral fragment is removed, the great trochanter with its attached muscles is turned outward, and the stump of the femoral neck and upper end of the femur is placed in the acetabulum. The third type of operation consists of ankylosing the hip by mortising together femur and acetabulum, supplemented by a graft from the outer table of the ilium. The results from these plastic operations have been most satisfactory in my experience.

DR. EDWIN W. RYERSON, Chicago: Many of these bone pegs and nails are driven in horizontally through the trochanter, and sometimes fail to enter the head and neck. Roentgenograms of many cases have been published which show an entire lack of knowledge of the proper method. It is useless to do that kind of work. The peg must always go up at a slant from a point below the trochanter. Secondly, the destruction and erosion of the head and neck of the femur are in many cases much more apparent than real, on account of the foreshortening in the roentgenogram due to rotation of the distal fragment of the femur, and also the decalcification of both fragments from disuse. This decalcification will disappear if the bone is repaired by nail or peg so as to place the fragments in apposition and hold them in apposition until union has occurred.

DR. WILLIS C. CAMPBELL, Memphis, Tenn.: Nonunion may occur in 10 per cent. by the Whitman or any other method of

treatment. If the union has not occurred at the end of three months, the case should be considered ununited and a bone graft inserted through the trochanter and neck. In all cases in which we have employed this measure early, before atrophic changes occurred, we have been rewarded by success—solid bony union and a useful, and in some instances, a normal member. Consequently, I cannot emphasize too strongly bone grafting early, or just as soon as we find union has not occurred. To determine the position of the graft, a series of roentgenograms should be made during the course of the operation. First, after reduction; second, with the drill inserted; third, with graft in position. The fluoroscope is unreliable in this region. In the cases in which extreme atrophy has occurred we cannot expect union of the neck by any method. The head should be removed as suggested by Brackett and the neck inserted into the acetabulum. The method described by Whitman, of attaching the trochanter at a lower level, is an excellent one, as it takes up the slack in abduction, rendering the hip more stable. I first employed the same procedure three years ago.

DR. ARMITAGE WHITMAN, New York: I wish to make it clear that the operation is done only on those patients who desire it for relief of symptoms for which they think the operative risk is justifiable. In regard to Dr. Cotton's statement as to the satisfactory results following fibrous union, it is quite true that a number of such fibrous unions may be perfectly satisfactory. I doubt, however, whether Dr. Cotton would venture to predict with certainty that, in the event of failure of osseous union, fibrous union in that particular case would be satisfactory. We prefer the reconstruction operation because we believe it of advantage in removing absolutely the percentage of uncertainty involved in such cases, and we call it "reconstruction" because we believe it reconstructs a neck when the neck is entirely absorbed.

THE CLINICAL DIAGNOSIS OF HEREDOSYPHILIS *

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For one not specializing in the diseases of children to appear before a group of distinguished pediatricians merits an explanation, if not an apology. My presence here is due to the fact that within the last few years I have been consulted by a number of adults whose symptoms were due to prenatal syphilis, unrecognized until irreparable damage had been done. This was not due to parental neglect in seeking medical advice; in fact, most of the patients had been quite continuously under medical care since early childhood. In the hope of possibly averting similar tragedies, I have thought it worth while to review a few of the cases.

Failure to recognize heredosyphilis may be due to several reasons, among which those that appear to be the most important are:

1. Failure to appreciate that syphilis is very common and affects all ranks of society.
2. The neglect of the Wassermann test. A positive reaction is the most constant symptom during infancy and early childhood.
3. Failure to realize that in late heredosyphilis the Wassermann is very often negative.
4. Incomplete histories, and the failure to study symptoms collectively.
5. Lack of familiarity with the common stigmas.
6. Failure to study other members of the family.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Time will permit only a brief discussion of the last three. A complete history, always important, is particularly important in this group of patients. The symptoms considered singly are often not significant,¹ but if viewed collectively they frequently become very suggestive—an acute infectious disease not infrequently unmasks an unsuspected heredosyphilis. I know of no better way to illustrate how easy it is to miss prenatal syphilis than by citing one of my own mistakes: In 1911, a woman, aged 31, came to me for an examination of the lungs. She had always been delicate and following an attack of so-called grip a week previously, had slightly blood-streaked sputum several times. In addition, her appetite was poor and she had lost considerable weight. I could not, however, convince myself that she had tuberculosis, and so advised her. The correctness of this opinion in no way excused me for missing the true condition. Nine years later she was referred to me by her physician for treatment for neurosyphilis. At this time, owing to the fact that her previous record was temporarily mislaid, I took another history. I have arranged in two columns in the accompanying tabulation the data obtained at these different

OBSERVATIONS AT DIFFERENT EXAMINATIONS *

1911	1919
Very delicate child: "catarrhal."	Severe nervous trouble about seventh year; was so ill, recovery despaired of.
Slight thyroid enlargement, age 10.	About twelfth year, marked "drawing sensation" in feet, necessitating removal of shoes to stretch feet.
Several years ago lost sight of right eye; "shock."	Severe "growing pains" in legs. Knee jerks discovered to be absent in childhood.
Very easily exhausted. Very poor appetite.	After birth last child severe pain in back; later very severe darting pains in legs, etc.
15 pounds below usual weight. 30 pounds below maximum weight. Recent "grippe" with blood-streaked sputum.	Mother had ptosis of one eyelid.
Father and mother died at age of 45; pneumonia.	Oldest brother died infant; oldest sister "hemorrhage in back of eyes" (choroiditis?).
Two sisters; one had tuberculosis. Husband well. Four children.	Children ill a great deal, one misc. Physical findings: unequal immobile pupils; optic atrophy; absent knee jerks; blood Wassermann test, positive; spinal fluid Wassermann test, negative.
Physical findings: not tuberculosis.	Diagnosis: tabes dorsalis, juvenile type.

* In the left hand column, the history as obtained in 1911 contains no clue as to the true condition. On the right are listed the significant facts elicited in 1919. If this column is "added up," a provisional diagnosis of juvenile tabes can be made even without the physical findings.

examinations; in the right-hand column appear the data from which a diagnosis of juvenile tabes might have been made years before. Comment is unnecessary. The so-called stigmas are numerous and varied; some are very apparent while others are detected only on careful examination. It is true that the pathognomy of many if not all can be questioned, yet the occurrence of several in an individual establishes one of the most definite clinical pictures we have. It is quite another matter, especially in adults, to deduce that the symptoms are due to the prenatal syphilitic infection. To do so one must in the first place be sure that syphilis might be responsible for the symptoms, and secondly that no more probably etiologic cause can be found. This, of course, applies to our interpretation of a positive Wassermann reaction as well.

1. The presenting symptoms in 125 children with congenital syphilis recently studied by Dr. L. T. Royster (Am. J. Syph. 5: 131 [Jan.] 1921), were as follows: swollen knee, 1; injuries, 3; circumcision, 1; skin eruptions, 5; poor school work, 2; delinquency, 2; pain in chest and back, 1; enuresis, 1; indigestion, 1; general examination, 7; headache, 5; earache, 1; adenoids and tonsils, 37; swollen cheek, 1; nausea, 1; sore mouth, 1; glands of neck, 1; syphilis, 1; inflamed eyes, 1; painful micturition, 1; discharging ear, 1; defective vision, 7; sore throat, 6; abscessed ankle, 1; whooping cough, 1; feeding, 42.

Time will permit me only to show some of the more common stigmas. When one considers the countless number of spirochetes that are present in the skin, it is not surprising that skin manifestations are frequent. The deep linear scars in the lips extending out into the skin are one of the most trustworthy signs (Fig. 1). Scarring at the angles of the mouth results

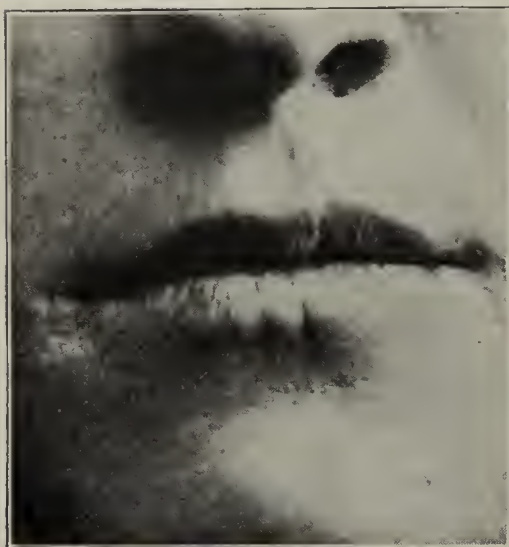


Fig. 1.—Girl, aged 15, with multiple lesions, exhibiting scarred lips, and scars at angles of mouth. Wassermann test positive. A younger sister with a negative Wassermann test had scars at the angle of the mouth only.

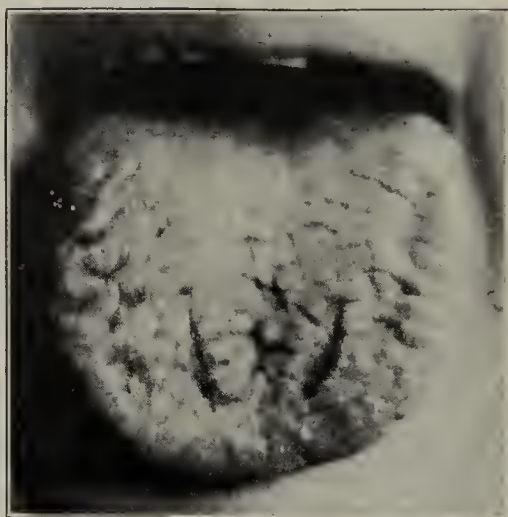


Fig. 2.—The furrowed or "scrotal" tongue; Wassermann test, negative; mother's Wassermann test, weakly positive.

from the long continued ulceration that sometimes occurs. Similar scars may be present about the anus.

If we examine the skin with especial care we shall sometimes see small, achromic, "punched-out" cicatrices rather generally distributed over the body. Great care should be taken to exclude other causes, especially variola or varicella. It is believed that they indicate the site of previous spirochetal nests. In apparently healthy infants, Fischl and Steinert² state, a supposedly harmless staphylococcus skin lesion may often shelter spirochetes and spread them broadcast. In several such cases nothing but a positive Wassermann test in the mother suggested looking for spirochetes in the vesicular fluid. The high, narrow palate so often associated with other stigmas should always awaken our suspicions. The deeply furrowed tongue (Fig. 2) referred to by the French as the "scrotal" tongue has long been recognized as a sign of much significance.

To Sir Jonathan Hutchinson we are indebted for first drawing attention to the fact that congenital syphilis sometimes leaves its mark on the teeth, though we must accredit Fournier with making the most extensive study of the effects on dentition. He demonstrated that prenatal syphilis may delay the eruption, alter the shape, size and arrangement, and prevent or distort the enamel formation. The most characteristic change is that of hypoplasia, often referred to incorrectly as atrophy, the classical example being the notched upper central incisors of the permanent set known as Hutchinson's tooth (Fig. 3). Though generally accredited with being the most pathogno-

monic of the stigmas, it is relatively uncommon. The so-called triad keratitis, deafness and notched incisors is almost a medical curiosity. Hypoplasia of the other teeth, Sir Jonathan did not consider significant. It is however, very often caused by hereditary syphilis. The lack of enamel over the distal part of the tooth sometimes makes it resemble a cuff projecting below the sleeve. At other times the distal or hypoplastic part of the tooth looks as if it had been pinched by artery forceps while still soft. The hypoplastic tip of the canine sometimes suggests the tip of a kernel of corn, both in shape and in its yellow color, while at other times its terraced appearance resembles a Burmese pagoda (Fig. 4). When the hypoplastic part has crumbled away, a puckered appearance results as though the edge had been drawn up with a shirring string.

More common than the Hutchinson tooth and of equal significance is hypoplasia of the sixth year molar, referred to in France as Fournier's tooth and in England as Moon's tooth (Fig. 5). As shown in Figure 6, it is the only one of the permanent teeth the enamel of which is laid down before birth. When the normal enamel-coated convolutions of the crown are replaced by a rough, jagged, yellowish mass, we have positive proof that something was interfering with the fetal growth during the last months of intra-uterine life. If in addition to the hypoplastic sixth year molar, the incisors and canines are hypoplastic, we know that the influence that began before birth continued to act during the first two or three months after birth. There is a definite line of demarcation where the hypoplastic crown of the molar joins the normal body of the tooth. It looks as though a



Fig. 3.—Hypoplasia of upper central incisors (Hutchinson's teeth), also upper lateral incisors and canines as well as all the lower incisors and canines. A study of Figure 6 makes it evident that the process interfering with the enamel deposition began during the latter part of the first month after birth (crescent in upper central incisors) and was again active during the third month. (Hypoplastic line in the middle of all the upper and lower incisors and the tips of the upper and lower canines.)



Fig. 4.—Hypoplastic upper canines, deciduous teeth; note terraced appearance; note absence of other teeth; keratitis; Wassermann test positive.

string had been tied tightly about it. Because of the vulnerability of these teeth due to the lack of enamel, they readily decay, and for that reason in adults we are apt to find that these teeth are lacking or crowned. Gold crowned molars are often a monument to a prenatal tragedy. It is quite commonly believed that

2. Fischl, R., and Steinert, E.: Arch. f. Kinderh. 69: 399, 1921.

congenital syphilis does not affect the deciduous teeth, notwithstanding the fact that Sanchez noted the effects at the end of the eighteenth century.³ This impression is incorrect and due, no doubt, to the fact that in order to have the deciduous teeth affected, the infection must take place so early in interuterine life (between the seventeenth and nineteenth weeks) that death occurs as a rule either before or soon after birth. In several of my cases the detection of the changes in the first teeth led to the diagnosis of congenital syphilis (Fig. 4). Had the grave significance of the hypoplasia in this little girl been appreciated, it might have been possible to prevent the severe attack of interstitial keratitis that for a time seriously jeopardized her eyesight. Occasionally, owing either to an increase in enamel bodies or a hypoplasia of the interenamel substance, white lines appear having the same crescentic form seen in enamel hypoplasia. This is distinctly uncommon, yet in one instance (Fig. 7), when associated with hypoplasia of the distal half of the upper lateral incisors, it furnished the first clue. This boy of 6, who was small for his age, was an eight months baby, weighing less

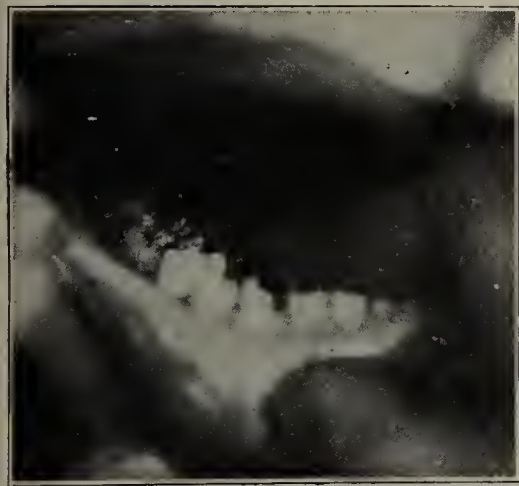


Fig. 5.—Hypoplastic sixth year molar; Fournier's or Moon's tooth; the canine and incisors also show hypoplasia.

than 5 pounds at birth. He was never well and had been under the care of a children's specialist for some time, though without benefit. He had a rather large forehead and enlarged tonsils and adenoids. His Wassermann test was positive. The father had a syphilitic spondylitis and a positive Wassermann test.

Though of much significance, the saber case tibia is rarely encountered except in Italians and negroes. The whole time allotted to this paper might with profit be devoted to a consideration of hereditary syphilis of the bones. The osseous changes may be the only signs of congenital syphilis in the fetus and be unsuspected till revealed by the roentgen ray.⁴ Fournier referred to the tibia as the "determining bone," as lesions of the upper third so often established the diagnosis of an unsuspected congenital syphilis. Acute epiphysitis, the pseudoparalysis of Parrot, is sometimes mistaken for acute scurvy. But it is in late childhood when the Wasserman test is so often negative, that the greatest number of mistakes are made. With the exception of acute fulminating osteomyelitis, no operative procedures should ever be performed on a child's osseous system till after a careful examination for hereditary syphilis has been made, clinical and serologic. Tuberculosis and syphilis sometimes coexist, and both conditions may require treatment. The child shown in Figure 8 had a positive Wassermann test, yet the pig test was positive for tuberculosis. Multiple syphilitic lesions of the bones and soft parts are difficult to dif-

ferentiate from tuberculosis. The boy illustrated in Figure 9 and his brother presented multiple lesions; both had positive Wassermann tests. I have seen what appeared to be an identical case, diagnosed as tuberculosis, because of a negative Wassermann test, in which recovery ensued with heliotherapy.

Syphilis should always be suspected in children showing eye palsies. The child illustrated in Figure 10 shows ptosis of one eyelid, a paralysis of both superior recti and marked lateral

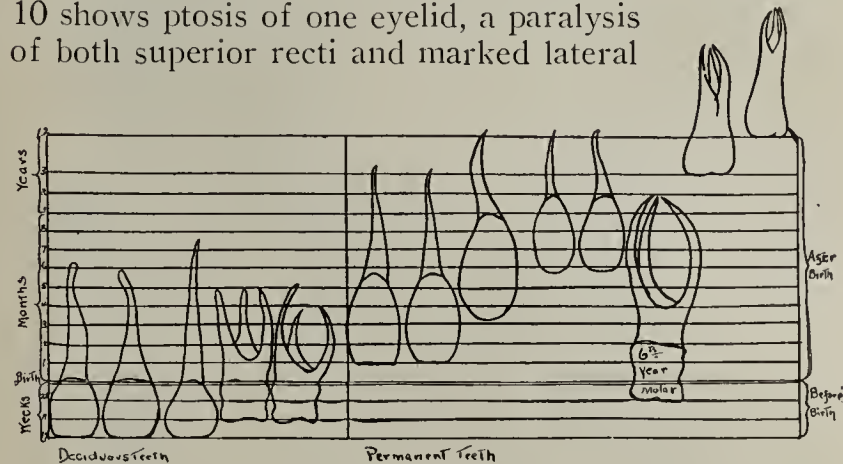


Fig. 6.—Chart showing time of inception of calcification (dentification) of the teeth (Stein, J. B.: *Dental Cosmos* 55: 691 [July] 1913).

nystagmus. The teeth are exceedingly hypoplastic. She was small for her age and had an advanced mitral stenosis, though she had not had rheumatism. A number of observers have drawn attention to the fact that stenosing lesions of the mitral valve are frequently due to hereditary syphilis. This is especially to be suspected if associated with an arrest of development and interstitial nephritis. Her Wassermann test was positive. The mother, a microcephalic, feeble-minded, alcoholic, sexually immoral woman with bilateral ptosis, had a negative Wassermann test. One of the mother's brothers was a mentally deficient epileptic; his blood and spinal fluid Wassermann tests were negative, though a robust sister had a positive test. The maternal grandmother had old corneal scars and a weakly positive Wassermann test. There is considerable to suggest that the child was a third generation syphilitic, yet the mother's sexual promiscuity makes it uncertain.

In a number of heredosyphilitics we have observed what we have designated as "knock knee elbows" (Fig. 11). It is an increase of the normal carrying angle, due apparently to an overgrowth of the internal condyle of the humerus which throws the forearm to the outer or radial side. This occurs sometimes

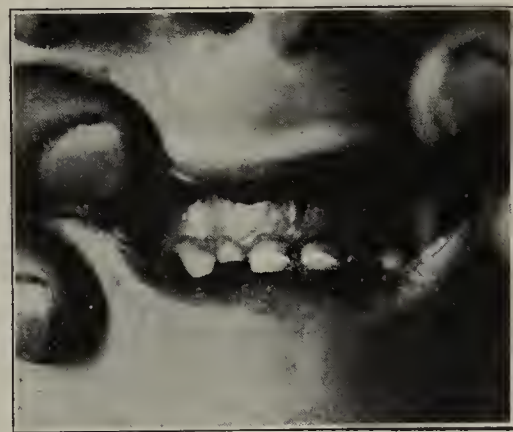


Fig. 7.—Hypoplasia of tips of upper lateral incisors and of interenamel bodies in upper central incisors producing the crescent white line; deciduous teeth; Wassermann test positive.

with limitation of extension. We have as yet not determined definitely that this occurs only with hereditary syphilis, but we have been impressed with its occurrence in this disease. Painless bilateral effusion of the knee joints (Fig. 12) should always suggest hereditary syphilis. It is one of the more uncommon manifestations.

3. Quoted by Cavallaro, Joseph: *Dental Cosmos* 50, Nov.-Dec., 1908; 51, Jan.-Feb., 1909.

4. Shipley, Pearson, Weech and Green: *Bull. Johns Hopkins Hosp.* 32: 75 (March) 1921.

By means of the stigmas already discussed, we are often able to arrive at a diagnosis by two methods. The common one, which might be termed the direct method is relatively simple. Having excluded, so



Fig. 8.—Coexistence of tuberculosis and syphilis; pig test of the pus from the wound positive for tuberculosis; Wassermann test positive.

far as possible, all other causes for the presenting symptoms, all the suggestive findings, both in the history and the examination, are recorded, and to each is roughly assigned the relative percentage of syphilitic probability; we then "add up the column," as it were.

The indirect method, to which I have referred⁵ as the diagnosis by intensive familial study, does not appear to be very generally employed, perhaps because it is too time consuming. Yet with sufficient care and skill this method will often be positive when the Wassermann test is negative. In these case the signs in the patient may be few or entirely absent, but present in other members of the family. To illustrate this I will tell of another of my mistakes. About fifteen years ago I was sent by a physician to see a little colored baby who was suffering from an acute respiratory infection, complicated by some digestive disturbance. I observed nothing unusual in the child or in the mother. About ten years later he was brought to my clinic at the dispensary suffering from severe interstitial keratitis. At this time I noted that the mother had a most "telling smile," though I had entirely missed it before. She exhibited the most perfect example of Hutchinson's teeth in an adult that I have ever seen.

As a rule, owing to the soft condition of the cutting surface, these teeth early become worn down, and by the time middle age is reached they are very short and the crescent has entirely disappeared. The child's father had a negative Wassermann test; the mother's was faintly positive, while that of the child was strongly positive. This seems to be an instance of transmission to the third generation and, judging from the degree of activity, there is no reason why it might not be transmitted still further.

The W. family well illustrates the need of a general familial survey. A man of 29 complained of weakness and pains in various parts of his body. He was not delicate as a baby, though he was a bed-wetter to his eighth year. Because of dyspnea he could never run and swim like other children. He had the signs of advanced aortic regurgitation, and much albumin in his urine. He denied syphilis, and the Wassermann test was negative. His tonsils were slightly cryptic. Were they the focus of the infection? He had very slight linear hypoplasia of all four central incisors, quite insufficient evidence for a diagnosis of hereditary syphilis. It is true that enuresis occurs frequently in heredosyphilis, but there are many who do not consider it especially significant. Of course, aortitis is usually due to syphilis; yet the history conclusively proves that the lesion was present in childhood, and it is quite generally stated that syphilitic disease of the aortic valve is very rare in childhood. He did not present the signs of prenatal syphilis, and he had cryptic tonsils. There were several clues in other members of the family, but the most interesting were those furnished by the little brother.

At the age of 4 he was taken to a physician because of fever and green stools. Three years later he was examined by a pediatrician who found that he had "poor teeth, poor eyes, presenting a run down nervous state, eyelids inflamed, heart and lungs generally negative." It is further stated that "the child wants gen-



Fig. 9.—Multiple lesions suggest syphilis rather than tuberculosis; this patient had lesions of both sides of the face, both hands, and tibia; Wassermann test, positive. Lesion subsided under antisiphilitic treatment.

5. Stoll, H. F.: Hereditary Syphilis as a Cause of Chronic Invalidism, J. A. M. A. 67: 1885 (Dec. 23) 1916.

eral attention; advise outdoor school, eye specialist; child has slight chorea; if unable to get in outdoor school, *feed the child*; no medication, hygiene and diet advised." He was examined by a psychiatrist who

advised that he be sent to the state school for feeble-minded children. Congenital syphilis apparently was not suspected, yet when his mother was carefully questioned a few years later she readily gave the following additional and suggestive information: He weighed 9 pounds at birth and was very healthy and strong, but when about 1 month old he developed a cold in his head, and a nose specialist who was consulted said he had contracted a cold at birth and had adenoids. He improved and was in good health until about 1 year of age, when he began cutting his teeth and during this time he had convulsions for about six months. He did not walk until his second year, and was always small for his age. Otherwise he seemed well, playing and sleeping normally. He had granular eyelids since

and the hypertrophic change resulting therefrom. Her brother showed the classical saddle nose, prominence of the frontal bones, interstitial keratitis and an incomplete cleft palate. Another brother suffered from



Fig. 10.—Ptosis of left eyelid; paralysis of both superior recti; masked lateral nystismus; extreme dental hypoplasia; mitral stenosis; Wassermann test positive.



Fig. 11.—The radial deflection of the forearm which we have referred to as "knock-knee elbow" appears to be due either to increase in the length of the inner condyle or to a lack of development of the outer condyle. This results in the outward deflection of the articular surface of the humerus. In these cases it is possible to approximate the forearms through their whole extent when the elbows are fully extended. Occasionally there is a coexisting limitation of extremities at the elbows. The pronounced types of this elbow have usually been associated with some of the recognized stigmas of heredosyphilis, but our series is too small to speak with finality. This child has numerous stigmas and a positive Wassermann test.



Fig. 12.—Painless effusion of knee joints; patient had interstitial keratitis; Wassermann test negative.

his second year. The "cold in the head," the convulsions and retarded development, notwithstanding his apparent health at birth, should have excited suspicion. Then, too, he presented the rather suggestive "key-stone facies"—high broad forehead and small, pointed chin—and hypoplasia of his deciduous teeth. This boy, his sister and his mother all had positive Wassermann tests. The older brother, I learned later, had had a positive test a few years before.

It is interesting to note how quickly an observing nurse will learn to detect the more common signs. Some years ago a young woman was convalescing from an appendectomy. Nothing in her appearance had interested the surgeons in attendance, but the nurse on the ward suggested that I look her over; she also remarked that certain members of the family who had visited the patient were "interesting." The patient showed an old interstitial keratitis, deeply scarred lips and a markedly furrowed tongue. She also exhibited one of the less common stigmas, that of limitation of extension at the elbows (Fig. 13). This may be due to a previous and unrecognized epiphysitis

interstitial keratitis. The mother had small, immobile pupils; the father was not examined.

In the time at my disposal I have been able to consider only a few of the diagnostic problems presented

by this disease. The rôle played in the causation of the various endocrine dysfunctions, in hypertension, epilepsy, chorea, etc., cannot be discussed; nor could I speak concerning them with any considerable degree of positiveness, as in most of the investigations that have been made only the results of the Wassermann test have been considered. These conditions must be restudied clinically as well as serologically. I hope I do not appear to speak disparagingly of the Wassermann test. I consider a positive reaction unquestionably the most trustworthy evidence of syphilis. But one must view with concern the decadence in the ability to make clinical diagnoses so manifest today

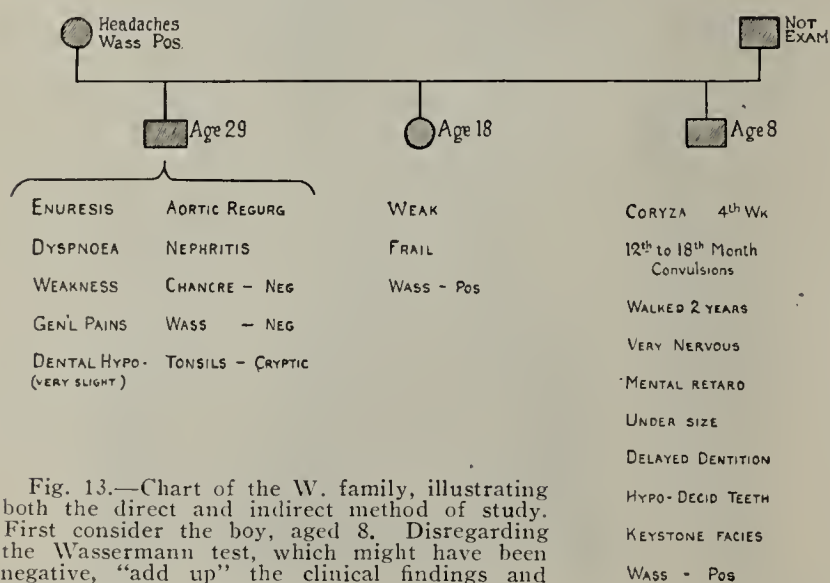


Fig. 13.—Chart of the W. family, illustrating both the direct and indirect method of study. First consider the boy, aged 8. Disregarding the Wassermann test, which might have been negative, "add up" the clinical findings and they will warrant a tentative diagnosis of congenital syphilis. Examination of the mother's and sister's blood would have clinched it. The data concerning the 29-year-old brother are insufficient for a diagnosis of syphilis, even if the Wassermann test had been positive. There is nothing to suggest heredosyphilis till the other members of the family are studied.

and the tendency to depend entirely for our diagnoses on the multicolored reports that emanate from the laboratory. It is no uncommon experience to meet clinicians who refuse to make even a provisional diagnosis until all the reports have come to hand.

I hope I have not conveyed the idea that the diagnosis of heredosyphilis by intensive familial study is a quick, easy method. It requires the expenditure of a good deal of time and patience, and a familiarity with the common symptoms and stigmas. Moreover, the method is not infallible; yet in certain cases it will enable us to arrive at a diagnosis when the Wassermann test is negative.

179 Allyn Street.

ABSTRACT OF DISCUSSION

DR. ROGER H. BENNETT, New York: I hope that we shall see less congenital syphilis in the future than we have in the past. I have this hope because so much more work is being done in the prenatal clinics in the larger centers and particularly in the larger hospitals. I am informed that at the New York Lying-In Hospital, where routine Wassermann tests are taken on every patient entered there, including the out-patients, 8 per cent. of all women examined have positive Wassermann reactions. If those figures are correct, and the mothers are properly treated over a prolonged period from early pregnancy, it is going to make a great deal of difference in the number of cases of congenital syphilis. I also agree that the laboratory may spoil the clinicians. I recall seeing in my clinic a baby that was just reeking with syphilis. It presented the typical textbook picture of congenital syphilis. One of the men in the seats asked, "Have you had a Wassermann test done?" The clinical evidence in this and many other cases is just as accurate and conclusive

as a Wassermann test. Those of us who see many infants see a good deal of congenital syphilis and are able to recognize it early not only from a clinical standpoint but because we are making more Wassermann tests. One type of congenital syphilis that is not always recognized is the infant who is being properly fed, under the proper hygienic surroundings, yet does not gain in weight, does not progress normally and has no snuffles and no syphilitic lesions that can be seen externally. That is the type of baby in which we always have a routine Wassermann test made and frequently find congenital syphilis where no conclusive clinical evidence exists.

DR. J. I. GROVER, Boston: A physician sent me a baby for my opinion about a skin lesion which he thought might be chickenpox that was not clearing up but had begun to desquamate. It was very evidently a case of congenital syphilis. The mother had not told the physician that she lost a child a year ago that had congenital syphilis (with a positive Wassermann reaction). It died during the administration of neo-arsphenamin. She feared the new baby would be given the same treatment and die also. The mother and father had Wassermann tests made last year, and they were reported negative. In view of the fact that both babies had syphilis, the mother or father, or both, also have the disease. The positive syphilitic case was reported to the board of health last year. They did nothing about it to my knowledge, never approaching the mother or father. I do not believe we shall ever improve on the 8 per cent. incidence (just mentioned) until the state does something radical in all positive specific cases as it does in smallpox and diphtheria.

DR. FRITZ B. TALBOT, Boston: The tendency of medical students is to depend not on their observations and their actual knowledge of symptoms and signs of disease but on the laboratory. That is not entirely due to the medical student himself, but, in part, to the attitude of his instructors who like to make a pretty case and have all the sidelights available present before the students; and I think if those who are teaching medical students will bear that fact in mind, the clinical diagnosis will become much more common in the future.

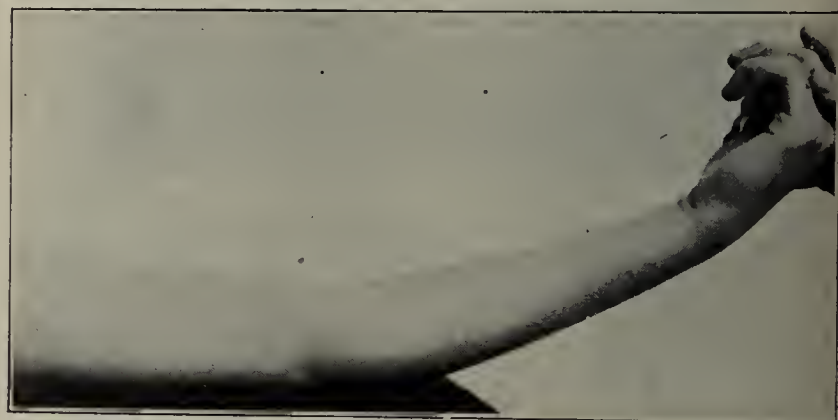


Fig. 14.—Bilateral limitation of extension of elbows, possibly due to an old epiphysitis; patient had interstitial keratitis.

DR. E. C. FLEISCHNER, San Francisco: Special stress should be laid on two points: First, these hyperplastic lesions should excite grave suspicion of syphilis. We should not surmise that every one of these cases is a syphilitic child, but every case should be considered a potential case of syphilis. Second, Dr. Stoll emphasized a phase of the subject, the proper taking of family histories. Were we to enter the office of any one of us, irrespective of how well trained we may be, we would find a great deal to criticize, particularly with respect to the average family history.

DR. LOUIS W. SAUER, Evanston, Ill.: Was the child with the deficient enamel and the negative Wassermann test syphilitic?

DR. BORDEN S. VEEDER, St. Louis: I was interested in what Dr. Stoll pointed out in regard to the teeth, for there is an impression that the common type of teeth in hereditary syphilis are the Hutchinson teeth. In our syphilitic material at St. Louis I do not think it runs over 4 or 5 per cent.; but

this type of peg tooth which Dr. Stoll has described is far more common and should always cause suspicion of hereditary syphilis. There are a great many children with bad teeth of this type resulting from malnutrition in infancy who are not syphilitic. You must remember that tooth lesions in syphilis are due to trouble in the first few months of life when the tooth buds are developing. During the last year we have been going over our syphilitic material in St. Louis and have notes on about 500 cases between 1912 and 1920, and I must say that in spite of the fact that we have treated many of these cases intensively with various methods of treatment, it is my feeling that when the whole thing is summed up the results of treatment are most unsatisfactory. It is my belief that very little is to be gained by the treatment of the syphilitic child; for even if the syphilis is cured, all sorts of physical and mental defects are left. The point we must come to is the studying of the family in order that the mother and father receive treatment to prevent the birth of a child with hereditary syphilis. Treatment in this way gives very much more satisfactory results. Treatment of the syphilitic child, even though it brings about a negative Wassermann test, does not affect the alterations of the tissues which have been destroyed or changed by the pathologic process. Two things in regard to the syphilitic child must be recognized. One is that there is an invasion with the spirochetes which brings about the Wassermann reaction; secondly, there are certain definite permanent anatomic changes which are reactions from the syphilitic virus.

DR. HENRY F. STOLL, Hartford, Conn.: I do not consider a negative Wassermann test of any value in excluding heredosyphilis. It has been repeatedly shown that in older children particularly it is very often negative. This seems to be especially true in lesions of the bones. We should remember the classification Fournier gave us: in addition to the patients whose lesions are due to heredosyphilis, we see others suffering from the results of syphilis in the parents, who are not syphilitic. Syphilis is the most potent of germ plasm poisons; like alcohol and lead poisoning, syphilis exerts a blight on the ovum and actual syphilitic infection may not occur. In the later group antisyphilitic treatment is not indicated. I remember the advice of Delafield, concerning the discovery of a movable kidney. "When you find a woman with a movable kidney, don't cackle like a hen that has laid an egg." The advice is applicable to the stigmas of heredosyphilis. You fit together the physical signs and symptoms as one assembles a picture puzzle, and then if there is no other more probable cause, treatment for syphilis may be instituted. Hypoplastic teeth alone do not justify a diagnosis of heredosyphilis. Finally, we must not forget our responsibility in seeking other cases of syphilis in the family when an infected child comes under our observation.

Vital Statistics.—One of the most important functions of vital statistics is to determine accurately the risk of illness and of death of those actually exposed to a particular disease or disease group, or, in other words, to measure specifically the forces of morbidity and of mortality. The terms of the risks so determined are commonly expressed in ratios or rates indicating the proportions of the numbers affected to the numbers exposed, and the real value of such rates must depend upon the accuracy and the comprehensiveness of the data in regard to both the affected and the exposed. It is only when the data include such essential qualities as age, sex, race stock, and occupation that the resulting rates may be regarded as satisfactorily specific. In actual experience, the data available to vital statisticians are, in general, so lacking in comprehensiveness in these respects, that there exists hardly a single example of an accurately defined rate expressed specifically in terms of risk on the part of those definitely exposed to illness or to death from a particular disease. In consequence, the public health official is seriously handicapped in defining his problems, in devising administrative measures, and in estimating their value.—W. T. Howard, Jr., *Am. J. Hygiene* 1:198 (March) 1921.

GRANULOMA INGUINALE

(GRANULOMA VENEREUM; GRANULOMA OF PUDENDA; ULCERATIVE VULVITIS; SERPIGINOUS ULCERATION OF GENITALS, ETC.)*

KENNETH M. LYNCH, M.D.

CHARLESTON, S. C.

One of the most troublesome conditions with which we have had to deal in Charleston is a group of granulomas of the groins, external genitalia and perineum, of essentially chronic and progressive character, intractable to various therapeutic measures, and generally classed under the broad and meaningless term of venereal condylomas or ulcers. This group of conditions has been fairly prevalent in this locality to my observation for several years, and the physicians of the community assure me that it has been a bugbear particularly in the public hospital for many years. I became interested in the matter the early part of this year from reading an article on granuloma inguinale by Campbell,¹ reporting three cases from the Bellevue Hospital and also including two cases which had already been reported by Symmers,² and calling attention to the value of intravenous tartar emetic therapy in the condition.

These five cases from the Bellevue Hospital are apparently the only cases reported in this country in which the organism first described by Donovan³ in 1905 was found, although Grindon⁴ reported clinical observations in three cases in St. Louis in 1913. In this connection it may be well to note the report by Driscoll⁵ of three cases of "erosive vulvitis" in Richmond, from which he did not obtain Donovan's organism but a spirochete and vibrio, but whose illustrations resemble very closely the condition under consideration.

In the time between March 11 and May 1 of this year, we have had at least nine cases of this group in the wards of the Roper Hospital in Charleston, if any dependence is to be placed in the occurrence of Donovan's organism, as well as a number in the outpatient department, and in the experience of the staff such cases have been in more or less constant attendance in the hospital for many years. Looking back through my records, I can find tissues which have been examined from some thirty cases which, although no search was made for Donovan's organism, appear to have belonged to this group.

Of these patients one, a young negro who had a very extensive lesion of the groins, died of a secondary pneumonia, the exact cause of which was not determined.

In other words, in this community as well as probably throughout the South, if not throughout the nation, a fairly prevalent condition has been passing under the general class of venereal sores and has not been recognized as it has been in other parts of the world

* Read before the Section on Pathology and Physiology and presented in the Scientific Exhibit at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Campbell, M. F.: Granuloma Inguinale, *J. A. M. A.* 76:648 (March 5) 1921.

2. Symmers, Douglas: Granuloma Inguinale in the United States, *J. A. M. A.* 74:1304 (May 8) 1920.

3. Donovan: *Indian M. Gaz.* 40:414, 1905.

4. Grindon: *J. Cutan. Dis.* 31:236, 1913.

5. Driscoll, T. L.: Erosive Vulvitis, *Arch. Dermat. & Syph.* 1:170 (Feb.) 1920.

(notably the warmer countries) as an entity, and for which there is reputed to be a specific treatment.

From the study of the cases which have occurred in the hospital wards, I have come to the conclusion that there is apparently a type of pure case, but that there are also cases in which the condition is similar, if not identical, and Donovan's organism present but which appear to be secondary to or at least



Fig. 1 (Case 1).—Granuloma inguinale.



Fig. 2 (Case 1).—Granuloma inguinale healed.

associated with other conditions, and consequently the consideration of which becomes more complicated.

TYPICAL CASES

In the first group I wish to give a brief summary of three illustrative cases:

CASE 1.—V. H., a white man, aged about 25, a grocery clerk, two years ago had a chancre on the penis, which was followed by clinical syphilis with a positive Wassermann reaction. He received a thorough antisyphilitic treatment, including a number of injections of arsphenamin, with a clinical and serologic cure. Six months ago, after the Wassermann reaction had become negative, a papule developed in the left groin, broke, exuded a serous fluid, and gradually developed into a granulomatous ulcer which, at the time of admission, covered the whole left groin (Fig. 1). The Wassermann reaction was then negative. This lesion was cauterized, and he received seven intravenous injections of 1 per cent. tartar emetic, administered every third day, aggregating 40 c.c., after which the lesion was completely healed (Fig. 2), and he was discharged. Improvement began in this case after the third injection, and progressed rapidly.

CASE 2.—H. N., a negro man, aged 21, eight months ago, following gonorrhea, noted that a lump appeared in the right groin. This was opened by a negro physician, and instead of healing, progressed to a large ulcer covering the whole groin. He was treated at the local government clinic, where he proved to have a positive Wassermann reaction and was given nine or more injections of arsphenamin, he says with some improvement. On admission he had a large granulomatous ulcer covering the whole right groin, almost identical with that in the white man (Case 1, Fig. 1), and his Wassermann reaction was negative.

He was given seven intravenous injections of 1 per cent. tartar emetic aggregating 55 c.c. in a period of fourteen days. Improvement began practically immediately, progressing, until at the time of discharge there was only a broad, linear, tough scar, covered by a hard scab along the inguinal groove. He was instructed to return for further treatment, but failed to do so.

CASE 3.—M. M., a negro woman, aged 17, about two years before had a small papule on the skin between the vagina and anus, which broke and exuded serum. From this a fungoid granuloma formed and extended in the course of a year up both groins and over the pubis and labia majora, and down over the perineum but apparently not onto the mucous membrane of the anus and vagina. The appearance of the lesion was that of a very soft, villous, spongy, vascular tissue

which bled very easily (Fig. 3). There was a characteristic disagreeable odor and a serous discharge, with the formation of yellowish crusts but practically no pus. Her stay in the hospital had been about eighteen months, during which time she had been virtually bedridden, and had shown an irregular intermittent fever somewhat like typhoid temperature, at times up to 102, but usually not above 100. She had had many different kinds of treatment, including thorough curetting and cauterization and arsphenamin, although the Wassermann reaction had been repeatedly negative, with no result but a continuous extension of the lesion. Other than this lesion, nothing had been found abnormal. March 11, 1921, intravenous tartar emetic injections were started, and at the present writing, May 30, she has received twenty-seven doses aggregating 242 c.c. of 1 per cent. solution. At the end of three weeks, improvement began. She was then given a roentgen-ray treatment over the upper part of the lesion, and radium was applied over the lower part. Improvement continued slowly for a week or ten days thereafter, and then the lesion became firmer and patches of new epithelium appeared over the upper part. These extended, and healing progressed from the edges until now she is virtually well, all except two or three small spots being covered by a rather rough, dark, hairless skin, and healing is evidently continuing rapidly. Her general condition has improved markedly in the past three weeks, the patient gaining in weight, being no longer confined to bed, and her fever gradually disappearing.

CONSIDERATION

We have in these three cases apparently at the time pure cases of granuloma inguinale, all of them being in young persons, two men and one woman, two negroes and one white. The men showed typical groin involvement beginning in the perineum, the lesions in the white man and the woman starting as a simple small papule, the negro man possibly having a bubo as the initial lesion. The two men had had syphilis, but with serologic cures, and the granuloma developed in the face of apparent cure of syphilis and was unaffected by continued antisyphilitic measures. The woman had no evidence of syphilis or other genital infection, and also was unaffected by antisyphilitic measures. In scrapings of the lesions of all three, Donovan's organism was found, being abundant in the woman, but less numerous in the men.



Fig. 3 (Case 3).—Granuloma inguinale.

GRANULOMA INGUINALE ASSOCIATED WITH OTHER DISEASE

In addition to the seemingly pure cases there have been a number in which similar lesions infected by Donovan's organism but associated with other diseases led to a complication of the issue:

CASE 4.—S. E., a negro woman, aged 21, whose Wassermann reaction was + + +, three months previous to admission noticed a small papule in the left groin, which itched. She scratched it, and it ran bloody serum. From this progressed a granulomatous ulcer with fungoid edges involving the lower inguinal fold and extending up on the labium (Fig. 4). Without any preliminary antisyphilitic measures she was put on the tartar emetic treatment, receiving ten injections aggregating 93 c.c. of 1 per cent. solution in a period of twenty-six days. No improvement occurred, but rather a decided extension of the lesion. The granuloma was then excised, the edges of the incision joining without infection. She was continued on the tartar emetic as a safeguard to the healed area and discharged to the outpatient department for antisyphilitic treatment.

CASE 5.—M. F., a negro woman, aged 24, whose Wassermann reaction was + + + +, about one month previous to admission had a small pimple on the left labium majus about one week after sexual intercourse. This ulcerated and spread rapidly until at admission there was a large granulomatous ulcer of the left labium (Fig. 5) extending down over the perineum and along the drippings of the excretion down the thighs, with a profuse seropurulent exudation having a foul odor. She had an irregular fever varying from 99 to 102,

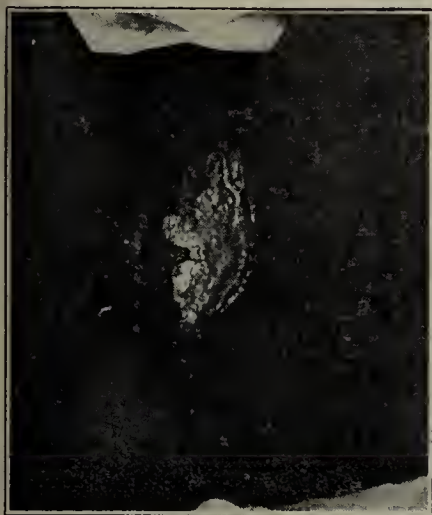


Fig. 4 (Case 4).—Granuloma inguinale in syphilis.

usually down in the morning and up in the evening. She had received three intravenous injections of 1 per cent. tartar emetic solution aggregating 10 c.c., given at three day intervals, when she died suddenly. The necropsy revealed, in addition to the ulceration, a gangrenous condition of the inner edges of the fallopian tubes, and severe degenerative changes of the specialized tissues with myocardial dilatation.

on the perineal surface between the anus and the vagina. These broke, and the ulceration gradually extended over the whole neighboring region, until at admission there was a large granulomatous lesion involving the labia majora and perineum and extending down the drippings over the buttocks (Fig. 6). There was also a granuloma of each groin above the labia not connected with the lower lesion. She had been given a long and thorough treatment for syphilis, including a number of injections of arsphenamin in the outpatient department, without effect. She was admitted to the ward, where she had an irregular intermittent fever like Cases 3 and 5. Sixteen injections of 1 per cent. tartar emetic, aggregating 149 c.c., in a period of forty-four days accompanied by one radium treatment had no visible effect on the lesion, and she has now been turned back for further antisyphilitic measures.

CASE 7.—T. H., a negro man, aged 24, whose Wassermann reaction was + + + +, four years before had a nodule in the right groin which opened like a boil. Ulceration extended over the right groin, then a similar lesion began in the left groin and pursued the same course, and subsequently a sore occurred on the penis. At admission he exhibited very extensive granulomatous fungoid, ulcerative and nodular lesions with scar contraction and edema, of both groins from the spine of the ileum down onto the sides of the scrotum (Fig. 7), and a granulomatous ulcer of the surface of the right cheek at the angle of the jaw which, he says, started at the first development in the groin. He also says that his father died of the same thing. In the light of experience from the other cases he has not been given the tartar emetic yet, but has been put on antisyphilitic treatment, without as yet, after six weeks, any particular improvement.

CASE 8.—E. F., a negro woman, aged 19, whose Wassermann reaction was + + + +, and who had active gonorrhea, about three months before admission had a pimple in the perineum between the anus and the vagina which formed a bleb and ulcerated. About a month later kernels formed in both groins which abscessed and broke. On admission she exhibited three elevated, rounded, villous, fungoid granulomas about 2 inches in diameter, bleeding easily, with very



Fig. 5 (Case 5).—Ulcerative granuloma in syphilis.

little sensitiveness on scraping, one in each groin and one on the perineum (Fig. 8). She has received at the present, May 30, eight doses of tartar emetic aggregating 72 c.c., and also two injections of arsphenamin. At about the fifth dose the granulomas were noticed to be much firmer and had little tendency to bleed. Now they have shrunk considerably, are still firmer, and there is an extension of new skin over about a half inch at the edges. Donovan's organism was abundant in these granulomas on admission, but after the second tartar emetic injection there was a marked decrease in number with disintegration within the large mononuclears very evident, and after the fourth dose none could be found.

CASE 9.—J. M., a negro man, aged 40, whose Wassermann reaction was negative, about one year before admission had a small swelling on the prepuce which ulcerated and gradually extended. He had had gonorrhea several times, the last about one year previous. On admission, the most of the penis was simply a ragged granulomatous mass with at least one half destroyed (Fig. 9). Two biopsies were made, both showing the usual picture of these granulomas. He was given twelve injections of tartar emetic aggregating 121 c.c. of the 1 per cent. solution

over a period of twenty-three days, after which the most of the granulomatous tissue had sloughed away, leaving a stump which it was decided to trim and cauterize. Sections at this time revealed well marked squamous epithelioma; and the remainder of the penis was amputated and the groins cleaned out. No metastasis was found.

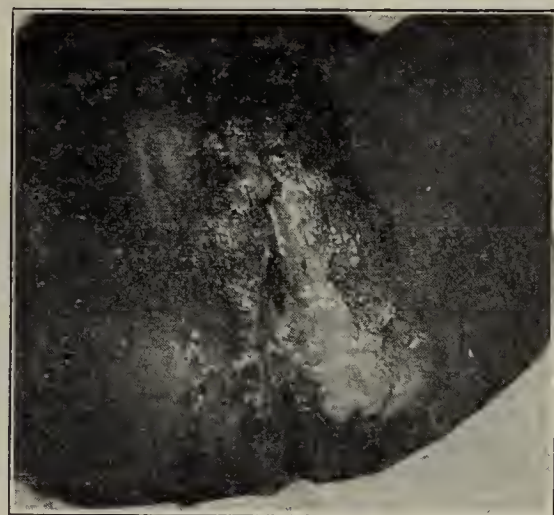


Fig. 6 (Case 6).—Granuloma in syphilis.

CONSIDERATION

This group of cases reveals combinations of conditions which have thus far proved very difficult obstacles. In all of them Donovan's organism has been prolific. Case 4, a granuloma of the groin infected by Donovan's organism coupled with syphilis, proved

intractable to tartar emetic. Fortunately, it was amenable to excision. In Case 5, a rapidly extending lesion infected by Donovan's organism, coupled with syphilis and evidently a general infection of some kind, the patient died. Case 6, a long standing granulomatous condition, infected with Donovan's organism possibly



Fig. 7 (Case 7).—Granuloma inguinale in syphilis.

grafted on suppurating buboes and coupled with syphilis, has thus far proved resistant to arsphenamin. Case 8 is apparently a granuloma of the perineum, then extending to ruptured gonorrheal buboes in the groins, coupled with active gonorrhea and syphilis. From a combination of arsphenamin and tartar emetic therapy in this case improvement has begun, and the indications for a cure are strong. Case 9 seems to have started as a granuloma of the penis, although preceded by gonorrhea, which developed into epithelioma in the course of tartar emetic administration covering twenty-three days. It seems, therefore, that the usual case is one in which the granuloma is secondary to either syphilis or gonorrhea, in five of the nine here reported there being present either one or the other at the time, and some both, while three of the remain-

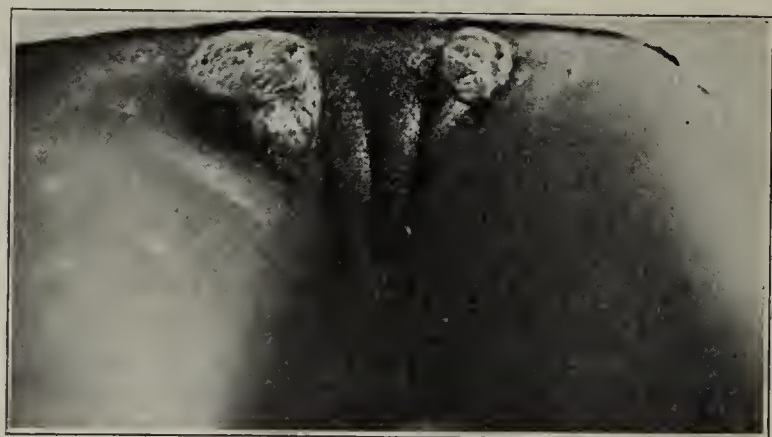


Fig. 8 (Case 8).—Granuloma upon ruptured buboes.

ing four patients had immediately previous to, if not actually at the time of development, either syphilis or gonorrhea or both. There is then only one case, Case 3, in which there was no other proved previous or existing venereal infection, and this patient may have had gonorrhea or some other infection, of which there was nothing remaining.

BACTERIOLOGIC AND BIOLOGIC CONSIDERATIONS

In all of the cases here reported, the organism first encountered by Donovan was obtained in smears, the more acute and progressive the lesion the larger numbers present. This organism, or at least what we take to be the same, has been easily secured in culture. Figure 10 shows the intracellular and extracellular organisms as seen in smears from several cases. On account of the character of tissue reaction (Fig. 11) in the lesion, extensive search has been made in all of these cases for fungi, spirochetes and protozoa, without success, although a number of peculiar bodies, the nature of which is as yet undetermined but which must be differentiated from protozoa, have been encountered. In fact, the lesion is often remarkably clear of even ordinary surface contaminants, and usually nothing but Donovan's organism has been encountered after keeping the lesion clean for a time. Under the tartar emetic treatment the organism undoubtedly decreases in number, and finally disappears; in some cases when it has been abundant, disintegration in the cells and disappearance of the mass of infection has been evident after three or four injections. The organism secured in culture is pathogenic for rabbits when injected subcutaneously, but no experimental infections resulted from planting the organism on surface abra-

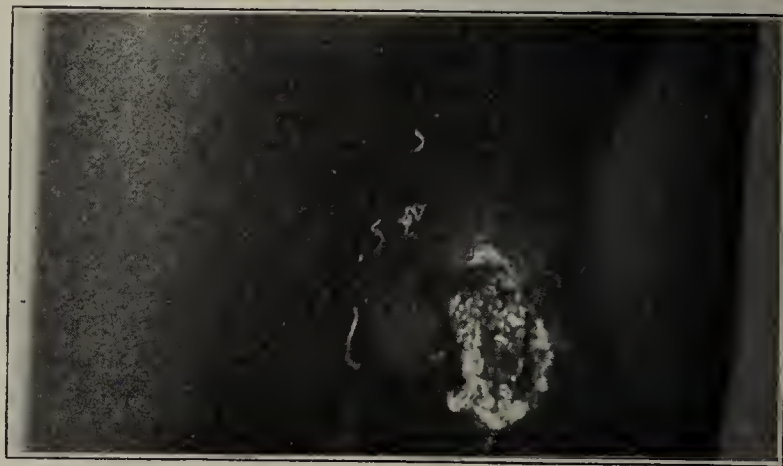


Fig. 9 (Case 9).—Granuloma of penis.

sions or from injecting scrapings of the sores subcutaneously. The virulence of the organism in culture varies apparently in proportion to the severity of the case from which it comes, some from the most active clinical cases producing a spreading gangrene with death of the rabbit in a few days, while those from the least active cases lead to a nodular induration which may persist for two months or longer, and may or may not slough with the production of a granulomatous ulcer (Fig. 12) which tends to heal in four or five weeks.

In Case 7 is recorded an infection of the face by Donovan's organism. So far as I have been able to determine, this is the first record of its appearance in other than the lesions on and around the external genitals. In this connection I wish to record finding a similar organism, if not the same, in a granuloma of the back and in three chronic ulcers of the leg, in none of which cases was there any lesion of the genitals or neighboring parts, all four patients having negative Wassermann reactions, all giving histories resembling those of fungus infections, and some improving remarkably on the tartar emetic treatment. The study of these and other similar cases has just been started.

The bacteriologic part of this study is as yet uncompleted, and I have reserved an opinion as to the exact nature of the organism which is the subject of dispute, Walker⁶ identifying it as a capsule bacillus of the *Bacillus mucosus-capsulatus* Friedländer group; while Arago and Vianna⁷ name it the type species, *C. granulomatis*, of their new genus, *Calymmatobacterium*. In fact, I think the proof is not yet final that Donovan's organism is the cause of the condition or that we are dealing with only one condition. The observation of Goodman⁸ in reporting four cases in Porto Rico, that the spirochetal organism described by Wise was encountered in one which failed to show Donovan's organism, while the other three did, is confirmatory to the records of other workers.

TARTAR EMETIC THERAPY

In this work I have used the U. S. P. commercial tartar emetic (antimony and potassium tartrate), in 1 per cent. solution in physiologic sodium chlorid solution or distilled water, sterilized by filtration. Knowles,⁹ in a discussion of the same treatment in kala-azar, recommends in that condition only the use of the "heavy powder," but I could find no reference to a division of the product into "light powder" and "heavy powder." Our usual procedure is to start with 3 c.c. of the 1 per cent. solution diluted to 10 c.c. with

either sterile physiologic sodium chlorid solution or distilled water, increasing the dose 2 c.c. every third day until 12 c.c. of the undiluted 1 per cent. solution is reached. At this stage some nausea and vomiting has been encountered, and the dose has been reduced when this occurred. Larger doses have not been given, and no other reaction has been seen except some rather severe local inflammations when the drugs escaped into the tissues. Experience in these cases leads me to believe

that in the pure condition prompt healing will result in fairly extensive lesions within about four or five weeks, and even in the most extensive, persistence in the treatment will effect results in time. Case 3 of this series appears to be one to invite encouragement even in the most extensive.

However, when the condition exists as a complication of some persisting disease, as in the case of syphilis, tartar emetic alone appears to be powerless. Hereafter, in the cases of granuloma plus syphilis, we expect to use the tartar emetic between the injections of arsphenamin as we have done in Case 8. When it is possible to do a complete excision of the lesion and support healing with tartar emetic, the promise of early results is better, and even curetting extensive granulomas and cauterizing them down to the base accompanied by tartar emetic injections appears to offer earlier recovery than with the tartar emetic alone. For the present we look on these cases from the therapeutic standpoint as divisible into four classes:

1. Small granulomas, amenable to excision, followed by tartar emetic injections.
2. Pure cases in which curet and actual cautery remove the exuberant tissue, with follow-up tartar emetic injections until healed, and at longer intervals for some time thereafter.
3. Pure cases in which curet and cautery may not be used but which will heal under persistent tartar emetic therapy.
4. Other diseases, particularly syphilis, complicated by granuloma infected with Donovan's organism, in which tartar emetic alone appears to be without effect.

In the first three groups I think we can expect to obtain good results. In the fourth, an effectual combined therapy to fit each case must be evolved.

ABSTRACT OF DISCUSSION

DR. BALDWIN LUCKE, Philadelphia: How do you obtain your material for diagnosis? Do you make surface scrapings, or do you go deeply into the tissue? Have you been able to obtain Donovan-like bodies from the experimental lesions?

DR. KENNETH M. LYNCH, Charleston, S. C.: The organisms are found in the scrapings. If the lesion is kept clean for several days, they may be obtained directly from the surface. The purest and best preparations are obtained a bit below the surface. You do not have to go deep. A simple scraping will give an excellent preparation. The Donovan organism has been recovered from the experimental lesion after inoculation from culture.

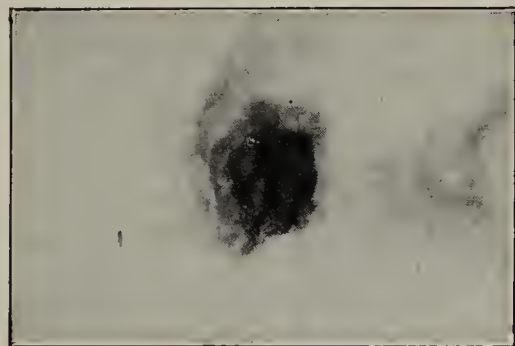


Fig. 12 (Rabbit 3).—Experimental ulcer culture from granuloma inguinale.

Aneurysm of the Hand.—Arnobio and Silvio Markues have encountered only one case of this kind in twenty years of practice, and know of only thirty-five that have been published. The tumor in their patient had developed at a point repeatedly bruised by the shovel, and its nature as an aneurysm was not suspected until the sac perforated during its removal. In their communication in the *Annaes Paulistas de Medicina*, July, 1920, p. 3, they quote a few cases on record of similar diagnostic blunders.



Fig. 10.—Donovan's organism; direct smear and culture.

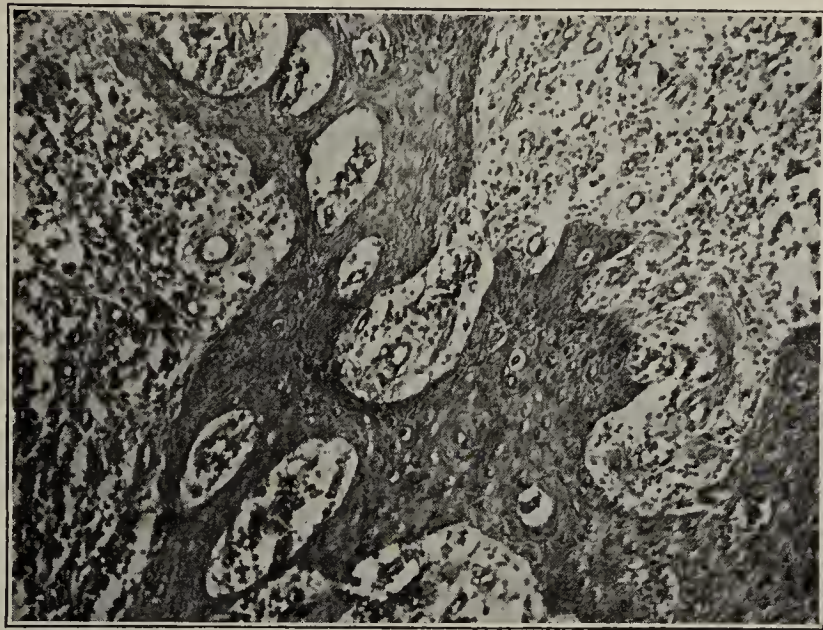


Fig. 11 (Case 1).—Granuloma inguinale.

6. Walker, E. L.: J. Med. Res. 37:427 (Jan.) 1918.

7. Arago and Vianna: Mem. do Instit. Oswaldo Cruz 5:221, 1913.

8. Goodman, Herman: Ulcerating Granuloma of Pudenda, Arch. Dermat. & Syph. 1:151 (Feb.) 1920.

9. Knowles, R.: Indian J. M. Res. 8:140, 1920.

ACTION OF RADIUM AND ROENTGEN RAYS ON NORMAL AND DISEASED LYMPHOID TISSUE *

ISAAC LEVIN, M.D.

NEW YORK

My associates and I have ascertained in a series of clinical and experimental investigations that the lymphocytes circulating in the blood are most readily influenced by radium and roentgen rays, while all the other normal types of leukocytes and the erythrocytes possess a greater resistance. Normal blood of a turtle contains from 3 to 10 per cent. of polymorphonuclear leukocytes and from 97 to 99 per cent. of lymphocytes. After radiation the relative amounts of the two types of white cells in the blood of the turtle change so that the polymorphonuclears appear in about 80 per cent., as against 20 per cent. of the lymphocytes. The normal blood of a frog contains from 10 to 20 per cent. of polymorphonuclear leukocytes and about 80 per cent. of lymphocytes. After irradiation the numerical proportion changes so that the number of polymorphonuclears in the frog equals from 70 to 80 per cent., and of the lymphocytes from 30 to 40 per cent. The following phenomenon observed in the course of this investigation supports strikingly the conception of the specific action of the rays.

The experiments consisted in the injection of an emulsion of yeast into a normal frog, which was followed twenty-four hours later by irradiation of the animal with roentgen rays or by an insertion of a radium emanation capillary into the dorsal lymph sac of the frog. The injection of yeast is followed by a change in the blood of a frog similar to the one induced by the roentgen rays or radium. The change is most marked twenty-four hours after the injection and continues for a few days. Neither the roentgen rays nor the radium produced any further noticeable change in the numerical relationship between the lymphocytes and the polymorphonuclear leukocytes of the yeasted frogs. At the most, a slight additional decrease of the lymphocytes takes place. Evidently the polymorphonuclear leukocytes resist the action of the rays even when their relative number in the blood is increased.

The total count of the white cells of the frogs was practically unaffected either by the radiations or by yeasting. Apparently the mechanism of the action

of the rays on the leukocytes of the blood consists in the destruction of the lymphocytes, which is then followed by the release of the polymorphonuclear leukocytes from the depots in the bone marrow or by an overproduction of this type of cells by the blood-forming organs.

Certain investigators maintain that the polymorphonuclear leukocytes are most readily destroyed by the rays. However, the analysis of their results shows that the destruction of the polymorphonuclear leukocytes is caused by the action of a lethal dose of the rays which produces a severe lethal leukopenia. Zoellner,¹ for instance, reports that the polymorphonuclear leukocytes are most severely affected, while the perusal of his experiments shows the following results: The blood of a normal guinea-pig contained 15 per cent. polymorphonuclears and 85 per cent. lymphocytes. Two days after irradiation the blood showed 54 per cent. polymorphonuclears and 46 per cent. lymphocytes; three days after irradiation, 76 per cent. polymorphonuclears and 24 per cent. lymphocytes. Near death

there developed a severe leukopenia of from 12,000 to about 600 white cells, and then the whole blood smear may show only one or two lymphocytes and no polymorphonuclear leukocytes.

As a general rule, as stated above, in all the animals tested as well as in the human being, the lymphocytes are most severely affected and readily destroyed by the irradiations.

The specific radiosensitivity of lymphocytes explains the action of radium and roentgen rays on normal and diseased lymphoid tissue. Intense irradiation of any region of the organism and not the direct

raying of lymphoid organs is followed by a complete or partial destruction of the cellular elements of lymphoid tissues—the cells of the medullary part of the lymphatic glands, the malpighian corpuscles of the spleen, Peyer's patches of the intestines, the tonsils and the thymus gland of children. This destruction of the lymphocytes within the lymphoid tissue is accompanied by endarteritic obliteration of blood vessels and formation of dense connective tissue.

Normal lymphoid tissue is comparatively less radiosensitive than the various types of hyperplasias of lymphoid tissue. Furthermore, simple inflammatory hyperplasias are less radiosensitive than the neoplastic hyperplasias. It is comparatively difficult to influence with radium and roentgen rays bacillary infectious lymphomas like the tuberculous glands. Favorable reports were published recently of results of radium and roentgen-ray treatment of infected tonsils. I am investigating the subject in a series of

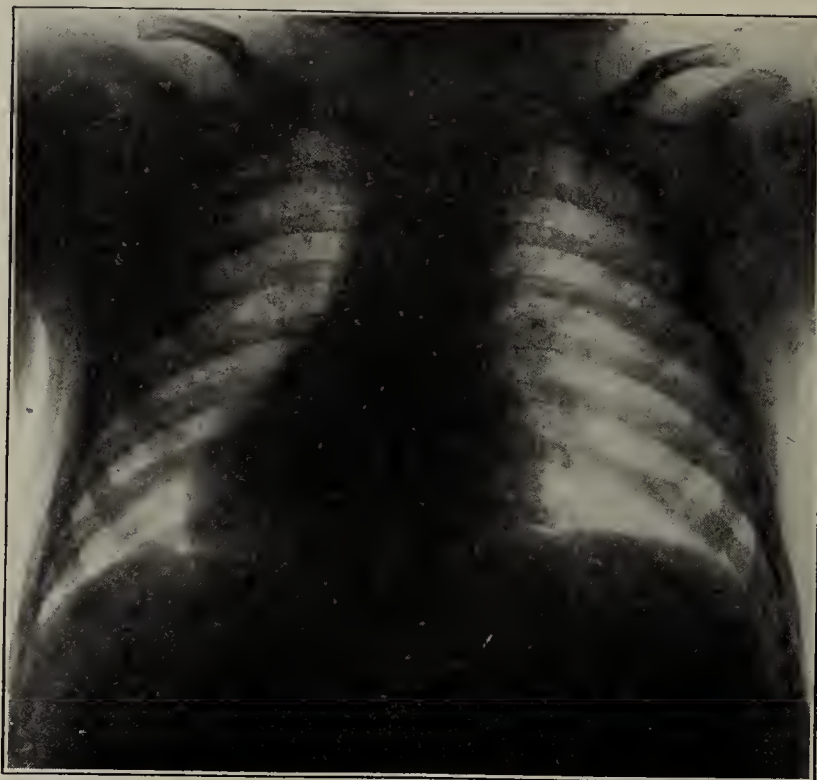


Fig. 1 (Case 1).—Before treatment: enlarged thymus.

* From the Department of Cancer Research, Montefiore Hospital.

* Read before the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Zoellner: *Strahlentherapie* 9: 607, 1919.

cases. The investigation is not yet completed, and the results of the study will be reported later.

Hodgkin's disease morphologically and etiologically must be classified with the infectious lymphomas. However, it presents a type of actively proliferating neoplastic hyperplasia of the lymphoid tissue and is extremely radiosensitive. Under the influence of radium and roentgen rays there takes place in a Hodgkin's lymphatic gland necrotization of lymphoid tissue accompanied by hemorrhages, proliferative endarteritis of the arteries, and ultimately replacement of the lymphoid cellular structures by dense connective tissue. Later on, part of this newly formed connective tissue is also absorbed and there is only a minute hard nodule left of the affected lymphatic gland. Frequently the gland disappears entirely. A similar process takes place within an enlarged spleen, when it shrinks to normal size under the influence of radium or roentgen rays. Microscopic examination of the spleen of a rabbit into which a radium emanation capillary was placed a week before the removal of the spleen disclosed necrosis of the lymphoid tissue and thickened walls of blood vessels.

Lymphosarcoma, which presents a true neoplasia of lymphoid tissue, is influenced by irradiation more promptly and completely than any other type of lymphoid hyperplasia. Thus, beginning with normal lymphocytes circulating in the blood and ending with lymphosarcoma, all types of normal and diseased lymphoid tissues are influenced more or less promptly by radium and roentgen rays.

In the following parts of this presentation a more detailed discussion will take place of the mechanism of the action of these agents on the various diseases of the lymphoid tissue.

STATUS THYMICOLYMPHATICUS

This disease of childhood consists of general lymphoid hyperplasia. The most important manifestation is the enlargement of the thymus, which causes frequent attacks of so-called thymic asthma. These attacks frequently cause sudden death of the patient. In Case 1, status thymicolymphaticus with frequent attacks of thymic apnea, the patient was apparently cured by radium and roentgen rays:

CASE 1.—G. M. A., boy, aged 3½ years, a gracile, handsome child, whose parents and a little sister were normal, on Dec. 27, 1918, had the first attack of thymic asthma and a second attack ten days later. The next day enlarged tonsils were removed, and a roentgenogram of the chest (Fig. 1) revealed an enlarged thymus. The plate showed the characteristic convex line of the thymic shadow passing into the cardiac shadow. Jan. 15, 1919, radium and roentgen-ray treatment of the region of the thymus was begun. During the treatment the child had attacks once in ten days, then at irregular inter-

vals. The last attack took place, July 18, 1919. A roentgenogram (Fig. 2) taken one and a half years after the beginning of the treatment revealed a small thymic shadow with concave lines as it passed into the cardiac shadow. At present, two and a half years after the beginning of the treatment, the boy is strong and virile and has lost the gracile type of beauty characteristic of status thymicolymphaticus.

As stated above, the disease is caused not only by thymic enlargement but also by general lymphoid hyperplasia. The most important feature in this case is that there undoubtedly has taken place under the influence of the irradiations a correction of the whole lymphoid system of the organism, and the treatment was given only to the region of the thymus. This phenomenon will be discussed in more detail later.

HODGKIN'S DISEASE AND MEDIASTINAL TUMOR

As stated above, Hodgkin's disease is etiologically considered an infectious lymphoma. Nevertheless the main features of the disease set it apart from any known inflammatory disease of lymphoid tissue. Micro-

scopically, the main feature of Hodgkin's granuloma is not a degenerative process, as in syphilis or tuberculosis, but an active proliferation of all types of cells of the lymph gland. This proliferation is limitless and ends only with the death of the organism, and therefore every cell within a Hodgkin's granuloma is biologically identical with a cancer cell. The disease is very promptly influenced by radium and roentgen rays. The opinion prevails that the action of the rays is only palliative and that ultimately the patients fail to respond to treatment. These unsatisfactory results are

probably due to the fact that treatment is attempted only late in the course of the disease and is not pursued with sufficient energy. In several early cases I succeeded in arresting the disease for from six to eight years, which is a longer period than the patients usually remain alive untreated. The following is a case in point:

CASE 2.—Miss M. P., aged 20, a professional ballet dancer, came to me six years ago. The swelling in the right side of the neck (Fig. 3) was noticed two months previously and rapidly grew to the size noted in the photograph. The patient felt weak and had occasional attacks of fever. The state of her general health and the deformity made it impossible for her to continue her work. Examination revealed that the swelling was due to a packet of enlarged lymphatic glands of various sizes. There were no enlarged glands anywhere else. The spleen and the liver also were not enlarged. The patient received radium applications to the glands of the neck and no other treatment. Six weeks later the swelling completely disappeared, the shape of the neck became normal, and the patient went back on the stage. The treatment was continued for some time, and at present the patient is well and continues her professional occupation.

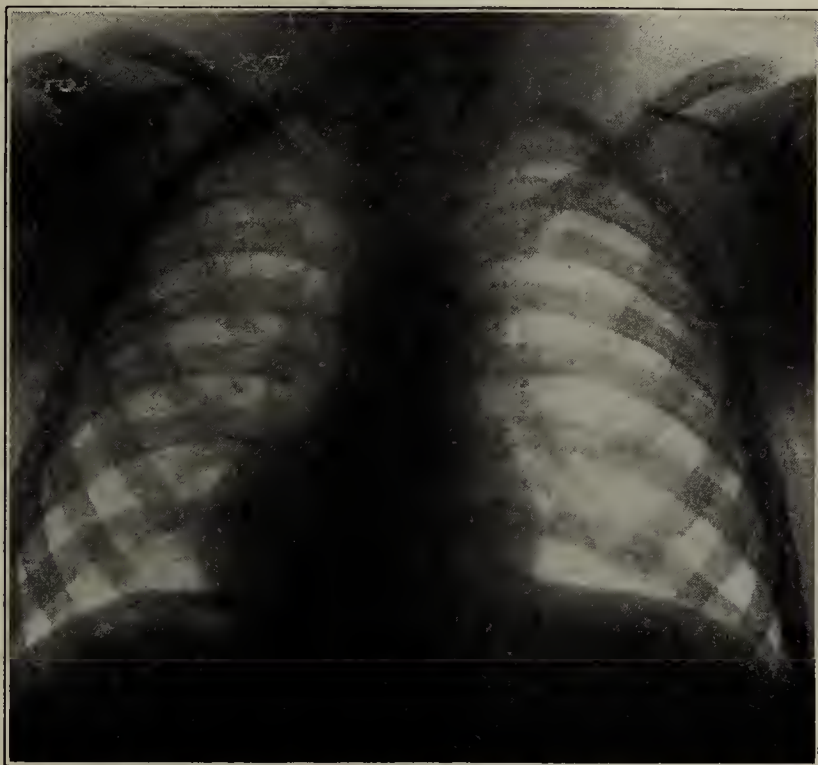


Fig. 2 (Case 1).—After treatment: thymus normal.

Mediastinal tumor presents the most distressing and clinically severe type of Hodgkin's disease. The promptness with which these massive tumors disappear under treatment is possibly the best evidence of the great radiosensitiveness of diseased lymphoid tissue. Case 3 may serve as an illustration:

CASE 3.—M. J. H., a man, aged 24, sent to me for treatment in June, 1920, noticed swelling of the glands of his neck in 1918. The examination revealed enlarged lymphatic glands on both sides of the neck and in both axillary regions, and a diffuse bulging in the upper sternal region. Roentgen-ray examination disclosed a bulky diffuse tumor in the mediastinum. The patient received both radium and roentgen-ray treatment which were directed to the mediastinum, both cervical and axillary regions. The last examination in May, 1921, showed the mediastinal tumor to have been reduced considerably in size; the lymphatic glands are not palpable, the bulging in the sternal region has disappeared. The patient lost the respiratory mediastinal distress and is clinically well.

LYMPHOSARCOMA AND LYMPHATIC LEUKEMIA

Both lymphosarcoma and lymphatic leukemia are malignant diseases of the lymphoid tissue which manifest themselves with rapid and continuous proliferation of lymphocytes. There is a great deal of kinship between these two diseases and Hodgkin's granuloma. In fact, there is a great deal more of a clinical difference between lymphosarcoma on one hand, and lymphatic leukemia on the other, than there is between either of the two and Hodgkin's. Lymphosarcoma is a more localized disease than Hodgkin's, while lymphatic leukemia is more generalized than Hodgkin's. A number of authors maintain that the difference between the three diseases is rather one of degree than of kind. In any event, this is absolutely correct as far as the therapeutic action of radium and roentgen rays is concerned. All the three diseases give excellent immediate clinical results. The ultimate results are even possibly better in lymphosarcoma than in Hodgkin's, since in the former generalization does not take place as readily as in the latter. The ultimate results in lymphatic leukemia, on the other hand, are worse than either in Hodgkin's or in lymphosarcoma. This difference is probably due to the fact that leukemia is a systemic generalized disease from its incipience.

However, radium and roentgen rays do not act in diseases of the lymphoid tissue as a purely local agent. A local application of radium to one region seems to influence the whole systemic abnormality. Cases 4 and 5 will illustrate this phenomenon:

CASE 4.—Mr. I. H., aged 62, developed a mass in the right axilla, which was removed surgically. Microscopic examination showed it to be lymphosarcoma. The condition recurred

in six weeks, and the patient was then referred to me for radium treatment. The examination revealed a large diffuse mass, about the size of a grapefruit, occupying the whole of the axilla and invading the pectoral muscles. In the left axilla there was found an enlarged, freely movable gland the size of a hen's egg. The radium applications were made only at the right axilla, but with complete disappearance of the tumor in the right axilla the enlarged gland in the left axilla also disappeared. I have noted the same phenomenon in other cases.

CASE 5.—Mrs. R. A., aged 60, referred to me for radium and roentgen-ray treatment for a condition of lymphatic leukemia in October, 1920, suffered from diarrhea for two years and noticed the enlarged glands a year before the beginning of the treatment. Examination revealed lymphatic enlargement everywhere, the spleen reaching to 2 inches below the umbilicus and the free border of the liver reaching to the umbilical line. The blood showed a total white count of 184,000. The differential count revealed 89 per cent. of small lymphocytes. The radium and roentgen-ray treatment was given to the region of the spleen. The treatment was

followed not only by diminution in the size of the spleen but also by an improvement of the blood picture and by the practical disappearance of all the enlarged lymph glands. The diarrhea, however, is as distressing as it was at the beginning of the treatment, and the general weakness still persists. None the less, the general effect on the whole lymphoid system of local applications of radium to the area of the spleen is remarkable.

MYELOID LEUKEMIA

It was stated above that the polymorphonuclear leukocytes are not radiosensitive. I² have shown in a previous publication that myelocytes in conditions other than myeloid leukemia are also not radiosensitive. The myelocytes of myeloid leukemia which are so readily destroyed by radium and the roentgen rays must represent biologically a different type of a cell more akin to a cancer cell. The disease responds very promptly to irradiation, and again the remarkable fact is that local irradiation of the spleen changes the picture of the blood, though the myelocytes are derived mainly from the bone marrow.

CASE 6.—Mr. W. P., aged 42, was referred to me in September, 1920, for radium treatment of a condition of myeloid leukemia. Examination showed the spleen reaching to about 1 inch above the umbilicus, and no enlargement of lymphatic glands or liver. Blood examination made before beginning of treatment gave a total count of 220,000 leukocytes. The differential count was: polymorphonuclears, 63 per cent.; lymphocytes, 2 per cent.; myelocytes, 31 per cent.; eosinophils, 1 per cent.; mast cells, 3 per cent. Examination of the patient in March, 1921, seven months after beginning of the treatment, revealed the spleen not palpable; leukocytes, 22,000; polymorphonuclears, 75 per cent.; small lymphocytes, 17 per cent.; myelocytes, 5 per cent.; eosinophils, 1 per cent.; mast cells, 2 per cent. The treatment consisted in local application of radium and roentgen-ray treatment of the region of the



Fig. 3 (Case 2).—Tumor of the neck, Hodgkin's disease.

spleen. The general condition and strength of the patient improved remarkably.

PERNICIOUS ANEMIA

Several English and German authors reported good results from treatment of cases of pernicious anemia with irradiations. In view of the fact noted above that radiation of the spleen influences favorably the course of various diseases of blood and lymphoid tissue, and the further fact that splenectomies are attempted for the cure of pernicious anemia, I decided to investigate what influence radiation of the spleen would have on the course of pernicious anemia. Two cases were selected with a perfect blood picture of a severe pernicious anemia and a large spleen. Since the hemoglobin showed 20 per cent., transfusions were done in both cases and radium was applied to the spleen once a week. There has taken place in both cases a general clinical improvement of the blood picture. It is impossible to ascribe this clinical improvement to the action of radium, since transfusion alone may temporarily improve the condition of the patient. Moreover, spontaneous remissions frequently take place in the course of the disease. It is remarkable, however, that in both patients the clinical improvement was accompanied by a return of the spleen to a normal size. This shrinking of the enlarged spleen could be caused only by the radium treatment, and there is a good deal of evidence to prove that the destruction of the erythrocytes in pernicious anemia takes place in the spleen. It would seem to me that the subject is worthy of further study.

CONCLUSION

The outstanding feature of the present investigation consists in the fact which it brings forward that, in diseases of the lymphoid tissue, radium and the roentgen rays do not act merely as a local agent which reduces the size of a tumor or an organ, but produce a generalized effect on the lymphoid system of the whole organism. It is impossible to assert at present with any amount of certainty what the mechanism of this influence is. Some investigators maintain that specific enzymes are freed from the desintegrating lymphocytes. The hypothesis is quite plausible, but there is hardly any work done yet to clear up the problem.

Lymphoid tissue in health and disease is of greatest importance in animal economy, and the action of radium and roentgen rays on this tissue presents the most remarkable phenomenon in biology. Experimental and clinical study of the problem will elucidate, on the one hand, the mechanism of the biologic action of the rays generally, and will also help in clarifying many mooted problems of structure, derivation and pathogenesis of the blood, blood-forming organs and lymphoid tissue both normal and diseased.

ABSTRACT OF DISCUSSION

DR. EDEN V. DELPHEY, New York: According to the experiments of physicists and physiologists, the effects of radioactivity on living animal tissues are the same whether the radioactivity is derived from radium or from roentgen rays. Columbia University teaches that the alpha rays from radium are stopped by the thinnest tissue paper; that the

beta rays, which are identical with the cathode stream in the roentgen-ray tube, are filtered out by the aluminum capsule which is used to surround the radium in treating cases, and that the gamma rays are the same as the roentgen rays. Whether you use radium or the roentgen ray, you are employing exactly the same agent; therefore in referring to radioactivity you will understand that I mean either one. In using radioactivity two things are to be considered: intensity and volume. I am sorry that Dr. Levin did not state what dosage he used in his experiments because the efforts are different when the dosage is different, in regard both to intensity and to volume of the agent. If Dr. Levin will indicate in his printed paper the amount of radium he used, the nearness to the tissues acted on, the time of the exposure, and the dosage indicated in millicuries as well as the amount of screening he employed, it will be of a great deal more value to those who are interested in the subject. Some years ago, I learned that radioactivity influenced animal cells in direct proportion to the instability of their metabolic activity. Cells whose metabolic activity is most unstable are more quickly and completely acted on than those whose metabolic activity is more stable. The unstable cells are those of malignant neoplasms, gland cells, prickle cells of the skin, the intima of blood vessels, the leukocytes, etc., and they are stimulated to increased growth, more stimulated to erratic growth, and destructively stimulated by massive doses until they break down and are destroyed. The action of radioactivity may be compared to the results of a whip to a horse: a slight application, the horse trots—normal stimulation; a stronger application, the horse runs away—stimulation to erratic growth; continued beating of the horse results in his falling down dead—destructive stimulation. You can accomplish any of these actions you desire; but, unfortunately, while you are destroying the neoplasm at the surface, you may be stimulating the tissues to erratic growth deeper down, and while the surface may heal over and you think you have cured the neoplasm, such is really not the case. These patients will have, not a recurrence, but a continuance of the same malignant neoplasm of which you think they have been cured. Therefore, it is well to have a report, after five years, on all cases of malignant neoplasms, as these unfortunate patients have the bad habit of dying of the same incurable disease of which they have been cured.

DR. WALTER G. BAIN, Springfield, Ill.: Did you make any observations of the dosage action on the leukocytes?

DR. EDWIN R. LE COUNT, Chicago: What was the age of the child with the enlarged thymus? Of course, we are all well acquainted with these tragedies, deaths, under anesthetics of one sort or another of children with enlarged thymic bodies. I am greatly gratified to see the clear picture of the enlarged thymus, because it does show that it is possible to examine children brought in for tonsillectomy or some other trivial operation, and determine the presence of the enlarged thymus and know the hazard that exists.

DR. ISAAC LEVIN, New York: The methods are described in the paper. We are a gathering of pathologists, and I take it we do not need to discuss in detail the method. As I stated before, in the beginning the action of the rays consists in a change of the numerical relationship between leukocytes and lymphocytes without influencing to any considerable extent the total count. The result is probably due to the destruction of lymphocytes and replacement by polymorphonuclear leukocytes from the bone marrow and other depots of lymphoid tissues. Of course, when the animal receives a much larger—lethal—amount of irradiation, then subsequently a complete leukopenia takes place with a change of the total count, sometimes from 12,000 to about 600, so that occasionally the whole blood smear may contain no more than two or three leukocytes of any type. To answer Dr. Le Count, the little boy was 3½ years old and had enlarged tonsils and adenoid tissue. As the chairman very well stated, if a roentgen-ray study of the chest of children were done more frequently before tonsillectomies and adenoid operations, sudden inexplicable postoperative deaths would happen less frequently.

THE OPERATIVE LENGTHENING OF THE FEMUR *

VITTORIO PUTTI

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BOLOGNA, ITALY

I wish to call attention to a subject which I think is of notable importance, that is, the operative lengthening of the femur. A shortening of the femur which does not surpass 2 inches and is not complicated by a deviation of the static axis of the limb does not require operative treatment. The patient himself easily learns to compensate this shortening, by lowering the pelvis or by putting the foot in the equinus position, and a raised boot is sufficient to hide the limp. If the shortening is caused by a deviation of the static axis of the femur, the patient will receive benefit from an osteotomy.

But I do not intend to discuss the cases which can be treated by the ordinary orthopedic methods, and I do not wish to consider those in which the shortening is due to a recent fracture, because the modern technic of fracture treatment enables us to give the femur its normal length.

I shall take into consideration only those cases in which the shortening, which has existed for a long time and surpasses 2 inches, must be looked on as definitive. Among these cases there are not only the results of old fractures, so frequently in evidence since the war, but also others, in which the shortening is due to a congenital or an acquired cause, which has damaged the normal growth of the femur. I speak of the femur, because it is only on this bone that I have operated, until now; but the method that I wish to lay before you may be used, I believe, with due modifications, on any other bones of the lower limbs.

We cannot say that a therapeutic problem so limited is one of the easiest to solve.

Some old surgeons, among them Rizzoli in Italy and Heine in Germany, finding it impossible to lengthen the short limb, thought to equalize the limbs by shortening the normal one. By this method, which has also been recently adopted, we reject the means which we at present possess and, thanks to which, the problem presents itself under a more favorable aspect.

PROBLEMS OF PROCEDURE

Two questions must be considered: (1) the degree and nature of the resistance which must be overcome, and (2) what means must be used to obtain the desired lengthening.

The greatest resistance is naturally offered by the bones, and their elongation can be effected only by osteotomy, which, however, must be performed in such a way as to facilitate the formation of the callus. But a strong resistance is also offered by the soft parts. Supposing that, in the cases we are now considering, the shortening has existed for a long time, we are in the same position as if we had to lengthen the soft parts beyond their normal proportions.

Is this possible without damaging the muscles, nerves and vessels? In a paper I published some years ago the question was fully discussed. Many facts drawn from clinical experience, from the study of the phys-

ical property of the tissues and from experimental researches, allow us to conclude that, to a certain degree, and by adapted methods, it is possible.

As to the nerves and vessels, experiments made on dogs by Magnusson have shown that these parts can support a lengthening of 2 or 3 inches without damage.

Not less important are the means of obtaining the lengthening.

Among the methods of traction which can overcome the greatest resistance with the least effort without doubt, Codivilla's method is to be considered; that is, the traction applied directly to the bones. But if we will apply the traction to the distal fragment in such a way as to develop its entire action, the countertraction must be applied to a tissue which possesses the physical properties peculiar to that on which the traction works, that is to say, the bone.

This is the principle on which the double transfixion method, used by Codivilla, Lambert, Steinmann and Hey Groves, is based. But the apparatus of these authors do not bring about that kind of traction which is indispensable to our purpose, i. e., continuous traction.

To overcome the elastic resistance of the soft parts gradually, and without excessive effort, which might be dangerous, the acting force also must be elastic and continuous, so that it can be developed according to the resistance it encounters.

DESCRIPTION OF APPARATUS

To this purpose I have had an apparatus made which I have called an *osteoton* and which I think will facilitate and diffuse the technic of the operative lengthening of the femur.

The apparatus consists of two parts: 1. Two large metal pins to be fixed, respectively, in the proximal and distal fragments of the fracture. 2. A telescoping tube in which is contained a strong spring which is pressed by a screw. The instrument is provided with two metal sockets into which the two pins run. The apparatus, which is the result of many experiments, is constructed so as to overcome the most powerful resistance. It can be completely taken to pieces and sterilized. Besides serving as a means of traction, it can be used at the same time as a dynamometer and as a measurer of the length obtained. Two scales divided in millimeters, engraved on the apparatus, serve to give the operator at every moment the measure of the force of traction used and of the lengthening obtained. The surgeon has, therefore, constantly before him the most important elements for directing his action.

TECHNIC

The technic for using the apparatus is not difficult: The two pins, by means of two small incisions, are fixed on the bone, one in the subtrochanteric region, the other in the condyles of the femur. The pins are so constructed that they can be inserted without the use of a drill. When they have passed through the entire thickness of the bone, they must pierce the cortex. According to the necessity, these pins can be placed parallel or at angles, both on the same plane, or on different planes.

When the pins are fixed and when the osteotomy has been performed, the instrument is applied to the pins, so that we can begin a gradual traction, operating the screw which moves the spring.

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

One of the greatest advantages of the apparatus is that it permits osteotomy to be performed in any point of the diaphysis that is on the callus, in the case of noninfected fracture, as well as outside the callus, when we fear to give rise to a latent infection. To perform the osteotomy, I make use of a motor saw with which I trace a Z-shaped incision like that used for tendon lengthening.

The double traction greatly simplifies the after-treatment. Above all, the traction is limited entirely to the bone which must be lengthened. The apparatus serves as a perfect means of immobilization, so that any other is superfluous during the time of the lengthening. So we avoid the damages to which the immobility may give rise; and the hip and knee can be kept in semi-flexion, which is the most convenient position for obtaining relaxation of the muscles. The wound can be easily observed by the surgeon, and the bandages can be removed without difficulty. I generally leave the apparatus in place for thirty days, after which I put the limb in plaster of Paris, which is worn till a complete consolidation of the callus is obtained. In every case I have noticed that the consolidation is somewhat delayed.

In this manner I have operated on ten cases of old shortening of the femur, of which two were the result of war infected fractures. I have obtained integral lengthening of from 3 to 4 inches. One of the cases demonstrated that it is possible to obtain a lengthening of the femur beyond the normal proportion. I have never noticed any trophic disturbances. In one case the traction caused pain in the crural and sciatic nerve.

ABSTRACT OF DISCUSSION

DR. PHILIP D. WILSON, Boston: In 1918 I saw one patient with the traction appliance still in place. It is a very ingenious device. There is great difficulty in bringing a fracture down to complete approximation by skin traction alone, and we often have to resort to skeletal traction. Even with this, however, one seldom obtains a lengthening of more than one-half inch. Therefore, we can readily appreciate the ingenuity of a device of this kind which enables us to gain a length of as much as 3 or 4 inches. Lacking the device Dr. Putti described, we still have the alternative of shortening the femur on the sound side. This gives a good functional result, the muscles compensating for the increased shortening. The objection may be raised that this means operating on a normal limb which should not be exposed to operation. We must get more experience with this device.

DR. PAUL B. MAGNUSON, Chicago: Dr. Putti's procedure is most interesting and instructive, as it applies continuous extension to the shortened bone over a very considerable period of time, and at the same time holds the fragments in perfect alinement. This has not been accomplished by any other device. The final results speak for themselves. In the fourteen cases of this type in which I have operated, the lengthening of the femur has varied from 2½ to 4 inches. The traction has always been applied either by a compound pulley or a Hawley table, and has extended over a period of from twenty minutes to half an hour. In three of these cases a toe drop developed which lasted from two to three months, owing to the stretching of the sciatic nerve, directly affecting the external popliteal. The results have all been satisfactory except in one case. The patient died in shock. The shock in this class of operation is tremendous. When we consider that the muscles, nerves and blood vessels of the leg are stretched and that bone must be cut by saw or chisel; that the muscles must be loosened up for a considerable distance around the site of operation on the femur, and that there is considerable hemorrhage, it can easily be estimated that this is among the most serious of all surgical procedures,

and incidentally one of the most difficult. The operation which Dr. Putti does is certainly not as shocking to the patient as the one which I have been in the habit of performing, as the traction is maintained over a longer period of time, and, therefore, the stretching is done more slowly. Whether this method would be as successful in the hands of those of us who are less skilful than Dr. Putti is a question to be determined by our results. I doubt whether most of us have the surgical technic and the mechanical skill to do the operation and secure the results shown here. Patients who are selected for this operation must be young, strong and otherwise healthy; their general systemic condition must be gone into thoroughly before operation, and all chance of infection eliminated. At the time of the operation one must be prepared to combat shock promptly and effectively. It has been my experience that physiologic sodium chlorid solution with epinephrin chlorid, given intravenously on the operating table, is most effective in this particular case; and these operations are never done by me without preparing for combating this shock in advance of the operation and having everything accessible, the arm being scrubbed up and the instruments laid aside for giving the intravenous injection with the saline ready at hand, should it be needed. In the experimental work which we did at the University Research Laboratories on lengthening of shortened bones of the leg, which was published in the *University of Pennsylvania Medical Bulletin* in May, 1908, it was proved conclusively that if the technic was what it should be, the soft structures of the leg could be stretched for a considerable distance without any serious damage, and that the bones could be dovetailed and spliced successfully by holding the fragments in line and taking the weight from the site of operation while healing was taking place, and this Dr. Putti's apparatus does.

STUDIES ON ANEURYSM

I. GENERAL STATISTICAL DATA ON ANEURYSM *

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AND

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PHILADELPHIA

This paper is to serve as an introduction to a series of studies dealing with aneurysm; it contains general statistical data on the incidence, location, sex, age, race, number and recorded diagnoses of 321 aneurysms studied postmortem at the Philadelphia General Hospital and the Hospital of the University of Pennsylvania. These data are compared with similar publications from pathologic and clinical sources, so that the sum total of aneurysm on which certain phases of this investigation were undertaken is well above 3,000. Osler's¹ conception of an aneurysm, "a tumor containing blood in direct contact with the cavity of the heart, the surface of a valve, or the lumen of an artery," has been adopted; and although, as Dr. Osler points out, this definition does not include every condition now spoken of as an aneurysm, it covers the lesions studied in this paper. We have limited ourselves to aneurysm of the heart and its valves, and of the aorta and the arteries within the body cavity ("intracorporeal" aneurysms). Aneurysms of the peripheral and of the intracranial vessels are not here included.

* From the McManes Laboratory of Pathology, University of Pennsylvania, and the Pathological Laboratory, Philadelphia General Hospital.

* Read before the Section on Pathology and Physiology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Osler, William, and McCrae, Thomas: *Modern Medicine*, Philadelphia, Lea & Febiger 4: 472, 1915.

GENERAL INCIDENCE; RELATIVE FREQUENCY IN
DIFFERENT COUNTRIES

In the Philadelphia General Hospital, protocols of postmortem examination have been kept since 1867, in the Hospital of the University of Pennsylvania since 1875. Some 12,000 necropsies have been recorded (up to November, 1916), of which 10,600 were held at the former institution.

In the entire series, 268 subjects presented 321 intracorporeal aneurysms. The data appertaining to frequency, age, sex and race are based on the number of patients and not upon the number of aneurysms. In 2.2 per cent. of patients coming to necropsy, aneurysms were found. However, since only one out of every 6.4 patients dying at the Philadelphia General Hospital was examined postmortem (this being the average for the seventeen years ending in 1916), an accurate conception of the frequency of aneurysms in the living patient cannot be obtained.

study of aortic aneurysms, we have in Table 1 compared the relative frequency of aortic aneurysms only.

It has been remarked that of the Caucasian races, the Anglo-Saxon is a more frequent sufferer from aneurysm than the Teuton, and our figures support this belief. Thus, for the United States the average incidence in persons examined postmortem is one aortic aneurysm in forty-one; for Great Britain, one in seventy-four; for the Scandinavian countries, one in 109, and for Austria and Germany, one in 198. Again, it must be emphasized that in the United States only a certain percentage of patients are examined postmortem, while in Austria and Germany postmortem examination of hospital patients is the rule. Clinical observations also support the view that aneurysm is more frequently encountered in the United States and Great Britain than elsewhere. Thus, Osler¹ states that in the British army home contingent with a strength of 118,224 (in 1905) there were eighteen deaths from aneurysms; in Germany (1904-1905), with

TABLE 1.—RELATIVE INCIDENCE OF AORTIC ANEURYSM IN DIFFERENT COUNTRIES

Country	Author	Year of Publication	Source and Date	Number of Necropsies	Number of Aortic Aneurysms Found	Frequency
United States	Lemann.....	Am. J. M. Sc. 152:210 (Aug.) 1916.....	Charity Hosp., La., 1905-1914.....	2,000	67	1 in 29
	Osler.....	Modern Medicine 4:472, 1915.....	Johns Hopkins Hosp.	2,200	49	1 in 45
	Lucke and Rea..	1921.....	Phila. Gen. Hosp., 1867-1916.....	12,000	278	1 in 43
			Univ. of Pennsylvania, 1875-1916			
Total.....				16,200	394	1 in 41
Great Britain	Nunnally.....	Aneurysm of Abdominal Aorta, 1903....	St. George's Hosp., London, 1841-1905..	17,872	166	1 in 107
	Bryant.....	Clin. J. 23:71, 1903.....	Guy's Hosp., London, 1854-1900.....	18,678	325	1 in 57
Total.....				36,550	491	1 in 74
Scandinavia	Rash.....	Arch. f. Dermat. & Syph. 47:15, 1899....	Kommune Hosp., Kopenhagen, 1892-1896	3,165	28	1 in 113
	Dahlen.....	Ztschr. f. klin. Med. 58:163, 1907.....	Seraphim Hosp., Stockholm, 1897-1906..	2,325	22	1 in 105
Total.....				5,490	50	1 in 109
Germany and Austria	Bosdorff.....	Ueber Häufigkeit und Vorkommen der Aneurysma, 1899	Kiel Path. Inst., 1873-1888.....	5,353	28	1 in 191
	Bauder.....	Untersuchungen ueber die Rolle der Syphilis, etc., Basel, 1908.....	Basel Path. Inst. 1888-1908.....	9,570	58	1 in 165
	Vix.....	Zur Lehre ueber die Aorten-aneurysmen, Erlangen, 1904	Erlangen Path. Inst., 1862-1903.....	9,792	38	1 in 257
	Müller.....	Zur Statistik der Aneurysmen, Jena, 1902	Jena Path. Inst., 1865-1900.....	10,360	69	1 in 150
	Borowsky.....	Die Perforations-richtung der Aneurysmen der Aorta thoracica, Breslau, 1910	Breslau Path. Inst., 1892-1909.....	19,646	66	1 in 297
	Emmerich.....	Ueber die Häufigkeit der inneren Aneurysmen in München 1888.....	München Path. Inst., 1870-1888.....	8,669	52	1 in 166
	Juda.....	Die Beziehungen zwischen Aneurysmen und Tuberkulose, Erlangen, 1892.....	Städt. Krankenh. Dresden, 1851-1862...	8,871	35	1 in 253
			Erlangen Path. Inst., 1862-1891			
	Cominotti.....	Wien. klin. Wehnschr. 14:843, 1901.....	Städt. Krankenhaus Triest.....	26,495	156	1 in 169
	Eppinger.....	Praktische Heilkunde 113:1: 114:1, 1872..	Prager Path. Inst., 1868-1871.....	3,149	15	1 in 210
Total.....				101,905	517	1 in 198
Grand total.....				160,145	1,452	1 in 111

Yet, in general, these statistics show that aneurysms are not uncommon at these two hospitals, one of which, as a teaching institution, favors such admissions, while the other is the largest charity hospital in the United States.

It has long been recognized that the frequency of aneurysms differs in various localities. Hence statistical data based on postmortem examination have been selected for comparison from American, English, Scandinavian, German and Austrian publications. Table 1 shows that, in 160,145 postmortem examinations, 1,452 aneurysms were discovered; that is, one aneurysm occurred in every 111, or 0.9 per cent. patients examined postmortem. These figures are only relative, for it must be remembered that a certain proportion of patients possess multiple aortic aneurysms; however, the total number of postmortems and of aneurysms recorded is so large that fair conclusions may be drawn. Since most writers have confined themselves to statistical

an army of 555,777, there were four. Wolpert² states that in 74,744 patients treated at the Medical Clinic of the University of Berlin (1895-1905), aortic aneurysm was diagnosed in fifty-five instances, i. e., one person in 1,359. Eichhorst³ (Medical Clinic, Zürich, 1884-1901) found twenty-eight patients with aortic aneurysm among 33,377 patients, i. e., one in 1,200. Dahlen⁴ reports that in the Seraphim Hospital in Stockholm, twenty-two patients with aortic aneurysms were discovered among about 15,000 inmates (1897-1906); i. e., one in 790. Very different figures are obtained in British reports: Browne⁵

2. Wolpert, R.: Ueber die Häufigkeit und Entstehung des Aorten-aneurysma, Berlin, 1905.

3. Eichhorst, H.: Handbuch der speziellen Pathologie und Therapie, Ed. 6, Berlin, Urban and Schwartzberg, 1904, p. 284.

4. Dahlen, B.: Ueber einen Fall von Aorten-Aneurysma, mit Durchbruch in den linken Vorhof nebst einigen Bemerkungen über Aorten-aneurysma, die fibroese Aortitis and Lues, Ztschr. f. klin. Med. 58: 163-196, 1907.

5. Browne, Oswald: Aneurysms of the Aorta with Especial Reference to Their Position, Direction and Effect, Cambridge, 1885.

mentions that at St. Bartholemew's Hospital (1867-1883) with a yearly average of 5,000 inpatients (i. e., 90,000) there were 228 with aortic aneurysm, i. e., one in about 350. Osler⁶ gives the incidence of aortic aneurysms in 24,363 admissions to the medical wards of the Johns Hopkins Hospital (1889-1909) as 231; i. e., one in 105 patients; and lastly, Lemann⁷ finds forty-seven patients with thoracic aneurysms in 15,513 outpatients at the Touro Infirmary, i. e., one in 300.

TABLE 2.—LOCATION OF THREE HUNDRED AND TWENTY-ONE ANEURYSMS

Heart and its valves.....	15
Heart	13
Heart valves	2
Aorta	278
Sinus of Valsalva.....	10
Ascending arch	62
Junction of ascending and transverse arch	23
Transverse arch	46
Descending arch	42
Entire arch	19
Arch (unclassified)	4
Entire aorta (dissecting aneurysm).....	1
Thoracic aorta	31
Abdominal aorta	40
Aortic branches (and pulmonary artery).....	28
Ductus arteriosus	1
Coronary artery	1
Innominate artery	13
Left carotid artery.....	1
Pulmonary artery	1
Superior mesenteric artery.....	1
Celiac axis	1
Splenic artery	6
Renal artery	2
Internal iliac artery.....	1

Therefore, both from clinical and from necropsy data, it seems fair to conclude that aortic aneurysm is more frequently found in the United States and Great Britain than on the European continent, or at least in the Teutonic countries. To explain this is more difficult. No doubt vascular syphilis is the underlying cause for the great majority of aortic aneurysms, and it may well be that the type of syphilis which tends particularly to involve the vascular system is more common in certain countries than in others. Whether there exist strains of spirochete having a selective affinity for the cardiovascular apparatus has not as yet been determined; but at least the researches of Marie and Levaditi⁸ indicate that certain strains of spirochete produce lesions of the brain and cord, while others affect chiefly the cutaneous surfaces. We have learned in the last few years that most pathogenic bacteria are not entities but groups consisting of many types (streptococcus group, pneumococcus group, typhoid group, etc.), and that the different members of such groups behave in dissimilar fashion. Clinical experience has demonstrated that some of the many forms of syphilis occur rarely in certain countries and among certain races. Of the latter, an example is the incidence of tabes dorsalis and aortic aneurysm, among the white and negro population of this country. Tabes is fairly common in white peoples, but quite rare among negroes. Indeed, only in the last few decades has locomotor ataxia been observed at all in full blooded blacks.⁹ On the other

hand, the proportionate incidence of aortic aneurysm is far greater in the negro than in the white population. All such facts may point either to the existence of different spirochetal strains possessing selective affinities and being particularly prevalent in certain countries or races, or to the predisposing influence on the vascular structures of racial characteristics.

LOCATION

The location of the aneurysms, the marked preponderance of aortic over nonaortic aneurysm, and the comparative infrequency of aneurysm of the various aortic branches is shown in Table 2. The arch of the aorta is most frequently involved, next the abdominal, and somewhat less frequently the thoracic aorta. Of the aortic branches, the innominate and splenic arteries are most often the seat of aneurysm. These findings in general correspond to most statistical reports, but are greatly at variance with the work of Edward Crisp,¹⁰ "Table of 551 spontaneous aneurysms selected indiscriminately from the British medical and surgical journals, from the year 1785 to the present time" i. e., 1844). This writer in 1851 published a little known appendix¹¹ to his monograph in which he adds data (from the same sources as in his first paper) on 151 aneurysms, bringing the total number of his cases to 702. Since his appendix is now somewhat inaccessible, the general statistical data as to location of the aneurysms are here cited: thoracic aorta, 241; pulmonary, 2; abdominal aorta and its branches, 73; common iliac, 2; popliteal, 182; posterior tibial, 21; innominate, 22; carotid, 28; cerebral, 13; temporal, 1; ophthalmic, 1; subclavian, 25; axillary, 24; subscapular, 1; brachial, 1. Crisp's data are mainly based on clinical reports, selected, as he states, "indiscriminately"; hence not even approximate deductions as to the relative occurrence and distribution of aneurysms can be drawn from them, and the quotation of his tables without further qualification can only give a wrong impression as to the location of aneurysms.

The most striking feature of his tables is the extraordinarily large number of aneurysms of the peripheral arteries; in the 12,000 postmortem records on which

TABLE 3.—INCIDENCE OF AORTIC ANEURYSM ACCORDING TO AGE

Age	No. of Cases
Under 20 years.....	1
From 20 to 29 years.....	9
30 to 39 years.....	32
40 to 49 years.....	81
50 to 59 years.....	60
60 to 69 years.....	42
70 to 79 years.....	18
80 to 100 years.....	4

the present study is based, less than a dozen of such aneurysms are recorded; and, judging from other clinical and postmortem statistics, aneurysms of the peripheral vessels are relatively uncommon. Crisp's statistics, are, however, not to be undervalued, for they contain a wealth of information.

AGE

Aneurysm may occur at any age, but it is most frequently found in early middle life. The incidence of

6. Osler, William: Syphilis and Aneurysm, Brit. M. J. 2: 1509-1514, 1909.
7. Lemann, T. T.: Aneurysm of the Thoracic Aorta: Its Incidence, Diagnosis and Prognosis, Am. J. M. Sc. 152: 210-222 (Aug.) 1916.
8. Marie, A., and Levaditi, C.: La paralysie générale est due à un tréponème distinct de celui de la syphilis banale, Rev. de méd. 37: 193, 1920.
9. Lucke, Baldwin: Tabes Dorsalis: A Pathological and Clinical Study of Two Hundred and Fifty Cases, J. Nerv. & Ment. Dis. 48: 393-410 (May) 1916.

10. Crisp, Edward: A Treatise on the Structure, Diseases and Injuries of the Blood Vessels, London, J. Churchill, 1847.
11. Crisp, Edward: Appendix to the Treatise on the Structure, Diseases and Injuries of the Blood Vessels, London, H. Teape & Son, 1851.

age, as recorded in our series in 247 patients, is given in Table 3. The youngest patient in the series was 12 days old; the oldest, 91 years.

The table shows that aneurysm may occur at any age, but that before the twentieth year it is very uncommon. Beginning at this age the curve of incidence rises gradually, to ascend somewhat sharply in the fourth decade to its maximum; there is a slight fall during the fifth decade, and from there on a steady decline.

TABLE 4.—SEX-AGE INCIDENCE

Author	Location of Aneurysm	No. Cases	Males	Females	Ratio M to F	Most Frequent Age Period
(a) Aortic aneurysms (collected from pathologic-anatomic sources)						
Biggs*	Aorta	34	27	7	3.9 to 1	Av. 44.3
Lemann†	Thor. aorta	47	35	12	2.9 to 1	35-55
Baule†	Aorta	58	37	21	1.5 to 1	Not stated
Vix‡	Aorta	37	28	9	3.1 to 1	40-50 av.
Müller‡	Aorta	69	51	18	2.6 to 1	40-60
Kröger‡	Aorta	48	38	10	3.8 to 1	Av. 52.2 M. 51.3, F. 56.1
Emmerich‡	Aorta	51	35	16	2.2 to 1	40-60
Rash†	Aorta	28	21	7	3 to 1	40-60
Bryant†	Abd. aorta	54	50	4	12.5 to 1	30-40
Browne‡	Aorta	88	74	14	5.2 to 1	35-55
Browne‡	Aorta	140	122	18	6.7 to 1	35-55
Hall‡	Aorta	98	89	9	9.9 to 1	35-55
Dahlen‡	Aorta	27	20	7	2.9 to 1	40-55
Total		779	627	152	4.1 to 1	
(b) Aortic aneurysms (collected from clinical sources, or from literature)						
Crisp‡	Aorta	314	261	53	5 to 1	30-40
Borowsky†	Aorta (rupt.)	175	150	25	6 to 1	40-50
Maximoff‡	Aorta	303	252	51	4.9 to 1	40-50
Maximoff‡	Aorta	41	29	12	2.5 to 1	40-60
Wolpert‡	Aorta	55	22	33	0.7 to 1	Av. 53.3 M. 52.1, F. 50.7
Hall‡	Thor. aorta	188	160	28	5.5 to 1	Not stated
Total		1,076	874	202	4.3 to 1	
(c) All aneurysms (collected from pathologic-anatomic sources)						
Bosdorff‡	All aneur.	94	51	43	1.2 to 1	60-80
Lucke & Rea	All aneur.	247	200	47	4.3 to 1	40-60
Müller‡	All aneur.	183	108	75	1.4 to 1	50-70
Emmerich‡	All aneur.	58	39	19	2.1 to 1	40-60
Cominotti†	All aneur.	181	150	30	5 to 1	40-50
Juda‡	All aneur.	48	31	17	1.8 to 1	60-70
Lidell‡	All aneur.	243	200	43	4.6 to 1	30-40
Von Schrötter‡	All aneur.	220	146	74	2 to 1	40-50
Total		1,274	925	348	2.7 to 1	
(d) All aneurysms (collected from clinical sources, or from literature)						
Crisp‡	All aneur.	702	624	78	8 to 1	30-50
Lebert†	All aneur.	386	296	90	3.2 to 1	35-45
Total		1,088	920	168	5.4 to 1	
Grand total		4,217	3,346	870	3.8 to 1	

a patient living for ten years. Nunnelly¹³ finds that the average course of aneurysms of the abdominal aorta, from the first appearance of the symptoms, extends over from thirteen to fifteen months. Bosdorff¹⁴ places the usual duration as from one and a half to two years; Emmerich, as from twelve to eighteen months. Crisp,¹⁵ on the other hand, believes the average duration of life to be from eight to ten years. Thus one might quote a considerable number of writers. It is most probable that the duration of life depends entirely on the individual case, and on the care and treatment the patient receives.

As will be pointed out, the majority of aneurysm patients die from a disease independent of the aneurysm; in our series, only about one third died from rupture.

In Table 4 the age incidence is collected from various pathologic as well as from clinical sources. In all, 4,217 aneurysm cases are tabulated. The most frequent age period given by the different writers varies considerably.

The statistics are tabulated under four headings: (a) aortic aneurysms from postmortems; (b) aortic aneurysms collected from clinical sources and from the literature; (c) all aneurysms (including aortic) from postmortems, and (d) all aneurysms (including aortic) collected from clinical sources and from the literature. As far as aortic aneurysms are concerned, there appear to be noteworthy differences in the most frequent age periods given, the majority of cases occurring between the ages of 35 and 55. In the figures dealing with aneurysms in any location (this includes aortic aneurysms) more advanced age periods are stated by some authors. Thus, Bosdorff¹⁴ gives from 60 to 80 years, and Juda¹⁶ from 60 to 70 years as the most frequent age periods, but an analysis of the material on which their data are based reveals that both writers included a considerable number of small aneurysms of the cerebral arteries.

Aneurysms occur at different age periods in whites and blacks, in males and females. In Table 5 the average ages of these various groups are shown. The average age at which white persons suffering with aneurysm came to necropsy was 54.4 years, and only 45.3 years for negroes. A somewhat less marked age difference is shown to exist between men and women, the average of the former being 46.9 years, of the latter 52.8 years.

Similar difference in ages exists between white males and white females, and between black males and black females, while between white females and black males the marked discrepancy of fifteen years is seen.

SEX

In our series there are 200 males and forty-seven females (sex not recorded in twenty-one instances); this gives a ratio of 4.2 males to 1 female. Table 4 shows that practically all writers have found a similar preponderance of the male sex. The sex incidence has been grouped under four headings: (a) aortic aneurysms from postmortem statistics; (b) aortic aneurysms from clinical sources, or collected from the

13. Nunnelly, F. P.: Aneurysm of the Abdominal Aorta, Oxford, 1906.
14. Bosdorff, Ernst: Ueber Häufigkeit und Vorkommen der Aneurysma, Kiel, 1899.
15. Crisp (Footnotes 10 and 11).
16. Juda, David: Die Beziehungen zwischen Aneurysmen und Tuberkulose, Erlangen, 1892.

12. Hall, F. de H.: Intrathoracic Aneurysm, Lancet 1: 843, 869, 945, 1913.

13. Nunnelly, F. P.: Aneurysm of the Abdominal Aorta, Oxford, 1906.

14. Bosdorff, Ernst: Ueber Häufigkeit und Vorkommen der Aneurysma, Kiel, 1899.

literature; (c) all aneurysms (including aortic aneurysms) from postmortem statistics, and (d) all aneurysms (including aortic aneurysms) from clinical sources or compiled from the literature. The total number of aneurysms collected in the table is 4,217; of these, 3,346 occurred in males and 870 in females, giving a ratio of 3.8 males to one female. Several writers (Bosdorff,¹⁴ Müller,¹⁷ and Juda¹⁶) record an unusually large number of females in their series; the same writers also give the most frequent

TABLE 5.—INCIDENCE OF RACE, SEX, AGE, AND RACE-SEX RATIO			
Race or Sex	Number Recorded	Average Age	Race-Sex Ratio
White.....	173	54.4	2.3 whites : 1 negro
Negroes.....	74	45.3	
Males.....	200	46.9	4.2 males : 1 female
Females.....	47	52.8	
White males.....	134	51.3	3.4 white males : 1 white female
White females.....	39	57.6	
Negro males.....	66	42.5	8.2 negro males : 1 negro female
Negro females.....	8	48.1	

age period at a very advanced time of life (i. e., from 50 to 80). Analysis of their reports shows that a relatively small number of aortic aneurysms was included, and that their figures are based on a relatively large percentage of aneurysms of the aortic branches and the cerebral vessels. One may, perhaps, draw the conclusion from the data that aneurysms of such arteries are somewhat more common in females than in males. The greater longevity of women, in general, may account for the advanced age periods given. Emmerich,¹⁸ whose statistics (Pathological Institute, Munich) show an unusual proportion of females, explains this by stating that in Munich women did more hard manual labor than elsewhere. All these, however, are exceptions, and it may be stated that, in general, aneurysm occurs four times more frequently in the male than in the female sex.

RACE

Aneurysm seems to be particularly common in the negroes. In our series there are 173 whites and seventy-four negroes, a ratio of 2.3 whites to one negro. In 5,000 admissions to the medical wards of the Philadelphia General Hospital the ratio of whites to negroes was fifteen whites to one negro. Osler¹ gives the ratio for aneurysm as 2.6 white to one negro, while the proportion of white to colored patients in the wards (of the Johns Hopkins Hospital) was as four white to one negro. Lemann,⁷ however, finds the difference between whites and negroes not at all marked. From his table on thoracic aneurysm it appears that among the males the aneurysms were about as frequent in white men as in negroes, while the negro female cases were relatively three times as frequent as the white female one. Our own figures, however, are similar to Osler's, and show the greater relative frequency of aneurysm in the negroes. The ratio of occurrence and other data are shown in Table 5.

NUMBER OF ANEURYSMS

While it is generally known that small aneurysms of the cerebral arteries are commonly multiple, the

fact that more than one large aneurysm of the aorta or its branches occur not infrequently is often overlooked in clinical examinations. Thus, it is not unusual to find only one aneurysm diagnosed, yet two or more are discovered at necropsy. If, for instance, an aneurysm of the ascending arch coexists with one of the abdominal aorta, one or the other is frequently overlooked, often because no effort is made to search for multiple aneurysms. In our series, multiple aneurysms occurred in fifty three patients; that is, one in every five patients with aneurysm had more than one such lesion.

In detail:

- In 41 patients, 2 aneurysms were present.
- In 10 patients, 3 aneurysms were present.
- In 1 patient, 4 aneurysms were present.
- In 1 patient, 5 aneurysms were present.

These were chiefly aneurysms affecting the aorta, but in several instances an aortic aneurysm coexisted with an aneurysm of one of the aortic branches.

DIAGNOSIS

Aneurysms frequently escape clinical detection. A glance through the postmortem protocols tabulated by Bosdorff,¹⁴ Browne,⁵ Crisp,¹⁵ Maximoff,¹⁹ Dahlen,⁴ Vix,²⁰ Kröger,²¹ Przygode²² and other authors shows that a very high percentage of aneurysms discovered at the necropsy table was not recognized clinically. Lemann⁷ recently discussed the diagnosis, and failure to diagnose, of aneurysms, and cites Sir William Osler's dictum that there is no disease more conducive to clinical humility than aneurysm of the aorta.

The clinical diagnoses recorded on the postmortem protocols in our series are given in Table 6.

In this series the correct diagnosis, i. e., aneurysm, was recorded in only 43 per cent. of the cases. It must be remembered, however, that these records began in 1867, before the days of modern diagnostic methods. The conditions most frequently mistaken for aneurysm are given in Table 6.

TABLE 6.—CLINICAL DIAGNOSES RECORDED IN A SERIES OF TWO HUNDRED AND SIXTY-EIGHT CASES WITH ANEURYSMS

Diagnoses	Number of Cases
Aneurysms.....	95
Asthma.....	8
Chronic endocarditis.....	21
Chronic myocarditis.....	17
Pulmonary tuberculosis.....	9
Mediastinal tumor.....	2
All other diagnoses.....	71
Not recorded.....	45

SUMMARY

This paper contains a statistical analysis of 321 aneurysms of the heart and its valves, the aorta and the aortic branches.

1. In 12,000 postmortem examinations at the Philadelphia General Hospital and the Hospital of the University of Pennsylvania, 321 "intracorporeal" aneurysms occurred in 268, or 2.2 per cent., of patients examined postmortem.

17. Müller, Ernst: Zur Statistik der Aneurysmen, Jena, 1902.
18. Emmerich, Otto: Ueber die Häufigkeit der inneren Aneurysmen in München, München, 1888.

19. Maximoff, N.: Beitrag zur Statistik der Aneurysmen, München, 1910.
20. Vix, K.: Zur Lehre über die Aorten-aneurysmen, Erlangen, 1904.
21. Kröger: Statistik der Aorten-aneurysmen nach den Sektionsprotokollen von 1872-1899, Kiel, 1901.
22. Przygode, Paul: Ueber die Rückwirkung der Aorten-aneurysma aufs Herz, Giessen, 1909.

2. Comparison of statistics shows that aneurysms are more frequent in the United States and Great Britain than in the Teutonic countries.

3. The aorta is more often involved; the various aortic branches are relatively rarely the seat of aneurysms.

4. The most frequent age period for aortic aneurysm is the fourth and fifth decades.

5. Aneurysm occurs at an earlier age in the negro than in the Caucasian race.

6. Aneurysm occurs about four times more frequently in males than in females.

7. Aneurysm is relatively more common in the negro than in the Caucasian.

8. In fifty-three patients (about 20 per cent.), multiple aneurysms were found.

9. The clinical diagnosis was made in 43 per cent.

COCCIDIOSIS IN MAN AS A POSSIBLE SANITARY PROBLEM IN THE UNITED STATES

FRANK G. HAUGHWOUT

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MANILA, P. I.

In 1918, I called attention¹ to the growing number of cases of human coccidiosis that were being reported from the war zones abroad, and ventured the opinion that the peculiar war conditions were not unlikely to bring about a spread of the parasites involved, and that coccidiosis might be expected to crop up at almost any time or place. This prediction now seems on a fair way to be fulfilled. The literature already contains records of eleven cases of coccidiosis discovered in the United States since I wrote my paper. Of these, four would appear to be autochthonous, and I propose to add another case just discovered by me in Manila, that I have reason to believe may have become infected in the eastern United States.

REPORT OF CASE

H. O. P., a man, aged 32, a resident of Georgetown, Ill., arrived in the Philippines, Dec. 19, 1920, and has since been attending to his business in Manila and the provinces. Early in February, while he was in Cotabato, he developed diarrhea and abdominal discomfort. His stools were watery and, so far as he observed, contained neither blood, pus nor mucus. He doctored himself with field remedies, and was feeling a little better when he returned to Manila, February 26. Soon after his arrival he ate two very heavy meals, and had a relapse of his diarrhea. He consulted Dr. Otto Schöbl of this bureau, who found numerous small amebas, whose species he did not determine, in the stool specimen submitted. The stool was not dysenteric. As the symptoms did not wholly abate, the case was referred to me by Dr. Schöbl. The patient, meanwhile, had been taking heavy doses of ipecacuanha on his own account (90 grains of the drug daily, in the form of Alcresta tablets) and the character of his stools suggested that he was suffering from ipecac diarrhea. On my own suggestion, he discontinued the drug and a day or two later his stools had become normal. I failed to find amebas in either the motile or encysted forms after several examinations, but I did eventually find a solitary cyst of a coccidian which, on subsequent study of abundant material, I have decided is *Isospora hominis* Rivolta, 1878 (emend.

Dobell,² 1919). The case is still under observation, so I shall not go into details as to symptomatology except to state that so far the patient has shown no definite train of symptoms referable to the coccidial infection.

COMMENT

During the years I have been in the Philippine Islands I have studied several thousand stools in the search for intestinal parasites, and have never found a case of infection with any sporozoan parasite until this case came to me. My subjects have been drawn from nearly every part of the islands. I therefore think, in view of my observations and the observations of other men in the Philippines whose experience has been quite extended, that it is exceedingly unlikely that the infection of this case occurred here.

The patient spent the years 1915-1916 in Manila as a member of the scientific staff of this bureau. In 1917, he was at Trenton, Ont., where there was no obvious source of infection, and in 1918-1920 he was chemist at the government smokeless powder plant at Nitro, W. Va., which is about 15 miles from Charleston. He says the sanitation at the plant was excellent, but that the laboring force included men from many points in Europe. He thinks it not unlikely that the force included men from the eastern Mediterranean zone, where coccidiosis seems to be endemic.

Kofoid, Kornhauser and Plate,³ in reporting on the examination of troops at Debarkation Hospital No. 3, in New York, record the finding of eight cases of *Isospora* infection in the men examined by them. Of these, six occurred in troops that had seen overseas service, and the other two in home service troops. Kofoid and Swezy,⁴ in what would seem to be a continuation of that work, record eleven cases of sporozoan infection, of which seven were found in overseas troops and four in home service troops. In short, there is ground for the belief that at least four autochthonous infections have already been found in the United States. It is my belief that before a great while others will be found in the civilian population. These facts brought out by Kofoid and his co-workers seem to have escaped general notice and comment, even by the authors themselves, probably because they are buried in the tabulated reports of the findings. It would seem desirable to follow the peregrinations of these infected soldiers and to inquire into the histories of the apparent autochthonous cases. The purposes of this paper is to suggest such an inquiry.

I shall report in detail on my case in a subsequent paper, but it seems appropriate to me to add to my warning of 1918. So far as we have records of actual cases, coccidiosis in the adults observed seems not to have been a fatal or even a very serious affection. But our knowledge of the condition is very meager, and we have no pathologic studies to guide us. While it may be relatively harmless in adults, I submit that we have few or no data as to its effects on children or on persons of lowered vitality in whom it may be a much more serious matter.

The condition presents an interesting epidemiologic problem whose study should now commence with the seeming early development of the infection in the

2. Dobell, Clifford: A Revision of the Coccidia Parasitic in Man, *Parasitology* 11: 149-196 (Feb. 28) 1918.

3. Kofoid, C. A.; Kornhauser, S. L., and Plate, J. T.: Intestinal Parasites in Overseas and Home Service Troops of the U. S. Army, *J. A. M. A.* 72: 1721 (June 14) 1919.

4. Kofoid, C. A., and Swezy, Olive: On the Prevalence of Carriers of Endamoeba Dysenteriae Among Soldiers Returned from Overseas, *New Orleans M. & S. J.* 73: 4-11 (July) 1920.

1. Haughwout, F. G.: Infections with Coccidium and Isospora in Animals in the Philippine Islands and Their Possible Clinical Significance, *Philippine J. Sc.*, B 13: 79-93 (March) 1918.

United States. The high resistance of the cysts to the action of chemical reagents and disinfectants, and the high degree of vitality of coccidial cysts in general, place the parasite on a far more dangerous plane, from the epidemiologic point of view, than obtains in the case of the other intestinal protozoa of man whose cysts are much less resistant to untoward environmental conditions.

Persons desiring to inform themselves regarding the morphology of these cysts, and those of other man-infesting sporozoa, are referred to the papers of Wenyon⁵ and of Dobell,² which contains the best descriptions and illustrations of these parasites that have so far been published.

Clinical Notes, Suggestions, and New Instruments

FOREIGN BODIES IN RECTUM AND SIGMOID

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I report two cases, the first because of its interest as a causative factor in an intractable fistula, the second because the object had ascended into the sigmoid and the method adopted in its removal offers a possible suggestion to others who may perchance have to deal with similar cases.

CASE 1.—A man, aged 28, in good physical condition, two years prior to coming under my service at the Maryland General Hospital had developed a perirectal abscess, which had been opened and drained at another institution. Complete healing had not occurred, and he was left with a fistula for which a subsequent operation was performed. Healing apparently took place, but later there was a recurrence of the fistula. The customary procedures failed to detect the causative factor. The fistula was complete, running from an external opening about three-fourths inch from the anal margin in the middle of the left posterior quadrant, with an internal opening about 3 inches up the rectum, having a lateral extension about 3 inches deep into the cellular tissues posterior to the rectum.

The tract was cut down on and presented nothing unusual; but on introduction of a finger to break up any trabeculae that might inclose pockets, there was felt at the bottom of the wound a sharp pointed object that felt not unlike a spicule of bone. Forceps carried along the palmar surface of the finger caught and pulled out a piece of wood 2 inches long and sharp at both ends. It had evidently been cut from a meat skewer that had been used in a roast of meat, and passed through the alimentary tract until it arrived in the rectum, where it was pushed through the wall and came to be lodged outside the bowel in the perirectal tissues. Its removal was followed by prompt healing of the fistula.

CASE 2.—A carpenter, aged 54, two days before had introduced a glass test tube through the anal orifice to relieve itching from worms. Digital examination disclosed nothing except a relaxed sphincter. With the sigmoidoscope there could be seen the edge of the flange of the tube protruding from the sigmoid on the left about 9 inches from the anus. It was impossible to seize it with any ordinary forceps for fear of breaking, which would result in the sharp edges perforating the intestine with danger of peritonitis. A roentgenogram by Dr. Walton disclosed the tube occupying a loop of the sigmoid with the closed end pointing toward the umbilicus. By deep pressure the tube could be readily rolled around under the fingers, but could not be dislodged.

The question of removal was considered, and as there was no danger in delay, the man was fed on food with abundance of residue, followed by a pint of liquid petrolatum in the hope that the tube would be carried down and

out in a stool. Because of its position, arrest of peristalsis and shape of the test tube with its closed end upward, no stool occurred, but the patient suffered some discomfort. Considering its removal by mechanical means, it was realized that unless it could be seized and drawn out through the anus an abdominal incision would be necessary.

It occurred to me that if it was possible to get something into the lumen of the test tube and expand it, perhaps it could be drawn out in that manner. A horsehair probang that was popular some years ago for the removal of foreign bodies from the esophagus before the advent of the esophagoscope suggested itself as a practical instrument for the purpose. The man being placed in the knee chest position, a pneumatic sigmoidoscope of 1¼ inches diameter was introduced until its distal end came in contact with the proximal end of the test tube, which occupied a relative position to the lumen of the sigmoidoscope of almost a right angle. Through the sigmoidoscope I passed the probang, while Dr. Reeder manipulated the tube over the abdomen, lifting and steadying it, while I passed into its lumen the probang, over the bristles of which I had fastened a rubber finger cot. When it was in the test tube, I expanded the rubber-covered bristles, which adhered to the sides of the tube so that it was readily and easily drawn down and out. The man suffered no ill effects from his experience.

The test tube was 15.5 cm. long and 2.5 cm. in diameter. There was no evidence of the presence of *Oxyuris vermicularis*. The absence of this and the relaxed sphincter suggest the use of the tube as probably due to a perversion. The height to which the tube had ascended was doubtless due to reverse peristalsis, as it was too far to be pushed up by the patient. Its further ascent was limited by the curve of the sigmoid.

817 Park Avenue.

NEW BLOOD COUNTING PIPET HOLDER

A. M. MOODY, M.D., PASADENA, CALIF.

The necessity for having some convenient method for carrying and transporting filled blood counting pipets is apparent.

The holder here illustrated is convenient and will allow one to transport filled blood diluting pipets without any danger of losing a drop of the contents. Furthermore, it provides centrally located laboratories with a

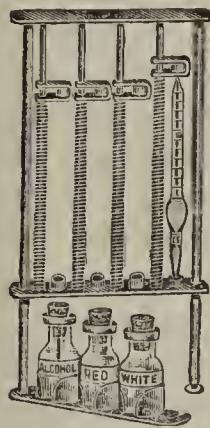


Fig. 1.—Device for transportation of specimens in blood counting pipets.

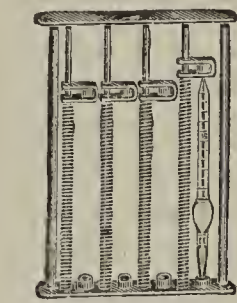
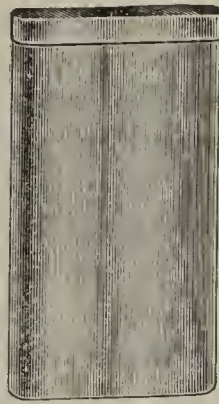


Fig. 2.—Method of inserting pipet.

means by which physicians who do not possess a microscope may collect the blood from their patients and then send the filled pipets to the laboratory for counting.

The holder and case are so designed that they can be readily sterilized when necessary after contact with contagious diseases.

The device has been made in two models, one with diluting bottles and needle attached for use in homes, and the other for hospital use when the only problem is the safe transporting of the filled pipets to the laboratory.

The holder as illustrated is all metal with through and through rods on which are springs with holding cups attached. One end of the filled pipet is placed in the stationary cup and the movable cup is lifted enough to cover the open end.

5. Wenyon, C. M.: The Development of the Oocyst of the Human Coccidium: An Addendum, *Lancet* 2: 1276 (Dec. 11) 1915.

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SATURDAY, SEPTEMBER 17, 1921

BLOOD VISCOSITY AND BLOOD PRESSURE

Blood has a viscosity four or five times that of water. The viscosity is maintained at a fairly uniform level, and in the normal person shows only a slight diurnal variation, depending on the intake of food and fluid. However, wide variations from the normal have been found in many disease conditions. For example, an increase in the number of cells, of the colloids in suspension or of carbon dioxide causes an increase in viscosity; and increases in the water, oxygen or salt content lower viscosity. So far as is definitely known, it seems highly improbable, according to Holmes,¹ that the viscosity of the blood is ever altered sufficiently to result in the production of symptoms in the absence of any complicating factor.

Several authors have suggested on theoretical grounds that a thickening of the blood might increase the blood pressure and play an important part in the production of vascular disease. However, as pointed out by Lyon,² few observers have found any relationship between viscosity of the blood and blood pressure. Blunschy³ noted that, during exertion, viscosity and blood pressure were parallel; and Bayliss⁴ suggested the use of gum solution in place of physiologic sodium chlorid solution for transfusion in hemorrhage cases in order to maintain the blood pressure. When the viscosity of the blood is reduced, a constriction of the arterioles may be necessary to raise the blood pressure, in order to offer the desired resistance to the heart and to prevent the arterial system from being too rapidly emptied.

Because of the general importance of the subject in both the diagnosis and treatment of disease, Lyon has endeavored to obtain information as to whether any relationship could be demonstrated to exist between the viscosity of the blood and the blood pressure, by examination of eighty normal persons and of more than 400 persons suffering with a wide range of disease conditions. He found that the blood viscosity

rises steadily with increasing years, reaching a maximum in the period from 30 to 39, and thereafter falling slowly, the curve corresponding closely with those for the number of erythrocytes and the percentage of hemoglobin. On the other hand, blood pressure figures show no maximum in middle life but continue to increase through the later decades. In disease, Lyon found no definite relationship between blood viscosity and blood pressure, owing perhaps to the enormous power of compensation which the body possesses. In patients with anemia or cyanosis, alterations in the blood pressure appear to be very largely dependent on the thinness and thickness of the blood. The study suggested that the chief regulating mechanism in the circulation lies not in the arterioles but in the capillary areas. He concludes that the viscosity of the blood is an important factor in maintaining blood pressure, but that alteration in the thickness of the blood can be easily compensated for by the body.

It is especially interesting, however, in this connection to consider the view of Holmes as to the importance of blood viscosity in hemiplegia. In the aged, the blood viscosity remains stationary or falls, whereas the pressure is likely to be greatly increased. If such persons are subjected to dehydration through severe diarrhea, vomiting, etc., there occurs greatly increased viscosity, which may well result in pathologic phenomena. The observations recorded emphasize the importance of preventing dehydration of the tissues in the aged, especially in the case of those known to have vascular disease.

THE LIVER AND SPECIFIC DYNAMIC ACTION OF PROTEIN

The liver, being the largest glandular organ of the body, has often been suspected in the past to be the seat of important metabolic phenomena, although in recent years it has become quite common to assign large physiologic duties to comparatively small anatomic structures. No one today is content to regard the secretion of bile, the most conspicuous performance of the liver, as its sole function in the organism; indeed, the production of bile has even been assigned a secondary importance by those who are inclined to magnify the less well known activities of the hepatic cells. The production of urea from its nitrogenous precursors is one of the reactions for which the liver has long been held responsible, although evidence is not wanting that urea can arise in other tissues also. Cases of liver disease have repeatedly been investigated in the hope of connecting the hepatic organ in some way with the "assimilation" and metabolism of the amino-acids arising by the digestion of protein in the alimentary tract. Although deamination of amino-acids and urea synthesis seem to be somewhat incomplete without the liver, they may nevertheless occur to a considerable extent. The consensus for the moment

1. Holmes, W. H.: Relation of Increased Blood Viscosity to Transient Attacks of Hemiplegia, *J. A. M. A.* **76**: 1641 (June 11) 1921.

2. Lyon: Blood Viscosity and Blood Pressure, *Quart. J. Med.* **14**: 398 (July) 1921.

3. Blunschy: *Cor.-Bl. f. Schweiz. Aerzte* **38**: 664, 1908.

4. Bayliss: *Proc. Roy. Soc., London* **89**: 380, 1915.

has been summarized by stating that in liver insufficiency the cleavage of amino-acids is not entirely normal, although striking departures are seen only in very severe cases.

The increase in heat production in the body following the ingestion of foodstuffs, and notably protein—a phenomenon to which Rubner first gave the designation “specific dynamic action of foods”—is probably associated with some unique stimulation of the body cells. Several years ago, Aub and Du Bois¹ studied the effect of feeding large quantities of meat to persons with normal torsos but reduced muscle area. The outcome, showing a relatively greater increase in metabolism than is noted in normal persons under the same conditions of diet, suggested that the stimulation of the cells is not confined to the mass of skeletal muscles or dependent solely on surface area. The viscera were naturally considered as a possible location of the phenomena leading to the specific dynamic action of protein. The latest metabolic investigations of Aub and Means² at the Massachusetts General Hospital on patients suffering from a variety of liver diseases give no support to the conjecture that the liver is solely responsible for the increased heat output provoked by a meal rich in protein. The basal metabolism was essentially within normal limits. The rate of absorption and utilization of protein in large quantities was usually normal, even in severe cirrhosis. Marked portal obstruction caused no delay in the appearance of the specific dynamic action of protein. Aub and Means conclude that the liver is either not an important regulator of the metabolic rate or is adequate for this purpose even when severely diseased. Furthermore, their studies justify the deduction that either the liver is not the main site of the specific dynamic action of protein or else that it can adequately perform this function even in disease. It is, of course, well known that the thyroid can modify the basal metabolic rate. Even in exophthalmic goiter and cretinism, however, the specific dynamic action of protein is not unusual. The rise in metabolism in such cases is, as Du Bois³ has shown, merely superimposed on the abnormal basal rate. It is therefore reasonably certain that the thyroid gland also is not the seat of the specific dynamic action.

1. Aub, J. C., and Du Bois, E. F.: The Basal Metabolism of Dwarfs and Legless Men, with Observations on the Specific Dynamic Action of Protein, *Arch. Int. Med.* **19**: 840 (June) 1917.

2. Aub, J. C., and Means, J. H.: The Basal Metabolism and the Specific Dynamic Action of Protein in Liver Disease, *Arch. Int. Med.* **28**: 173 (August) 1921.

3. Du Bois, E. F.: Metabolism in Exophthalmic Goiter, *Arch. Int. Med.* **17**: 915 (June) 1916.

Duties of Health Officers.—Modern sanitary practice places a multiplicity of duties on the health officer. In the larger communities at least, the burden is sufficient to demand all of the time and energies of the health executive if really efficient health service is to be rendered. Unfortunately, to the legitimate activities of a health department are often added duties which, in the light of present knowledge, have little or nothing to do with preventing sickness or decreasing mortality.—*Health News* **15**:303, 1920.

Current Comment

PHYSICAL STANDARDS FOR WORKING CHILDREN

The problem of the regulation of child labor, like many other social and economic questions, takes on broader aspects and relations the more carefully it is studied. The difficult point to determine is, At what age and under what conditions can a child begin to work without endangering his future physical and mental development? Prohibition of the employment of children in certain tasks and the creation of an arbitrary fixed minimum age for entrance into any employment are only partial solutions of the problem. Any permanent and fundamental legislation requires the establishment of standards of physical fitness which all children entering employment should be required to meet. The creation of such standards, in turn, requires the formulation of definite standards of normal development for the use of physicians in examining a child applying for a permit to work. To fill this need, the Children's Bureau appointed a representative committee of physicians to formulate such standards. Their report appears in Bulletin 79 of the Children's Bureau, consisting of general recommendations regarding methods of examination, a standard record sheet of physical examinations for employment, for the use of the examining physician, and an instruction chart for physicians in making such examinations and filling out reports. The bulletin is a preliminary one, and it is expected that from time to time the results of further scientific research and practical experience in this field will be published.

EXPERIMENTAL STUDIES ON TRACHOMA

It is generally known that trachoma is a highly contagious disease and exists endemically in parts of the United States as well as in other parts of the world, but the specific cause of the disease is still unknown. There is no evidence that trachoma is caused by a micro-organism of the bacterial or blastomycetic group. The epithelial inclusions or Prowazek bodies are quite characteristic of trachoma, but do not appear to be the cause of the disease. Trachoma is much more prevalent where the hygienic and sanitary surroundings are bad, and Eaton¹ and others believe that the virus is endogenous and that by far the most potent known means of transmission of trachoma is interhuman contagion. There has been very little definite information concerning the transmission of trachoma by animals and insects, but the recent work of Nicolle and Guénod² appears to show that the fly may transmit the disease for a period of twenty-four hours after having been in contact with infective materials. The observations of Nicolle and Guénod give us considerable information concerning the nature and transmission of the virus of trachoma. They find that the infective agent is a filtrable virus, passing the Berkefeld V filter, that it is destroyed by heating to 50 C. for one-half hour, and that it may be preserved in glycerol at icebox temperature for seven days. The chimpanzee, baboon

1. Eaton, F. B.: *Am. J. Ophth.* **3**: 422 (June) 1920.

2. Nicolle and Guénod: *Arch. d. l'Inst. Pasteur de l'Afrique du Nord* **1**: 149 (July) 1921.

and rabbit were found to be susceptible to trachoma, but the rat, cat and guinea-pig were not, although the guinea-pig showed some suggestive symptoms. The virus has also survived five successive transfers from rabbit to rabbit, and has been recovered from the eye of a rabbit one year after inoculation. It has also been preserved in the testicle of the rabbit for thirty-seven days. From their earlier observations these investigators believed that animals which had recovered from an attack were immune, but in their more recent work they find that a primary attack of trachoma when it has entirely subsided does not protect the eye of the rabbit or monkey from experimental reinfection. The transmission of the disease to rabbits and the fact that the virus can be preserved in the testicle of the rabbit offer some hope of discovering the cause itself of trachoma and later of obtaining means of prevention, as through serums or vaccines. Since about 50 per cent. of those who have trachoma have disturbances of vision, it is, of course, most important to prevent the disease as far as possible. In addition to isolating those affected with it, the rooms where trachoma patients are kept should be protected from flies by screens and there should be a systematic destruction of flies. Again, the fly has been found to be a possible agent in the transmission of human disease.

VETERINARY CHIROPRACTIC

And now the lower animals are to be "adjusted!" The house organ of a brand of chiropractic dispensed from Davenport, Iowa, prints letters from some of its "graduates" describing wonderful results attained in the "chiropractic treatment" of sick animals. One enthusiastic Georgia chiropractor relates that when he "was adjusting Henry Vinson's son for an incoordination causing pneumonia" that "Mr. Vinson says, 'Doc, I have a mule that is down in the back and can't get up and wish you would come out and see if you can do something for him.'" The versatile chiropractor looked over his new patient and "adjusted the mule between the hip bones." The mule recovered—presumably slowly enough to allow the adjuster to escape. The same practitioner also reports that he "was called to attend Mr. Ben Vandalsem's Scotch Collie who was dragging his hind legs, and after adjusting the dog he improved and got quite normal." A Texas chiropractor records the interesting case of a "cow down, all swelled up, as if she would burst." Diagnosis: "A poisoned condition." Treatment: "I adjust sixth and eighth dorsals and K. P. In two minutes cow was up vomiting. I came back by in one hour, cow seemingly in normal condition." Now, putting the "dorsals and K. P." of a cow in position and adjusting a mule "between the hip bones" may get chiropractors into serious trouble. It is one thing to fool with the health of human beings and an entirely different thing to trifle with the health of live stock. The "patent medicine" interests of the country have been powerful enough to keep off the statute books any law that would protect the public by giving it information regarding the composition of nostrums sold as home remedies. But there are some states which forbid the sale of any live stock remedy that does not bear on the label the names of its active ingredients. Hence it may easily come to pass

that if the chiropractors attempt to treat cows and pigs they may find themselves in hot water. That men, ignorant of the body and its processes, should treat the ailments of men, women and children is apparently a small thing; human life is the only thing involved. But that ignoramus should trifle with the health of a horse or a hog is an outrage; that is property. If chiropractors are wise they will confine their malpractice to humans; it is safer.

BRINGING PRESSURE TO BEAR ON CONGRESSMEN

In the *Congressional Record* for September 6 appear the remarks made by Miss Alice Robertson, member of the House of Representatives from Oklahoma, on the Sheppard-Towner bill. Miss Robertson's public statement regarding this bill has already been published in THE JOURNAL. One point brought out in her remarks, which will be of interest to those who have been engaged in any campaign for legislation, is her statement of the manner in which the endorsement of the measure by women's clubs was secured. She says:

It is reported that this bill has the endorsement of all the great woman's organizations representing a membership of ten million. I happen to hold memberships in four of these organizations. In my judgment, the membership of these clubs is twice counted, at least 50 per cent. Out of many letters telling me how endorsements of clubs were secured without any real understanding of the legislation involved. I select one at random:

"Hon. ———, member of the legislature, received an urgent telegram to work for this bill from the ——— Woman's Club, 1,400 strong, emphatically for it. Accordingly he 'got busy' with wire and mail to Washington. When he returned to ——— he called together the local ladies and asked for pointers. He was astounded to find that they knew nothing about the bill. 'Then, why did you send me such a telegram?' 'Because Mrs. ——— asked us to do so.' A very wealthy lady's name was mentioned. As she was known to the local ladies as a good woman, they assumed that everything was all right and did as they were bid."

Too often, the efforts made to "bring pressure to bear on the congressman" to pass or defeat various measures are of this kind. Such methods have been used both for and against all kinds of legislation so frequently that they have lost their effectiveness. Congressmen and members of legislatures now regard petitions, letters, telegrams and other formal propaganda methods as evidence of a well financed and energetically directed campaign on the part of a centralized organization rather than as any indication of real sentiment on the part of their constituents. The minutes of both the Senate and the House for every morning session contain resolutions, petitions, telegrams, letters and newspaper extracts introduced by various congressmen as a demonstration to their constituents of their zeal and energy. This mass of material, which every member receives, is about equally divided pro and con, and is introduced into the records, printed without reading, read by title, ordered to lie on the table, or referred to some committee where it is probably pigeonholed indefinitely. The really wise and efficient legislator today analyzes carefully each bill on which he is to vote, and endeavors to learn the sentiment regarding it in his district from individual constituents in whose judgment he has confi-

dence. Like many other features of our social and political lives, conventional forms of propaganda have been so generally and indiscriminately employed that they have lost whatever influence they may have had in legislative circles.

ARIZONA'S OPPORTUNITY

The model bill for the registration of births and deaths has been adopted and is in force in forty-five states. It is only necessary for three more states—Arizona, Nevada and South Dakota—to pass this bill to secure for the nation what it heretofore has not had, namely, complete and uniform registration and tabulation of births and deaths. The need and value of such data, fundamental for legal, social, economic and public health purposes, is too apparent to require argument. Each of the three states named still adheres to the system of county registration, which the experience of years in other states has proved worthless. The county, especially in our Western states, is too large a unit for registration purposes. Small registration districts, with local registrars easily accessible to every community in the state, are necessary in any effective plan of birth and death registration. Vital statistics is one of the few subjects on which uniform legislation is necessary in order to secure figures that are comparable and capable of tabulation. The Arizona legislature meets in November of this year, which gives that state the opportunity to be the forty-sixth state to adopt proved and uniform methods of recording the births and deaths of her citizens. The legislatures of Nevada and South Dakota do not meet until January, 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Hospital News.—Dr. Newton T. Enloe, Jr., has been given a ten-year lease on the Enloe Hospital, Chico, and will at once assume active management of that institution. Dr. Newton T. Enloe, Sr., who wishes to devote his entire time to his practice, will retain his office in the building.

Personal.—Dr. Whalen Morrison has been appointed to succeed his father, the late Dr. Normal W. Morrison, as chief surgeon for the Coast Lines of the Santa Fe Hospital Association. Dr. Morrison will take charge of the association's hospital in Los Angeles and supervise the emergency hospitals at the terminals along the Coast Lines.

District Medical Meeting.—Under the auspices of the Santa Clara County Medical Society, the Fifth District State Medical Society will meet at Gilroy, September 21. Dr. William E. Musgrave, secretary of the state medical society, and also editor of the *California State Journal of Medicine*, has been invited to make an address on the organization, equipment and conduct of modern hospitals, and Dr. Alson S. Kilgore, San Francisco, regional director of the League for the Conservation of Public Health, will speak on the subject of cancer control.

Convention of Railway Surgeons.—The Pacific Association of Railway Surgeons held its nineteenth annual meeting, August 26-27, at San Francisco. The following officers were elected for the ensuing year: president, Dr. S. S. Vogle, Santa Rosa, surgeon of the Northwest Pacific; first vice president, Dr. George R. Carson, San Francisco, surgeon of the South Pacific; second vice president, Dr. George W. Stout, Ukiah, Northwest Pacific; treasurer, Dr. William M.

Keys, Alameda, Southern Pacific, and secretary, Dr. William T. Cummins, San Francisco, Southern Pacific. All officers were reelected, except the president. A joint session of the Railway Surgeons and the Saint Francis Hospital Clinical Society was held at which Dr. Martin Fischer, professor of physiology at the University of Cincinnati, delivered a paper on "Arteriosclerosis."

DISTRICT OF COLUMBIA

Appointment to Veterans' Bureau.—The appointment has been announced of Dr. John R. Crossland, St. Joseph, as a special expert in the Veterans' Bureau to look after the interests of the negro veterans entitled to benefits under the relief laws.

President Harding Made a Member of the United States Health Reserves.—For the purpose of raising the standing of the reserve corps and to promote cooperation among all agencies, professional, social and governmental, engaged in helping former service men, there was organized, August 29, the United States Association of the Public Health Reserve Officers, Post No. 1. President Harding was elected an honorary member of the organization, and Surgeon-General Cumming was chosen as honorary chairman; Col. John R. McDill was elected chairman; Bernard C. MacNeil, secretary-treasurer; and Isidore I. Hirschman, corresponding secretary.

FLORIDA

Quarantine Lifted.—The quarantine maintained at Pensacola since June, 1920, was terminated, August 17. Pensacola has been pronounced free from bubonic plague by the federal Public Health Service.

Personal.—Dr. Edgar Estes, chief surgeon of the Flagler Hospital, St. Augustine, has been appointed state chairman for the American Society for the Control of Cancer. A campaign of publicity and education will be carried on throughout Florida during "Cancer Week" in October.

GEORGIA

Appointments on Board of Medical Examiners.—Governor Hardwick, August 30, reappointed Dr. Charles T. Nolan, Marietta, as a member of the state board of medical examiners for a term of four years. Other appointments were Dr. William C. Williams, Cochran, who succeeds Dr. Alexander G. Little, Valdosta, and Dr. Henry G. Maxey, Maxeys, to succeed Dr. Albert Fleming, Waycross.

HAWAII

Venereal Clinic in Honolulu.—According to an announcement from the officers of the Territorial Board of Health, the first campaign against venereal disease was launched, August 1, with the opening of a newly established venereal clinic in Honolulu. The Territorial Legislature appropriated the sum of \$15,000 toward the maintenance of such a clinic, which is now being opened under the direction of the board of health, with the cooperation of the U. S. Public Health Service. A special effort will be made to check the spread of venereal disease among children, the prevalence of which has alarmed the health authorities.

ILLINOIS

Personal.—The governor has appointed Dr. Joseph H. Ellingsworth, East Moline, to be superintendent of the state hospital for the insane at Watertown.—Dr. Eugene Cohn, superintendent of the Kankakee State Hospital, has resigned, to become effective, October 15. Dr. William A. Stoker, Centralia, formerly superintendent of the Anna State Hospital, Anna, has been appointed to succeed Dr. Cohn.

Chicago

Chicago Motor Club to Urge Parking Privileges for Physicians.—At a meeting held this week the Chicago Motor Club assumed the initiative in a movement to secure parking privileges for physicians. A proposition will shortly be presented to the councils of the local and state medical societies for their consideration.

IOWA

Iowa Mobilizes Her Welfare Forces.—The twenty-second annual meeting of the Iowa State Conference of Social Work will be held in Creston, Iowa, September 24 to 27. This conference, in addition to the regular program, will include a general discussion on rural and community health problems, participated in by all the various organizations interested in

public welfare. This includes the Iowa State Medical Society, Iowa Tuberculosis Association, the State Red Cross, the State Federation of Woman's Clubs, State Parent-Teachers' Association, W. C. T. U. and American Legion, as well as the various departments of the state government, the state university, and the members of the state legislature. Such a mobilization of the resources and activities of the state for better social and health conditions is a most promising indication of the growing interest of the public in these questions and of the increasing capacity for leadership among physicians.

LOUISIANA

Personal.—Dr. Henry F. Ader has been elected a member of the state legislature from the sixth ward, New Orleans.

Hospital News.—Two campaigns have been launched to obtain large sums of money for the Presbyterian Hospital: \$300,000 for an endowment fund to the hospital's charity service and a building fund of \$250,000. Mrs. Alexina S. McBurney presented the hospital with twenty-one shares of bank stock as a nucleus for the endowment fund. As soon as the pledges to the building fund total \$50,000, a new hospital will be erected.

Health Work in Public Schools.—With the opening of the public schools, September 19, the health work will be greatly improved. Five additional nurses will be added to the department of hygiene, an oculist has been employed, and an additional medical inspector has been appointed who will investigate all contagious diseases, and vaccinate all public school pupils in the schools instead of the office as heretofore. Scales for the weighing and measuring of children in the public schools will be placed in every white school. All pupils from the kindergarten through the fifth grade will be given a complete physical examination, and the nurses will care for the pupils with physical defects that may be corrected.

MARYLAND

Personal.—Dr. R. M. Hakin, a native of Bombay, India, has been appointed resident physician of Sydenham Hospital, Baltimore, by Dr. C. Hampson Jones, health commissioner. Dr. Hakim is a graduate of the University of Maryland and has been on duty at the U. S. Public Health Hospital at Fort McHenry since his graduation. He is now a naturalized citizen of the United States.

U. S. Public Health Hospital to Be Enlarged.—Work on the new \$550,000 addition to the Perryville Hospital for disabled soldiers will be started within the next week, and will be carried on continuously until completion. From six to eight months will be required to complete the addition, and hundreds of laborers will be employed. When the enlargement has been erected, provision will have been made for the accommodation of 300 additional disabled men.

Demonstration on Radium at Kelly Hospital.—Members of the American Electrotherapeutic Association, which held its annual convention in Washington, D. C., recently, came to Baltimore, September 6, to attend a clinic on the use of radium in medicine given at the Howard A. Kelly Hospital. The clinic was opened by Dr. Frederick West, who demonstrated the preparation of radium for use in treating cancer. Dr. Curtis F. Burnam read a paper on the use of radium, and showed a number of slides illustrating the factors set forth in the paper. Dr. William Neill, Jr., and Dr. Dudley A. Robnett also made short talks. Dr. Howard A. Kelly was not present, as he is on a vacation in Canada.

Extension Classes for Physicians in Rural Sections.—Health clinics and dispensaries in many communities in the state, in charge of physicians and nurses connected with the University of Maryland Hospital and Medical School, are planned as part of an extension service that the institution will organize this fall. Special courses that out-of-town physicians can attend two or three times a week are already in operation, and the number of these is to be increased and their scope broadened. Most of the work carried on at the proposed dispensaries will be conducted by physicians from the community where they are located and by men who take some of the special courses. They will be acquainted with the nature of the work through the hospital and medical school, thus keeping in touch with the new methods of treatment. The development will naturally be slow. The University of Maryland stands practically alone in its effort to train rural physicians, most other hospitals giving their time to the development of specialists.

MASSACHUSETTS

Memorial Roentgen-Ray Building to Be Erected.—The contract has been awarded for the construction of the Thorndike Memorial Roentgen-Ray Building, for the city of Boston, at a cost of \$313,000.

Personal.—Dr. Francis O'Brien has been appointed superintendent of the Hampshire County Sanatorium at Leeds, to succeed Dr. Charles E. Perry, who resigned recently to take charge of a government tuberculosis hospital in California. —Dr. Sumner H. Remick, resident physician and superintendent of the Sassaquin Sanatorium, New Bedford, has been appointed by Commissioner Kelly as director of the division of tuberculosis sanatoriums, to succeed the late Dr. William J. Gallivan, South Boston.

The Professional Building.—The Hotel Tuileries, Boston, has been purchased by the Professional Trust Corporation and after extensive alterations the building will be opened, about October 1, for the exclusive use of physicians, and will be known as the "Professional Building." The large hotel ballroom will be retained and used as a general reception room and club room for the occupants. The other rooms in the hotel will be altered to make them suitable for the use of physicians. The building is six stories high and is of fire-proof construction.

Courses in Health Education.—The Harvard-Technology School of Public Health, in cooperation with the Graduate School of Education of Harvard University, Boston, is organizing a special course in health education for teachers, school nurses, directors of physical education and public health workers. The object of this course of study is to provide the professional training necessary to teach or direct the hygiene instruction in the public schools and to correlate the various health activities of the public school system in the most advantageous way. The course provides a thorough background for health work in the public schools.

MICHIGAN

New Medical Director for Blodgett Hospital.—It has been announced that, about October 1, Dr. Merrill Wells, medical director and superintendent of the hospital, will resign to resume active practice in Grand Rapids. Dr. Claude W. Munger, at present superintendent of Columbia Hospital, Milwaukee, will take his place. Dr. Munger is president of the Milwaukee Hospital Council, and secretary of the Wisconsin Hospital Association.

Campaign Against Malnutrition.—The surveys of last spring having disclosed that 10,000 schoolchildren of Detroit are more than 15 per cent. below average weight, the city council appropriated \$20,000 to combat the situation, the expenditure of which sum has been entrusted to the department of health. It is planned to have all pupils weighed and measured during September, and those children who are 15 per cent. or more under weight will be given a complete physical examination by the medical inspector of the health department. Children who are free from impairing defects which might be responsible for the underweight will be eligible for nutrition classes, which will be formed in each school. Those who possess the more severe impairing defects of nose, throat, eyes, thyroid and teeth will be advised of their condition and urged to have the defects corrected. A director of nutrition has been secured to supervise the work of these classes.

Typhoid Fever.—An outbreak of typhoid at Camp Roosevelt, near Muskegon, alleged to be due to a typhoid carrier, closed the camp to all new entrants, August 1. Seventeen cases at Otsego were thought to have been caused by a contaminated well. Nearly 400 residents of the village and 3,000 at Cadillac, where three deaths from typhoid fever occurred, were vaccinated against typhoid at clinics established by the state health department. In Detroit, where fatalities also occurred, the number of cases exceeded 100, and houses where the disease was present were placarded, and residents were urged to be vaccinated. According to a report of the health commissioner of Detroit, August 27, the number of cases of typhoid fever for that week declined from sixty to thirty-seven. An investigation showed that apparently the infection was obtained while bathing in the river. There are quite a number of contact cases showing that people are careless about being immunized against this disease, and are not taking the other necessary precautions to avoid infection.

MINNESOTA

State Medical Meeting.—The fifty-third annual meeting of the Minnesota State Medical Association was held, August 24-26, at Duluth, under the presidency of Dr. Charles Eugene Riggs, St. Paul. The election of officers resulted in the selection of Dr. James Frank Corbett, University of Minnesota, as president for the ensuing year; Dr. Samuel H. Boyer, Duluth, was reelected as first vice president; Dr. Charles E. Ide, Brainerd, second vice president; Dr. Thomas Williams, Lake Crystal, third vice president; Dr. Carl B. Drake, St. Paul, secretary, and Dr. Frederick L. Beckley, St. Paul, treasurer.

NEW YORK

Poliomyelitis.—There have been reported to the New York State Health Department from July 1 to September 9 a total of 241 cases of infantile paralysis, with twenty-one deaths. This number the health department believes does not represent all the deaths from this cause. During the same period in New York City seventy-eight cases were reported, making a total of 419 cases. Fifty-eight cases have been reported from Utica.

Health Conference.—The annual conference of sanitary officers and public health nurses of New York State was held at Cornell University, Ithaca, September 13-15, under the auspices of the state department of health. Dr. Hugh Cumming, surgeon-general of the U. S. Public Health Service, represented the federal government, and Miss Ella Phillips Crandall the National Organization for Public Health Nurses. The American Social Hygiene Association was represented by its executive secretary, Dr. William F. Snow, and the State Institute for the Study of Malignant Disease, by its director, Dr. Harvey Gaylord. Among the newer subjects discussed were "The Treatment of Hay-Fever and Asthma by Vaccines," by Dr. Albert Vander Veer, Jr., New York City, and "The Functions of Permanent Diagnostic Clinics," by Dr. Moses Mandelbaum, New York City Diagnostic Clinic.

New York City

Fifth Avenue Hospital Near Completion.—The new Fifth Avenue Hospital at One Hundred and Fifth and One Hundred and Sixth streets is progressing rapidly toward completion. Of a total of \$3,000,000 for the building fund, only \$750,000 remains to be subscribed. An endowment fund of \$1,000,000 has been provided which will insure maintenance after completion. The Fifth Avenue Hospital will be the first wardless hospital in the world, and is designed especially for persons who have not enough money to pay for private care and who do not desire to accept charity. There will, however, be provision for charity patients, the rates being based on the patient's ability to pay.

Society for Cinematographic Instruction.—This society, which has devoted the last eighteen months to experimental work at hospitals and laboratories in order definitely to ascertain the applicability of the motion picture to the study of medicine, surgery and dentistry, has established the fact that it is possible to record accurately and permanently every detail of any minor or major operation, and to portray in the most vivid manner every step in an operation. It is the intention of the society to work out various courses of study by means of cinematography, and to establish a central cinematograph library in New York City. This library will be equipped for private and group study, while members and institutions at a distance may either rent or purchase, at a nominal charge, duplicate copies of any of the subjects contained in the main library, and in this manner it will be possible to witness the work of the ablest men in the profession both in this country and abroad. At the present time the society is negotiating an exchange arrangement with the profession in Germany and other European countries. Any physician, surgeon or dentist in good standing is eligible for membership in the society. Monthly meetings will be held at which will be shown the latest work of the regular courses; and research work, together with further experiments in microcinematography, analysis of motion and natural color, will be pursued continuously.

OHIO

Personal.—Dr. John Oliver has resigned as professor of surgery in the University of Cincinnati College of Medicine, and head of the combined surgeons' service of general hospitals.—Dr. Nelson H. Young, formerly assistant superintendent, Toledo State Hospital, has been appointed senior

physician at the National Sanatorium for Veterans of the World War at Marion.

Hospital News.—A former resident has recently offered to erect a \$50,000 hospital in Lebanon, on condition that the commissioner or county equip it and agree to maintain the annual deficiency in operation. The Warren County physicians heartily endorsed the project of establishing a county hospital.—Several counties in Ohio are planning to build their own hospitals for tuberculous patients under the provision of the Jones law, which became effective, August 15. This law provides that commissioners of any county having more than 50,000 population may, with the consent of the state department of health, provide funds for purchase or leases of sites of buildings for that purpose. The law also provides that any municipality that cannot maintain its hospital may continue it, or lease or sell it to the county. Counties may still build joint district hospitals as provided by the law. Mahony County has planned to build a new hospital to cost approximately \$175,000. Trumbull, Stark, Belmont and Columbia counties are also considering the building of hospitals.

OREGON

Enlargement of University Dispensary.—According to an announcement by Dr. Richard B. Dillehunt, dean of the medical school, Portland, the free dispensary connected with the university will be enlarged to twice its capacity and will enable the handling of from sixty to seventy patients daily. The work is conducted to furnish practical experience for the advanced students, who work under the supervision of competent instructors. The medical school opens, October 1, when the requirements for entrance will be raised to three years regular college or university work instead of two years as formerly.

University of Oregon Medical School.—Actual construction on the \$225,000 wing of the medical school has begun, and the new building will be ready for the opening of the school year in the fall of 1922, and will more than double the present capacity of the school. The building has been made possible by a gift from the Rockefeller Foundation fund, matched by a state appropriation. In addition, the Rockefeller Foundation has donated \$50,000 for the equipment. With the present accommodation it has been necessary to restrict the entrance enrolment to seventy beginning students, and the entire student body to 155. With the completion of the new building, the school can care for at least 350 students.

PENNSYLVANIA

Personal.—Dr. J. Walter Bancroft, secretary of the Cambria County Medical Society, as a result of a recent automobile accident, is a patient in the Memorial Hospital, Johnstown, suffering from a fractured left humerus.

Hospital News.—The Chambersburg Hospital building is being enlarged by the erection of a commodious two-story wing to the east side of the present structure.—The contract has been awarded for the erection of a hospital building at Waynesboro.

Physicians Examine Pupils.—Plans to carry through the most systematic medical inspection of pupils in the history of the state department of health are being put into operation this week. In nearly 900 districts of the fourth class, which include the rural schools, physicians are examining the pupils. In the districts of the higher classes, including the cities and larger boroughs, local officials are directing the work.

Philadelphia

Personal.—Dr. James M. Anders has been elected president of the American Therapeutic Society for the ensuing year. Dr. Anders was also recently elected president of the American College of Physicians.

Assistant Supervisor Named for Defectives.—The board of education has authorized the procuring of an assistant supervisor whose duty it shall be to have active charge of the school pupils who are being retarded in their school work because they are suffering with defects of vision, hearing and locution.

RHODE ISLAND

Report of the Commission on Milk Supply.—The commission appointed by the mayor to inquire into the quality, price, delivery and pasteurization of milk sold in the city of Newport finds that the milk supply comes entirely from farms in Newport County, and the regulations permit but two grades—Grade A, which is pasteurized, and Grade B, which comes

from farms where the cleanliness of the farm and the cleanliness of the herds are certified to by the proper authorities—and that this system is a wise and necessary safeguard to public health. The commission recommends:

That legislation be enacted to provide for the maintenance of but one central slaughter house on the island, this house to be licensed, and that the slaughterers be licensed.

That no cattle shall be slaughtered unless under the direction of a competent inspector to be elected by the town council in the town where the slaughter house is to be maintained, and that said inspector shall receive fees to be determined by the town council as his remuneration. That no cattle or other animal infected with tuberculosis or other disease shall be slaughtered and the product sold for human consumption.

That the present state law be amended to provide against the importation of tuberculous cattle into this state and that adequate appropriations be made annually by the state for the inspection and destruction of tuberculous cattle.

That the present state law be amended to change the standard so that the butter fat in milk will be 3.25 per cent. and the total solids 11.75 per cent.

That at least one infant welfare station be established and operated under the direction of the board of health.

That the labels on all milk containers delivered to dealers and consumers be stamped in such a way as to indicate when said containers were filled.

That the inspector of milk be authorized to advertise at least four times in each month his analyses of the milk sold by the local dairy companies.

That the excess of skimmed milk be placed in the hands of some responsible organization or organizations recommended and approved by the board of health, and be distributed to consumers at a nominal price.

That some method be employed to reduce the number of bottles annually lost or destroyed by customers. An effective method would result in considerable economy in overhead expenses of the plant which should eventually prove to be a factor in the consideration of the cost of milk.

TEXAS

Baptist Sanatorium Dedication.—The Southern Baptists dedicated their new sanatorium for the treatment of tuberculosis, at El Paso, September 11. More than half a million dollars has already been invested in the sanatorium, which is new and modern in every respect, and more will be available later for the institution. Dr. Clarence W. Coutant, formerly with the U. S. Public Health Service, Fort Bayard, N. M., is medical director, and Dr. J. D. Riley, assistant medical director. Dr. John A. Standring will be retained as consultant.

VIRGINIA

Recent Appointments on State Boards.—Governor Davis, August 29, announced the following appointments: Dr. Edward McGuire, Richmond, and Dr. Harry T. Marshall, Charlottesville, both reappointed to the state board of health for the term of four years; Dr. Hugh J. Hagen, Roanoke, appointed to the state board of health; Dr. C. D. Fox, Roanoke, appointed member of the state board of pharmacy for a term of five years.

Tuberculosis Clinic.—At the clinic held, September 5-10, at Petersburg, under the auspices of the Tuberculosis Association of Virginia, the state board of health and the health department of Petersburg, Drs. Everett E. Watson, Mount Regis Sanatorium, Salem; Thomas N. Davis, Lynchburg; Charles Lydon Harrell, Norfolk; Gerald Ezekiel, Richmond, and Walter B. Martin, Norfolk, will examine all persons who apply in regard to their condition so far as it relates to the lungs, heart, tonsils, teeth and adenoids, free of charge.

CANADA

Roentgen-Ray News.—Frederick W. Classens, instructor in biology at the Western University, Canada, claims to have perfected a roentgen-ray machine that will cost \$100, against \$3,000 or \$4,000, the present cost of machines.

Personal.—Dr. Frederick Ball, retired physician and brother of Willard D. Ball, mayor of Ontario, lost his right eye as a result of the accidental breaking of his glasses. The broken glass inflicted a cut in the eye. Dr. Ball was taken to the San Antonio Hospital, Upland, Calif., where the injured eye was removed.

Scarcity of "Subs."—Addressing the Canadian Embalmers' Association at Toronto, recently, John D. McNurich, professor of anatomy, spoke of the scarcity of bodies for dissecting purposes of the university. He had found prohibition one of the main reasons for this, as men who would have ordinarily died destitute were now buried by their estates.

Public Health News.—Dr. Charles Hastings, M. O. H., Toronto, has quieted the misgivings of citizens by reporting that the so-called epidemic of summer influenza is nothing more than ordinary cases of colds, bronchitis, etc., which are

not reportable.—Dr. Theodore A. Lomer, M. O. H., Ottawa, in an address before the Canadian Sanitary Association, advocated new and more strict methods of disinfecting houses after disease, claiming that the present methods are spreaders of contagion and originators of epidemics.—In an address before the Canadian Embalmers' Association at Toronto, Dr. John W. S. McCullough, chief officer of health for Ontario, eulogized the work of funeral directors by cooperating with the health department in the care taken with the bodies of persons dying with contagious diseases.—At their annual convention at Ottawa, the Canadian Sanitary Association decided to change the name of that association to the Sanitary Inspectors' Association of Canada, and to limit membership to sanitary inspectors. Dr. J. A. Beland, Shawenigan Falls, Quebec, was elected vice president, and Drs. John W. S. McCullough, Charles A. Hodgetts, Theodore A. Lomer, John A. Amyot, R. S. Parent, James S. Nelson, and Robert Law, were chosen as honorary members.

Quackery in the Province of Quebec.—In recent numbers of the *Bulletin Médical* of Quebec, Dr. J. Gauvreau has commented on the extent of quackery in that province. He blames present conditions on the credulity of the public and the fact that physicians do not take action, especially as regards the education of the public. He insists that the only solution of the matter is fighting ignorance with science, showing up the quacks. The greatest obstacle found in the campaign against quacks is the present law on patent medicines. This enables quacks to state in their advertising matter that while not legally authorized to practice medicine they have patent medicines of known curative value. On account of this law persons who have been sentenced several times for illegal practice of medicine have been able to establish firms for the sale of patent medicine on a large scale. Dr. Gauvreau blames the passage of the present Canadian law on the pressure exerted by patent medicine manufacturers. As a remedy he advises the creation of a bureau which will have charge of censoring medical advertising both in posters and in journals. He considers that these abuses will disappear only when the medical profession will be able to keep within bounds the yellow press so far as medical advertising is concerned.

GENERAL

Personal.—Dr. F. Calderón of Manila was given a reception and banquet recently on the occasion of his leaving the Philippines for a trip to the United States. Dr. Plácido de Guzman and Dr. J. Juliano also left for this country at the same time, and Dr. L. Ordóñez for Europe.

National Health Council.—The admission of the American Society for the Control of Cancer into the National Health Council has been announced by the council. Application for, or inquiry on membership has also been received from the following additional organizations: the National Committee for the Prevention of Blindness, the American Association of Physicians and Surgeons in Industry, the Conference Board of Physicians in Industry, the American Conference for Hospital Service and the National Drainage Congress.

National Medical Association.—The twenty-third annual session of the National Medical Association, consisting of negro physicians, surgeons, dentists and pharmacists, was held, August 23-26, at Louisville, Ky., under the presidency of Dr. John P. Turner, Philadelphia. The officers who were elected for the coming year are: Dr. Henry M. Green, Knoxville, president; Dr. John Perry, Kansas City, president-elect; Dr. Walter G. Alexander, Orange, N. J., general secretary; Dr. John Levy, Fresno, S. C., treasurer, and Dr. George E. Cannon, Jersey City, chairman of the executive board. The next meeting will be held in Washington, D. C., on the fourth Tuesday in August, 1922.

Second International Congress of Eugenics.—Major Leonard Darwin, president of the Eugenics Education Society of Great Britain, and a son of Charles Darwin, will deliver the opening address on the history of the eugenics movement. at the Second International Congress of Eugenics, to be held, September 22-28, at New York. The leading address in Section I—Human and Comparative Heredity—will be given by Lucien Cuénot, Nancy, France. In Section II—Eugenics in the Human Family—Dr. Herman B. Lundborg, University of Upsala, Sweden, will deliver the principal address. Dr. Lundborg, in conducting an investigation similar to that made by Dugdale of "The Jukes," examined the records of several thousand individuals of a Swedish family of unfortunate heredity extending over a period of 200 years. Georges Vacher de Lapouge, Poitiers, France, author of "The Funda-

mental Laws of Anthroposociology," "The Social Rôle of the Aryan," and other noteworthy volumes, will present the leading address in Section III—Human Racial Differences.

American Pharmaceutical Association.—At the recent national convention of the association held in New Orleans under the presidency of Charles H. Packard, Boston, scrupulous observation of national and local prohibition laws was urged. Other measures recommended were the reorganization of the Pharmaceutical Association and the establishing of a permanent home in the central part of the country; adoption of the metric system of weights and measures, and increased activity in the matter of research work. A considerable sum was subscribed to increase the endowment of the association's college. The Louisiana State Pharmaceutical Association, the National Association of Boards of Pharmacy, and the American Conference of Pharmaceutical Faculties, held meetings in connection with the National Association. The officers elected by the American Conference of Pharmaceutical Faculties for the ensuing year are: president, Dean C. A. Dye, Columbus University, Ohio; vice president, E. F. Kelley, University of Maryland; executive secretary (reelected), Rufus A. Lyman, Lincoln, Neb., and general secretary (reelected), Dean J. A. Bradley, Massachusetts College of Pharmacy.

National Safety Congress.—The tenth annual congress of the National Safety Council will be held at Boston the last week in September. The National Association of Industrial Physicians and Surgeons—of which Dr. Charles E. Ford, General Chemical Company, New York City, is president—will hold three joint meetings with the health service section of the Safety Council, and one general session on health and sanitation with the health service and women in industry sections, September 29-30. Among the speakers appearing on these programs are: Dr. Paul White, Massachusetts General Hospital, Boston, who will speak on "The Problem of Heart Disease in the Industrial Worker"; Dr. Royd R. Sayers, chief surgeon, U. S. Bureau of Mines, Washington, D. C., whose subject, "Transportation of the Injured," will be illustrated with slides; "Discussion of the Harm Done by Dusts in the Air" (with demonstration of new apparatus for estimating atmospheric dust), by Drs. Cecil Drinker and Philip Drinker, Harvard Medical School, Boston; Brig.-Gen. Charles E. Sawyer, Washington, D. C., will discuss the "Health of Industrial Workers and the Public Welfare," and Dr. Donald B. Armstrong, director, the Community Health and Tuberculosis Demonstration of the National Tuberculosis Association, Framingham, Mass., "What Has Been Done for the Health of the Industrial Worker in Framingham."

Senate Committee Makes Recommendations on Care of Disabled.—The expenditure of \$16,400,000 by Congress for the construction of new hospitals and additions to present hospital facilities will be recommended by the Senate Committee investigating care of disabled ex-service men. This committee was appointed through a resolution introduced by Senator Walsh of Massachusetts in the Senate and it is composed of Senator Sutherland, West Virginia; Senator Calder, New York; Senator Weller, Maryland; Senator Walsh, Massachusetts, and Senator Pomerene, Ohio. In addition to the recommendation of this appropriation by Congress many other plans are advanced: that the further use of war camps for the temporary housing of disabled soldiers be discontinued; that the President be authorized to transfer to the Veterans' Bureau the operation, management and control of any government hospital; that there should be established in each of the fourteen regional offices of the Veterans' Bureau a board for the investigation of complaints, this board to consist of one representative of the Bureau who is not a doctor, one ex-service man and a doctor who is not an employee of the United States Government; that there should be established an inspection service to inspect all hospitals at regular intervals; that there should be established additional training centers for mental and tuberculous cases. The committee in its report also declared that too much attention was given to the medical evidence submitted in the cases of disabled service men. The recommendations for the expenditure of \$16,400,000 were made as a result of testimony before the committee hearings given by Dr. W. C. White, Pittsburg, chairman of the Hospitalization Committee appointed by Secretary of Treasury Mellon to decide on the sites where all appropriations for hospitalization should be expended. The other members of this committee were Dr. Frank Billings of Chicago, Mr. John G. Bowman of Pittsburg and Dr. George H. Kirby of New York.

LATIN AMERICA

Tuberculosis Conference in Argentina.—The *Prensa Médica* announces that the Third National Conference on Antituberculosis Prophylaxis is to convene at La Plata in October.

Library Donated by a Physician.—Dr. M. Bango y León, former professor of clinical surgery of the University of Havana, and superintendent of the Sanatorio Covadonga, has donated his professional library to the National Library of Cuba.

Personal.—The director of the Bahia medical school has obtained from the Brazilian government an appropriation for two years of study in the United States by the assistant professor of hygiene.—The *Semana Médica* states that Dr. Israel Castellanos of Havana has been appointed director of the Identification Bureau of Cuba.

Election of Officers.—The *Revista de Medicina Militar* states that at the recent election of officers of the Bahia Medical Society, Dr. A. Pacifico Pereira was elected honorary president; Dr. L. Pinto de Carvalho, president; Dr. Caio Ferreiro de Moura and Dr. J. Coelho Moreira, vice presidents, and Dr. E. Diniz Gonçalves, secretary general.

Mexican Typhus Congress.—The Second National Tabardillo Congress is to convene at Mexico City, Dec. 25-31, 1921. The committee of organization is Dr. Pruneda, president; Dr. R. E. Cicero, 2a de las Moras 34, secretary general; and Dr. A. Brioso Vasconcelos, recording secretary. The vice presidents are Dr. H. Rubio of Pachuca and Dr. G. Escalona.

Güemes' Retirement.—As already mentioned, Prof. L. Güemes recently resigned the chair of clinical medicine at the University of Buenos Aires. He was given an ovation on his retirement and was presented with a testimonial. The salary that was paid him during the vacation period, followed by his resignation, he declined to accept, and the university authorities turned it over to a charitable organization.

Training School for Nurses at Rio de Janeiro.—The National Public Health Service of Brazil has founded at Rio a training school for nurses of both sexes, in charge of Dr. M. de Abreu. There is already a training school there for attendants to serve in the colony for the insane, besides the training school for nurses connected with the Hospital Nacional and in charge of Prof. Juliano Moreira, who is director general of the official care for the insane.

Hygiene Journal Reappears.—The *Revista de Higiene* of Bogotá, the organ of the Public Health Bureau of Colombia has resumed publication after an interval of over a year. The editors are Drs. P. García Medina, M. N. Lobo, P. J. Barón, director, assistant director and secretary, respectively, of the National Department of Health. The first number gives much space to the work that is being conducted in Colombia in cooperation with the International Health Board of the Rockefeller Foundation.

Medical Education in the United States.—In a recent number of the *Boletim da Sociedade de Medicina e Cirurgia de S. Paulo* there appears the address delivered by Dr. D. de Paula Souza before the Medical Society of S. Paulo comparing medical teaching in Brazil and the United States. He mentions the work accomplished by the American Medical Association, Carnegie Institute and the General Education Board for the improvement of medical education, in reducing the number of medical schools. Among physicians he met in this country, he praised very highly Dr. W. H. Welch of Baltimore, whom he calls the man with the highest medical culture in the United States.

FOREIGN

Personal.—Dr. J. M. Albiñana Sanz of Madrid has been officially appointed by the government of Spain on a historical mission to Mexico. He is to study the primitive medicine of the Aztecs and its influence on modern European medicine.

Training School for Nurses in Roumania.—An Italian exchange, *Pediatria*, mentions the arrival in Roumania of a delegation of eight nurses sent by the Canadian Red Cross to inaugurate a school for nurses. The delegation is in charge of Miss D. Cotton.

International Congress for Psychical Research.—The *Ugeskrift for Lager* reports that a number of foreign research workers presented communications at this congress which was held recently at Copenhagen, August 26 to September 2. The address of the secretary is Graabrødretorv 7.

Social Hygiene in Poland.—The Association of Social Hygiene of Poland, in its campaign against prostitution and venereal disease, has called its second meeting for October 30-31, to be held in Warsaw. The session will be in four sections, on: (1) eugenics; (2) sexual and eugenical education; (3) battle against venereal diseases, and (4) lego-social.

Anniversary of Foundation of Barcelona Academy of Medicine.—This institution celebrated recently with much ceremony the one hundred and fiftieth anniversary of its foundation. The leading address by Martínez Vargas, dean of the medical department of the University of Barcelona, was a historical sketch of medicine and of health legislation in Spain and the plan for a ministry of health as a government department.

Fiftieth Anniversary of the Birth of Schaudinn.—September 19 marks the fiftieth anniversary of the birth of Fritz Schaudinn, the discoverer of *Spirochæta pallida*. As stated by Garrison, Schaudinn's discovery of this almost invisible parasite was due to his incomparable skill in technic and staining methods. Without question, his discovery was one of the most important advances necessary to the conquest of syphilis.

Spanish Surgeon Distinguishes Himself.—Spanish newspapers are praising the conduct of Dr. Pedro González Rodríguez, a naval surgeon, during recent fighting in Morocco. While his ship, *Cataluña*, was engaging the Moorish positions, a large number of Moroccans were wounded. Dr. González Rodríguez asked permission to attend the wounded which he did in full view of the Moors, who, in appreciation of his humanitarian efforts, ceased firing. After rendering aid the doctor returned on board accompanied by the men whose lives he had probably saved.

International Anthropology Institute.—The first session was held recently at Liège, with Prince Bonaparte in the chair. The representatives of eighteen nations mapped out a concerted program for research, the whole under the direction of the international committee appointed, and the French subcommittee which has its headquarters in the School of Anthropology at Paris. The conference lasted ten days, and the *Paris médical* comments on the unusual coordination realized for a vast network of research workers to unite the different countries around the world.

Prison Term for Exaggerated Advertising of Nostrum in France.—The *Paris médical* relates that a chemist and a pharmacist were recently condemned by the Seine court to one month in prison and a fine of 5,000 francs on account of their advertising of Toxicurol, which they claimed would radically cure tuberculosis and with less expense than any other treatment. The testimony of experts was to the effect that the remedy in question was a typical nostrum, but the court did not enter into the question of obtaining money under false pretenses and merely imposed the highest penalty for illegal practice of medicine. Our exchange comments that the law should be amplified to permit prosecution for obtaining money under false pretenses in such cases, as the persons who believe the assurances of a prompt and complete cure under the remedy are losing valuable time when they might be getting effectual treatment. It is a more serious matter than the mere illegal practice of medicine. The suit in 1912 against the Electric Belt Company, in which two physicians who were in the employ of the company were involved, resulted in prison terms of from six months to two years for all concerned, as mentioned in THE JOURNAL at the time.

Deaths in Other Countries

Dr. E. I. A. Kinnvall of Stockholm.—Dr. M. Chotzen, lecturer for sexual hygiene and sexual pedagogics at the University of Breslau, aged 63.—Dr. F. I. Duos and Dr. F. M. Guedes de Miranda, both of Rio de Janeiro.—Dr. F. J. Xavier of S. Paulo.—Dr. N. Rossas Torres of Porto Alegre, aged 70.—Dr. Alice Maeffer Hardegger of Santa Cruz, the first woman physician graduated from the Porto Alegre medical school.—Dr. A. Vieira de Rezende of Rio de Janeiro, at an advanced age.—Dr. U. Paiva of Franca, Brazil.—Dr. Chandelon, professor of toxicology at the University of Liège.—Dr. F. T. Courel of Tucumán.—Dr. P. Trovati and Dr. E. Cornelli of Rome died from the effects of an automobile accident.—Dr. E. Prosperi, also of Rome, succumbed to streptococcus infection from a scratch during a venesection.—Dr. T. Moretti of Castiglione, killed in a runaway accident.—Dr. U. Ferralis-Biddau of Sassari, Italy.—Dr. J. Martínez Sáenz of Corrientes, Argentina, aged 71.

Government Services

Hospital Ships to Be Commanded by Line Officers

As a result of the recent ruling of the Judge Advocate-General of the Navy in the general court martial case of Lieutenant-Commander George to the effect that Commander Garton, an officer of the Medical Corps of the Navy and commander of the U. S. Hospital Ship *Mercy* did not have authority under the law to issue an order to Lieutenant-Commander George, an officer of the line in the Naval Reserve Force, a revision of the Navy regulations in regard to hospital ships has been effected. The change provides that naval medical officers shall no longer be placed in command of hospital ships, and that officers of the line in the future shall be named as commanding officers. Following this revision of the regulations, Capt. Thomas L. Johnson was ordered to the U. S. Hospital Ship *Relief* and placed in command. Captain Johnson is a line officer and the first of his status to command such a vessel since Roosevelt approved of the assignment of Medical Director Stokes to such a duty. The custom of placing medical officers of the Navy has been in vogue ever since the administration of President Roosevelt, when quite a controversy prevailed, the line officers of the Navy vehemently opposing the policy established at that time. Rear Admiral Willard H. Brownson, commanding the fleet of which a hospital vessel was a part, showed such antagonism to the policy that he was relieved of his command by the President. Since that time medical officers always have been designated to such commands, the under-officers having to do with handling the ship being selected from the merchant marine. In this way a conflict with naval regulations and the federal statutes, which inhibit the exercise of command by a staff officer, which includes medical officer, over a line officer, was obviated. It has been necessary, however, for some time for officers of the Naval Reserve to be assigned to these ships, and the case of Lieutenant Barton was an instance in which one of these officers of the line decided to test the regulations by refusing to obey an order from a medical officer in command. The result of this test was the decision of the Judge Advocate of the Navy in his favor and the change of policy which has just gone into effect.

Positions in Navy for Army Interns

Interns completing their courses in regular army hospitals this year will be offered commissions in the navy instead of the army, according to an announcement made by Surgeon General Ireland. These interns, who graduated from authorized medical schools and went into the army hospitals on the promise that they would receive commissions in the medical corps at the completion of their courses, were confronted with the proposition of losing their commissions because of the reduction made in the army by Congress. Through Rear Admiral Stitt, Surgeon General of the Navy, arrangements were made to take these interns into the navy, giving them a commissioned rank. This arrangement applies only to interns graduating this year.

Investigators Report to Veterans' Bureau

Operations of investigators sent out by the Veterans' Bureau to conduct investigations into the condition of disabled ex-service men throughout the country have resulted in the discovery that thousands of former soldiers are in need of medical and financial assistance from the government. More than 10,000 cases have been examined and completed by these investigators. The investigators in the form of squads operating in Des Moines, Iowa, found over 200 veterans needing assistance, and in Davenport, Iowa, 212 cases were reported. Two hundred and fifty men were examined at Canton, Miss., in one day, and operations at Camden, N. J., resulting in the passing on 300 cases; at Jackson, Miss., between 300 and 400 cases, and at Yazoo, Miss., 175 cases.

Public Health Service Institutes

In view of the great success of the institute of the Public Health Service held in Washington, D. C., last December, and of the difficulty, owing to the conflicting dates of other meetings, of arranging for another on the same scale this fall or winter, the service some time ago decided to try to meet the insistent nation-wide demand by arranging a series of institutes to be held in the larger widely scattered cities.

of the United States. Locations and dates were so arranged that at least two or three of the meetings should be held within reasonably convenient reach of nearly every resident of the country, and a tentative schedule of courses and of speakers was mapped out. The plans were promptly adopted by many cities, with some variations to meet special local needs.

Cities and dates so far listed are: Hot Springs, Ark., some date in November; New Orleans, January 9-14; Columbia, S. C., January 9-14; Dallas, Texas, and Birmingham, Ala., January 16-21; Memphis, Tenn., January 23-28; Louisville, Ky., January 30 to February 4; Indianapolis, February 13-18; Pittsburgh, February 20-25; Cleveland, February 27 to March 4; Lansing, Mich., March 6-11; Chicago, March 13-18; Minneapolis, March 20-25; Portland, Ore., and Kansas City, Kan., April 10-15; Spokane, Wash., and Newark, N. J., April 17-22; Helena, Mont., and Albany, N. Y., April 24-29; Denver, May 1-6; Washington, D. C., in late May. Some dates in the schedule remain vacant, and these are being rapidly allotted.

The institutes were planned to run for a week, and this length has been almost universally adopted. The basic courses include from three to six lectures on tuberculosis, child hygiene, nutrition, clinics and health centers, communicable diseases, noncommunicable diseases, industrial hygiene, sanitary engineering, administrative problems, mental hygiene, medical social work, syphilis, gonorrhea, protective social work, and the delinquent. Single lectures will also be given on special occasions. Two institutes, those at Hot Springs and Chicago, will be devoted especially to venereal diseases.

The list of lecturers who will speak at some or all of the gatherings include Drs. Frederick R. Green, John H. Stokes, A. J. McLaughlin, William C. White, Valeria Parker, W. F. Snow, W. A. Evans and M. J. Rosenau.

Army Reserve Officers to Retire from Active Duty

All reserve officers of the Medical Corps of the Army now on active duty will be relieved within the next month, according to information given out by the Surgeon General of the Army. The release of these medical officers from active duty is due to the reduction in the strength of the army by congress, which necessitates a similar decrease in the size of the commissioned personnel of the Medical Corps. The original plan of the Surgeon General was to continue these reserve officers on active duty, using them to care for disabled ex-service men confined to army hospitals, but it has been found that the regular army medical corps is sufficient to assume these duties.

Additional Hospitals at Soldiers' Homes

The Secretary of Treasury has announced that bids will be taken next month for the construction of additional hospitals at the Soldiers' Home in Milwaukee; Dayton, Ohio; Leavenworth, Kan., and at the Marion National Sanatorium at Marion, Ind., for the care of tuberculous and neuropsychiatric war veterans. The proposed expansion of these institutions will provide accommodations for 1,000 additional patients, and will cost approximately \$3,000,000. Recommendations for the expenditure of money appropriated by Congress for hospitalization at these sites were made through the Hospitalization Committee, headed by Dr. W. C. White of Pittsburgh.

Technical Courses for Army Medical Officers

Surgeon General Ireland of the Medical Corps is planning to send twenty officers of the Medical Corps of the Regular Army to various medical schools and colleges of the country to take special courses in technical studies. Last year a smaller number of officers were assigned to private study, but Congress recently changed the law increasing the number. The names of the officers will be announced later this month. They will receive their orders in time to begin the regular fall curriculum.

MEDICAL OFFICERS, UNITED STATES NAVY, RELIEVED FROM ACTIVE DUTY

CALIFORNIA		MISSISSIPPI	
Los Angeles—Lowell, C. H.		Meridian—Arnold, H. L.	
San Francisco—Visalli, J.			
ILLINOIS		NEW YORK	
Pecatonica—Ives, W. C.		New York—Iden, B. F.	
		Syracuse—Glismann, M. B.	
MASSACHUSETTS		VERMONT	
Boston—Regan, J. J.		Rutland—Gebhardt, F. H.	

Foreign Letters

LONDON

(From Our Regular Correspondent)
Aug. 22, 1921.

The Increase of Cancer

The continuous increase of cancer in civilized countries is unfortunately too well attested. It is exemplified in the recent report of the health officer for Edinburgh, Dr. Maxwell Williamson. The latest figures of cancer mortality are the highest ever recorded in Edinburgh. During the last twenty-three years the number of deaths in Edinburgh due to this disease has increased from 267 to nearly double this figure—471. All the deaths due to tuberculosis, including lungs, bones, bowels, etc., amounted to only 417. The commonest site of cancer seems to be the bowel, which, according to Dr. Williamson, may suggest some influence exercised by present-day habits of feeding. The table for Edinburgh shows an almost continuous increase:

CANCER DEATHS

Year	Rate per Thousand Living	Year	Rate per Thousand Living
1898.....	0.88	1910.....	1.20
1899.....	0.90	1911.....	1.26
1900.....	0.95	1912.....	1.24
1901.....	0.92	1913.....	1.24
1902.....	0.98	1914.....	1.37
1903.....	0.99	1915.....	1.32
1904.....	1.04	1916.....	1.34
1905.....	1.07	1917.....	1.25
1906.....	1.03	1918.....	1.35
1907.....	1.07	1919.....	1.27
1908.....	1.10	1920.....	1.39
1909.....	1.16		

The Roentgen-Ray Treatment of Cancer

The following statement has been issued by the Council of the British Association for the Advancement of Radiology and Physiotherapy (a body which includes the great majority of roentgenologists in this country): "In view of the publicity given to radiotherapy for cancer by laudatory articles in the medical and lay press, and the extraordinary claims put forward by the authorities of the West London Hospital, it seems advisable that a considered statement on the use of these agents should be made. The treatment has not yet been thoroughly tested. It possesses great potential dangers, and may not prove as efficacious as the claims now made would suggest. In the nature of the case, however, no certainty can be arrived at for some years. The unwarranted laudation of the recent change in technic will probably lead to a reaction, and bring discredit on roentgen-ray treatment in general. The claim put forward by the Erlangen school is that by means of their special method it is possible to administer a dose of roentgen rays which will cure cancer in one application. This claim is commented on in the *Lancet*: 'The suggestion is made in the press that cases of malignant disease should go to the radiologist immediately the diagnosis is made, and before operation, is based on the observation of competent observers. There is little doubt that the time has come for us to reconsider our position in dealing with the situation.' This we regard as a most ill-advised pronouncement, and we emphatically disagree with the conclusions expressed. The time has not yet come when radiotherapy may be regarded as the first choice in the treatment of the majority of cases of cancer. . . . We believe that, of any single method, surgery still offers the best prospect of cure in nearly all cases of cancer, and that until much more convincing proof of the efficacy of roentgen-rays or other form of radiation is forthcoming it would be dangerous to encour-

age patients to trust to roentgen-ray treatment alone for the cure of these very serious conditions. The possibility of successful surgical intervention ought to be, in each particular case, fully discussed. We are, however, of the opinion that a closer cooperation between the surgeon and the radiologist would lead to a clearer appreciation of the value of irradiation in treatment, and that in all cases both surgery and irradiation therapy should be fully considered, with a view to making the fullest use of both. Combined treatment offers the greatest hope of success. The methods employed in this country up to the present have given promising results. They have been worked out for use in conjunction with surgery, and it would be unwise to abandon them before we are assured that the more intensive form of treatment will give the patient an increase of favorable chances. Radiologists in this country have, during the past few years, so far perfected their technic that the risk of any injury to the patient is now small, provided his treatment is under the direction of experienced men. In our opinion the real contribution to progress on the part of the Erlangen school is that they have employed in suitable quantities roentgen rays of a higher penetration than that hitherto used, and have also carefully systematized already known methods of measuring dosage. Whether or not these rays ultimately prove superior in all cases to those of less penetration, this is an achievement for which they will always be entitled to credit. It is unnecessary to import the apparatus from Germany; several firms in this country are now making the requisite equipment, so that difficulty of obtaining plant will not be a bar to research."

PARIS

(From Our Regular Correspondent)

Aug. 20, 1921.

Aid to Famished Russia

At its recent session held in Paris, the supreme council had to deal with the problem of assistance to be given to Russia, which in its present famished state is fast becoming a prey to epidemic diseases. Lord Curzon stated that the opinion in Great Britain was that the commission having charge of the problem should be composed of three representatives from all countries interested and not merely of representatives of the allied nations. Lord Curzon emphasized also the urgent character and the enormity of the task of protecting Europe against cholera and typhus fever now raging in Russia. In the opinion of the British government, precautionary measures should be taken immediately. Last year, through the instrumentality of the League of Nations, large and small countries contributed proportionately to the expense entailed by the application of prophylactic measures—especially in Poland. At the present date the commission in charge of this work has exhausted its financial resources, and is thus threatened with collapse at a time when the danger is even greater than last year. Consequently, Lord Curzon proposed that the supreme council invite the contributory powers to continue to supply the necessary funds to combat the terrible danger.

The supreme council has decided to appoint a private commission to be composed of three members from each country represented at the council. This commission will form the nucleus of a larger international commission, whose duty it will be to undertake the feeding of the starving Russians. The international commission will include representatives from neutral nations, such as Sweden and Denmark, and likewise from philanthropic societies (the Red Cross and similar organizations), who will be invited to cooperate with the delegates of the entente powers. The bodies of these two commissions, although their members are appointed by the various governments, will have no official character whatever, thus avoiding official recognition of the Russian soviets,

though having the necessary intercourse with that government.

On the other hand, the *Conférence de secours pour la Russie affamée*, organized in Geneva by the *Commission mixte du comité international de la Croix-Rouge et de la Ligue des sociétés de Croix-Rouges*, adopted a resolution providing for the creation of a relief commission to combine the efforts of all philanthropic organizations, both private and official, that perform their functions without political or economic interest. In this resolution the conference requests the collaboration of all governments and asks that private relief associations support governmental action to the utmost by subordinating their efforts to the central organization that the conference is trying to create. The joint commission will have full power to form this organization, which will include representatives from various governments, as the sections from Red Cross commissions have already begun, or have the firm intention of initiating, relief work in Russia. Messieurs Nansen and Hoover (or his representative) were appointed high commissioners, with full power to conclude preliminary agreements with the Russian authorities, with the view to controlling the distribution and apportionment of aid. The commission was instructed to transmit to the League of Nations the resolution so voted, in order to obtain the collaboration of the league and uniform governmental action.

Death of Henri Beaunis

Prof. Henri Beaunis died recently at Cannet (department of Alpes-Maritimes) at the age of 91. He was one of the last surviving members of the medical faculty of the University of Strasbourg as constituted before the Franco-Prussian War. After the war, Beaunis was transferred from Strasbourg to Nancy, where he immediately took an active interest in the research work of the medical department of the university and in the joint discussions with the *Ecole de la Salpêtrière* on the subject of hypnotism. Thus he came to take up the study of physiology of the brain and physiologic psychology. He was later called on to establish at the Sorbonne the first French psychologic laboratory. He published, in collaboration with A. Bouchard, "*Eléments de physiologie*," in two volumes. He has published also his researches on cerebral activity, induced somnambulism, internal sensations, etc. Together with A. Binet, he founded the *Année psychologique*.

French Scientific Expansion in Foreign Countries

Dr. Marcel Labbé, professor in the medical department of the University of Paris, has accepted an invitation to deliver in Buenos Aires a course of lectures on the clinical aspects of biology. Next year, Professor Brumpt will deliver a series of lectures on parasitology in the medical department of the University of Buenos Aires. On the occasion of the official opening of the university at Peking, which is to take place in the near future, Dr. Tuffier, professor of clinical surgery in the medical department of the University of Paris, will give, at the request of the Rockefeller Institute, several clinical lectures, as well as demonstrations of operations, at the Union Medical College of Peking. He will also deliver the dedicatory address, the subject of which will be: "Surgical Septicemia and Its Treatment."

The New Ministry of Public Health

The *Journal officiel* has just published the text of the decree organizing the ministry of public health, charity and social provision. The functions of this ministry are divided into three departments: public health and social hygiene; relief of the poor, and housing and thrift. The department of public health comprises four bureaus: (1) public health and general hygiene; (2) sanitary prophylaxis, including prophylactic measures in epidemics; (3) birth propaganda and child welfare, and (4) social hygiene.

PEKING, CHINA

(From Our Regular Correspondent)

July 20, 1921.

Opening of the New Peking Union Medical College Hospital

During the month, the wards, operating rooms, clinical laboratories and outpatient department have been transferred from the old hospital of the Peking Union Medical College to the new. The last of the buildings of the new hospital was finished in June. It has a total bed capacity of 242. Of these, twenty-nine are for private patients, eight are for isolation cases, and thirteen are in the admission ward, where all ward cases are first sent for a process of cleansing and for special observation if necessary. Of the remaining 192, eighty are for the department of medicine, including pediatrics; sixty-two are for the department of surgery, including orthopedics and genito-urinary diseases; thirty are for the department of obstetrics and gynecology, ten for ophthalmology, and ten for otolaryngology.

THE MEDICAL SUPERINTENDENT

Dr. Ralph B. Seem, who has been working for the last two years on the plans for the new Albert Merritt Billings Hospital in Chicago, of which he is the director, has been lent by the University of Chicago to the Rockefeller Foundation for one year, to act as medical superintendent of the new Peking Union Medical College Hospital.

PROGRAM OF THE OFFICIAL OPENING

The program for the official opening provides a schedule for eight days, beginning September 15. Government representatives, delegates from universities and other medical schools, noted scientists and medical men from many countries will be present to read papers or take part in the clinical meetings. The program follows:

Thursday, September 15: "Evolution of the Ocular Symptoms in Pituitary Disorders," Dr. George de Schweinitz, professor of ophthalmology, University of Pennsylvania Medical School. Inspection of plant and reception. "Survey of Medical Education in China," Dr. Pearce, director of the division of medical education of the Rockefeller Foundation.

Friday, September 16: Sectional clinics. Trustees' meeting. "Plague in the Orient, with Special Reference to the Manchurian Outbreak," Dr. Wu Lien-Teh of the North Manchurian Plague Prevention Service. Sight seeing. "Conquest of Yellow Fever," Dr. Vincent, president of the Rockefeller Foundation.

Saturday, September 17: Sectional clinics. Trustees' meeting. "Osteomyelitis," Dr. T. Tuffier, professor of surgery, University of Paris. Reception by President Hsü of the Chinese Republic. Moving pictures. Lecture by Dr. W. W. Peter of the Council on Health Education of China.

Sunday, September 18: Sermon by Rt. Rev. L. H. Roots, bishop of the American Episcopal Church in Hankow, China. Organ recital.

Monday, September 19: Sectional clinics. Trustees' meeting. "Problems of Parasitology in the Orient," Dr. R. T. Leiper of the London School of Tropical Medicine. Dedication exercises. "Biochemistry in Retrospect and Prospect," Dr. A. B. Macallum, professor of biologic chemistry, McGill University.

Tuesday, September 20: Sectional clinics. Address by Dr. Florence R. Sabin, professor of histology at Johns Hopkins University. "Search for the Ideal in Hospital Organization," Dr. S. S. Goldwater, superintendent of Mount Sinai Hospital, New York.

Wednesday, September 21: Sectional clinics. Trustees' meeting. "The Clinical Importance of the Vital Capacity of the Lungs," Dr. Francis W. Peabody, associate professor of medicine, Medical School of Harvard University. Sight seeing. "Hookworm Prevention in the Eastern Hemisphere," Dr. Victor G. Heiser of the International Health Board of the Rockefeller Foundation.

Thursday, September 22: Sectional clinics. Trustees' meeting. "The Present Status and the Future of Chemotherapy," Dr. S. Hata of the Kitasato Institute, Tokyo. Sight seeing. "How Medicine Advances and Contributes to Human Progress," Dr. William H. Welch, professor emeritus of pathology, Johns Hopkins University; director, School of Hygiene and Public Health, Baltimore.

Sectional meetings will be held each week day from September 16 to September 22 by the departments of medicine, surgery, pathology, obstetrics and gynecology; on each week day except Monday by the department of ophthalmology; on Saturday and Monday by the department of otolaryngology, and on Tuesday and Wednesday by the department of neurology.

VIENNA

(From Our Regular Correspondent)

Aug. 12, 1921.

Conference on Child Welfare Work

A short time ago, a conference on the international aspects of child welfare, organized by the "Vienna Society of Friends' Relief Mission," took place in this city. A number of persons busily engaged in this kind of work were present, the principal being Mrs. Hainisch (who is mother of the present president of Austria), two English women physicians (Miss Courtney and Miss Clark), Miss Addams of the Women's International League for Peace and Freedom, and Professor Pirquet of Vienna. Representatives from Switzerland, Germany and France were present. Dr. Clark reported on the importance of international legislation, coupled with the proper instructions of the general public for the promoting of economic welfare of all classes. Professor Pirquet dwelt in his papers chiefly on the incidence of tuberculosis in Vienna. He showed how, owing to the underfeeding produced by the war and the time thereafter, the tuberculous taint had reached an enormous extent among the children of all classes here. More than 90 per cent. of all examined children had responded positively to the cutaneous test. The measures taken by the hospital authorities to grapple with the problem were handicapped by the absence of tuberculosis sanatoriums for children; only within the last few years, three such institutes were organized with a capacity of about 800 beds. So in the children's clinic the roof of the wards was transformed into an open air sanatorium, with 100 beds. The results obtained thereby are excellent. The necessity of balancing the needs of one country by the surplus of another as regards food was emphasized by Miss Addams, who recommended a certain international level as regards child welfare work. Other papers dealing with infant mortality and the age incidence of tuberculosis were also presented. It appears from these that the cause of infants' deaths is now mainly to be found in a general weakness of the offspring produced by the bad health of the parents, and not so much in disease of the alimentary organs. The latter seem to be benefited by the custom of breast nursing prevailing here nowadays, because of the scarcity of cow's milk. The paper on "Alcohol and Children's Health" attributed a large decrease of illness among children to the reduced amount of alcohol now available to the parents, partly because of financial straits, partly because of lack of material, and advocated restriction of the sale of alcohol, as practiced in America, as one of the chief means to produce a healthier race.

Enlargement of the Vienna Clinics

Among other useful plans, the break-up of the empire has brought also to a standstill the suggested erection of the new clinics begun in 1912. It would cost now more than the whole reduced republic could honestly spend. Therefore the government has adopted and brought into life a new plan to obtain sufficient beds and space for scientific research in the existing hospitals without undue expense. The old military hospitals have been adopted for this purpose, and several of the institutes not belonging strictly to the clinics have been already located there. Thus, the psychoneurotic ward for cases of minor importance as regards teaching has been transferred to the old garrison hospital adjoining the old "Allgemeines Krankenhaus" general hospital, well known to all American physicians who visited Vienna before the war. Also the kitchen for the hospital staff and the attendants and nurses is now situated in the military hospital, so that the kitchen in the Allgemeines Krankenhaus can devote itself solely to the wants of the patients—a much desired improvement of the state

existing hitherto. The nurses will in future also be housed in the apartments of the garrison hospital, their rooms in the clinics thus becoming free for other more important purposes. All the numerous administrative or economic offices will be transferred from there too; a special bureau of administration for all the clinics and wards of the general hospital is in course of adaptation in the garrison hospital block, which will enable a uniform handling of the complicated administrative business, and much space in the old house will be thus free for laboratories. The wards for skin diseases are also being transferred. Their area is being allotted to the clinics for dermatology. It must be added here for better understanding that, with us, only the clinics serve for purposes of instruction, while the wards are simply therapeutic institutes, not open for students but only for graduate medical work. The institute for forensic medicine will be joined to the old garrison hospital's post-mortem department, and its extensive space will be used by the institute of chemistry and pathologic anatomy. The histologic institute of Professor Störck and the collection of moulages (war models and reproductions of specimens and cases) of Professor Henning—a unique collection—are also moving out. Thus, a decisive change in the management of the clinical administration and teaching is being quietly brought about which will take at least half a year to be completed. The effect will be that for the near future the Vienna General Hospital will continue to be one of the largest hospitals of the world, and with 2,600 clinical beds will offer excellent opportunity for teaching and learning and enable Vienna to hold its own as a medical center.

Charity Work of the Society of Friends and the American Red Cross

At a recent meeting of the Vienna Medical Society, several reports were made on the noble work of children's help and famine relief conducted by the various foreign missions, which are chiefly responsible for the saving of many thousands of lives of infants and children in this and other cities of the former famine districts. Professor Moll's paper dealt with the organization of this work, in which he played a prominent part. More than 50 per cent. of all children born in Vienna between 1918 and now came under the scope of this welfare work, and as 90 per cent. of all children were breast fed, the mortality of infants dropped very low. The mothers were instructed to bring not only ill babies but also the healthy ones. Chiefly by means of the Anglo-American Society of Friends, the material and funds required for this work were obtained. More than fifty distributing centers were organized, where the mothers got the grants, consisting of milk, provisions and sundry articles of clothing, as well as money. A few figures will illustrate the extent of help rendered. The distributed quantities were: 630,000 kg. of flour and rice; 7,000,000 tins of condensed milk; 112,000 kg. of powdered milk; 270,000 kg. of lard; 370,000 kg. of sugar; 150,000 kg. of cocoa; 115,000 kg. of soap; 25,000 pairs of shoes; 2,000 van loads of wood; 60,000 children were recipients of weekly food packets, distributed only on a medical certificate; each packet containing two tins of condensed milk, one-half pound of rice flour or oatmeal, one-half pound of sugar and lard, besides some cocoa and soap. Care was taken to insure that the children really consumed the articles intended for them, and a small nominal charge was made for it, so that the depressing feeling of charity was as much as possible done away with. Gradually the distribution is now being diminished, and the whole work will be changed into "help for tuberculous children," and between 500 and 600 such children will be housed in special sanatoriums by means of the grants from the charitable missions mentioned. Papers by Bökin, Dehne

and Gränfeld were also read, giving similar information. It was stated especially that the American Red Cross has taken over the welfare work for infants. A network of centers for this work is being laid over all Austria, consisting of 100 offices, and the care of pregnant women will be one of the points of the program. The scientific value of such work will be controlled by selecting one special district, hitherto not much cared for, and to control its general health, morbidity and mortality with a view to the effect of this welfare work after a longer period. Furthermore, the system of distributing free meals to schoolchildren and apprentices came to the scope of the Society of Friends and the American "feed the children" fund. With the cooperation of Professor Pirquet, Dr. Nobel and Dr. Mayerhofer, in quick succession a number of kitchens were opened, where the children got every week day a free meal consisting of a warm porridge, or rice or macaroni, with sweet milk or cocoa and a white-flour pastry, each meal having the food value of 1,000 nems, or a liter of pure cow's milk. From 60,000 meals a day, the work increased to 400,000 meals a day. Chief credit is due to Mr. Herbert Hoover for this wonderful task of feeding a whole country's offspring. The foodstuffs used from June, 1919, till April, 1921, were valued at \$4,952,000, with a food value of 89,500,000 kilonems. The parents had to contribute to the cost of paying a trifling sum to the city of Vienna, the state also contributing to the costs—of course, only a small percentage of the actual expenditure incurred. The result of such an energetic feeding was controlled by periodic examinations of the children. It is a remarkable fact that children who were admitted to the feeding gained in weight up to 18 per cent., while other groups who were not admitted, or in places where no American feeding center had been established, the children showed on renewed examinations a decided loss in weight. This proves that only this organization has been the means of improving the general condition of the children, especially in Vienna, the center of famine. This feeding will be gradually stopped, and the charitable work will be confined, as mentioned above, to the care of tuberculous children. The control of the actual food value of the meals distributed was effected by the method of dry substance tests (Pirquet). The controls are made at least once every month for each kitchen, and a mobile laboratory is engaged with this work in the country places, so that uniformity is thus insured.

BERLIN

(From Our Regular Correspondent)

Aug. 19, 1921.

Imposition of Penalties on the Mentally Deranged

For a number of years, the work of improving the penal code of Germany has been going on. The work was interrupted by the war. The recently published draft of certain reformatory ideas with respect to the penal code has also general interest as regards the problem of the penalties that should be imposed on the mentally deranged and the feeble-minded. The Berlin psychiatrist Geheimrat Moll has given expression to a few observations on the subject that will doubtless be of interest to American physicians. Section 51 of the authorized penal code of the empire reads: "The doer of a wrong or criminal act is not punishable if at the time of committing the act he was in a state of unconsciousness (disorder of consciousness—Ed.) or was suffering from a pathologic disturbance of mental activity, on account of which condition the determining influence of his free will was excluded." The purpose of the section is to protect from punishment persons who on account of mental disorders are not accountable for acts that otherwise would be punishable

by law. As may be seen, there are three main notions to be considered: unconsciousness, pathologic disturbance of mental activity, and exclusion of the determining influence of the free will. Unconsciousness as used in the foregoing section comprises certain transitory conditions which we do not class among mental diseases; for example, drunkenness with disorientation, somnambulism, epileptic disturbances of consciousness, and hypnosis. Pathologic disturbance of mental activity concerns more the permanent conditions such as are found under the head of mental diseases; but the term "pathologic disturbance of mental activity" comprises much more than "mental disease," and for that very reason a special defining of the term is necessary in order to prevent its misuse. Therefore, in order to justify immunity from punishment, it is not sufficient that an act shall be committed in a condition of unconsciousness or of pathologic disturbance of mental activity, but it is essential that, owing to this condition, the determining influence of the free will shall be excluded or blocked. The choice of the term "exclusion of the determining influence of the free will" is not a happy one, and a great many objections have been raised against it. There must, naturally, be a limitation of immunity from punishment. It would not do to grant immunity for an act merely because the doer of the wrong was in a condition of pathologic disturbance of mental activity. But since many conditions must be regarded as pathologic disturbances of mental activity, although accountability is not excluded, provisions taking account of this fact had to be made. Again, many have felt the need of a provision to cover the cases of persons as regards whom the determining influence of the free will, as expressed in Section 51, was not excluded but who were strongly influenced by mental disturbance. A long struggle to introduce the notion of "lessened accountability" has been the consequence, and in the drafts of the new German penal code this idea has found expression. The last draft of 1919, therefore, introduces the feature of "lessened accountability." Section 18 of this draft, which corresponds to Section 51 of the old law, reads: "A person is not accountable for a wrong or a crime if at the time of its commission he was unable, by reason of some disorder of consciousness or pathologic disturbance of mental activity or some mental weakness, to understand the wrongfulness of the deed or to direct his will in accordance with his insight." Section 11 is worded thus: "If the ability of the doer of wrong to recognize the wrongfulness of the act was only highly lessened, for one of the reasons aforementioned, the punishment must be mitigated. This does not apply to disturbances of consciousness that rest on drunkenness for which the wrong doer is to blame." We note, then, here that "lessened accountability" is recognized. However, it would bring great damage to the public if persons who are dangerous generally but who on account of the plea of unaccountability have to be acquitted were allowed to move about freely and endanger their fellow men. Therefore, a new section of the law, which reads thus, has been proposed: "If on the ground of unaccountability a person is acquitted or relieved from further prosecution or is adjudged to present 'lessened accountability,' the court will order his detention in a public hospital or caretaking institution, in case public safety seems to demand such action."

The new draft proposes also other important amendments to the existing law. These concern children and juveniles. It is proposed to change the period during which juveniles may be held partially, and only partially, accountable for crime. At present it is from the completion of the twelfth to the completion of the eighteenth year. The proposed amendment provides that this period shall begin with the completion of the fourteenth year. The fundamental change for this period is, that the court is entitled to order that educative measures of the widest range and scope shall be instituted,

but must first ascertain whether educative measures are likely to prove sufficient. If the last mentioned inquiry is affirmed, the court must, in fact, issue an order for the institution of educative measures and may not impose any penalty whatever. The court is entitled to issue such orders as it sees fit with respect to the commitment and training of juveniles, and not only orders as regards supervision and welfare training, although these are mentioned more particularly. Even though the court does not deem that the educative measures will be sufficient, it is not entitled, according to the new draft, to impose a penalty on juveniles without further investigation. To be sure, there are important safeguards in the old law as well. The old law provides that a juvenile must be acquitted if, at the time the deed was committed, he (or she) did not possess the necessary insight to be aware of its wrongfulness. The new draft, in spite of many opinions uttered expressing contrary views, has retained this provision essentially unchanged. Lack of insight shall exclude accountability if such lack is the result of arrested mental or moral development, which renders the juvenile incapable of comprehending the wrongfulness of the deed and of directing his will in accordance with such insight. In the section mentioned and in another section of like import, juveniles would seem to have been given as much consideration as is admissible. In the future, a juvenile will not be subject to punishment even though he may have known that he was doing wrong, provided, on account of arrested development, he was unable to resist the impulse to the misdeed or crime.

From Shepherd to Millionaire

In a small village of the province of Hanover, there died, a few days ago, one of the most notorious modern quacks—"Shepherd Ast," as he was called. Ast made his diagnoses on the basis of three hairs taken from the back of the neck of his patients. For his treatment he used mixtures and ointments of his own manufacture. For many years, patients flocked to him not only from all parts of Germany, but also from foreign countries as well, from which latter fact we derive the comfort of knowing that stupidity in medical affairs is international. Ast in his early years was a shepherd, but his excessive profits soon made him a millionaire (marks), enabling him to purchase a large estate, on which he resided.

The von Behring Institute for Experimental Therapy

Professor Uhlenhuth, formerly head professor of hygiene in Strasbourg, who, on account of the loss of Alsace-Lorraine, was obliged to leave the Hygienic Institute, which was established under his direction, before it had been actually dedicated, has refused a call to the professorial chair of hygiene in the Berlin university, as a successor to Professor Flügge. For those not familiar with the situation his refusal to accept this chair came as a surprise. It was well known that Uhlenhuth, while he was still in Strasbourg, entertained hopes that some day he might occupy the chair that was formerly established especially for Robert Koch. Now that Uhlenhuth, through loss of the Strasbourg professorship, has given up his academic activities and has been able to secure only a scanty income in the bacteriologic department of the public health service, of which he was formerly director, it was naturally supposed that he would regard a call as Flügge's successor as a stroke of fortune. There must, indeed, have been very strong reasons that caused him to refuse the offer. Economic conditions, with their powerful influence on the fortunes of men, with which we were so familiar, during the war, and which are still affecting us to an even greater extent, are mainly responsible for Uhlenhuth's decision. The income that he would have derived from his government position and all secondary sources would not have been sufficient to secure for him and his

family a proper living. Why the ministry did not see fit to increase the salary and thus secure a man so well qualified as Uhlenhuth to teach and carry on investigations, is the question. The financial straits of the government do not, it seems to me, furnish an adequate explanation. As far as I have been able to ascertain, some of the influential members of the Berlin medical faculty were not favorably impressed with Uhlenhuth's personality, and for that reason, doubtless, the minister of public instruction did not feel under obligations or even justified in granting an increase of salary as a favor to Uhlenhuth. Whether he would have accepted the call, if that had been the case, is not at all certain. The Hygienic Institute in Berlin, I may state, is quite antiquated and in many respects does not measure up to the demands of a modern institute of research. For this reason, Professor Rubner, something over ten years ago, while he was still professor of hygiene, succeeded in getting a new institute erected in Invalidenstrasse. When it was finished, Rubner, to everybody's surprise, exchanged his professorial chair for that of Professor Engelmann, head professor of physiology, then recently deceased, and the new institute changed its firm name, as it were, becoming the Institute of Physiology.

The Hygienic Institute, of which he had been the director and which formerly was the Institute of Physiology under du Bois Reymond, was turned over, with very few changes, to Professor Flügge of Breslau. This institute, then, with its antiquated equipment could not be expected to satisfy Professor Uhlenhuth, especially in view of the fact that under his management the Strasbourg institute had been fitted out with the best and most up-to-date equipment to be had. I will pass over certain other things that stood in the way, as they are more of a personal nature. But these matters and even the other objections would not have induced Uhlenhuth to refuse the call if, at about the same time, he had not been invited to take over the scientific management of the so-called Behring Works in Marburg. With the not inconsiderable profits that had accrued to Behring from the manufacture of diphtheria serum, he had established a large institute in Marburg, which was to serve not only for sero-therapeutic researches but was also to aid in the manufacture of serums. In consequence of a nervous affection, which prevented him from throwing himself into the work and which, in spite of considerable improvement, had undermined his creative energy, the far-reaching plans of Behring, who was not only a great scholar but also a practical and prudent organizer, did not come to fruition. Nevertheless, he had been able to expand the technical department which he established at the Schlossberg in Marburg and to develop from it an independent organization, which was launched under the name of the Behring Works. Owing to the death of Behring in 1917, and more particularly, under the influence of the war, the activities of the Behring Works were reduced. About two years ago, an administrative council for the Behring Works was created, which, with the aid of new funds, assumed the task of carrying out Behring's plans. For this purpose, it was necessary to secure an able and well known investigator as the scientific director, who, through the influence of his name as well as by the results of his investigations, might be expected to restore the somewhat faded reputation of the Behring Works. Not only the immensity of the task but also the monetary inducements offered by such an organization proved, as any one will readily comprehend, strong incentives for Uhlenhuth, which made it much easier for him to refuse the call to Berlin. For the sake of the Behring Works, which have been rechristened "Institut für experimentelle Therapie von Behring," and much more for the sake of German science, it is to be hoped that Professor Uhlenhuth made the right decision.

Marriages

DANIEL D. V. STUART, JR., Washington, D. C., to Miss Margaret Atkinson Berry of Baltimore, at Annapolis, Md., August 30.

FRANK A. NORWOOD, Lockesburg, Ark., to Miss Dorothy Corbett of Ashdown, Ark., at Texarkana, July 24.

ALFREDO MOLLINEADO to Miss Lillian M. Bissett, both of Philadelphia, at Elkton, Md., in August.

VICTOR W. MAXWELL, Brookhaven, Miss., to Miss Edith Crawford of Laurel, Miss., July 28.

ADA B. CRAWFORD, San Francisco, to Mr. Robert William Brown of Los Angeles, August 24.

IRVING W. CHURCHILL to Miss Nora M. Haskins, both of University Place, Neb., August 6.

BENJAMIN T. BURLEY, Worcester, Mass., to Miss Angelyn Jefferds, in Chicago, August 20.

WILLIAM A. SHELTON to Miss Betty Louise Willis, both of Knoxville, Tenn., September 6.

GUSTAVE M. TAUBLES to Mrs. Mildred T. Bloomfield, both of San Francisco, August 6.

MAURICE S. ROSENTHAL to Miss Selma Abrams, both of New Orleans, September 1.

HENRY L. DOUGLASS to Miss Dorothy Lindsley, both of Nashville, Tenn., June 22.

C. R. McDONALD, Jennings, Okla., to Miss Andry Massey of Oklahoma City, July 9.

WALTER ORLANDO HENRY to Miss Mabel Henderson, in Los Angeles, recently.

JAMES C. SHIELDS to Miss Kathryn Hanley, both of Butte, Mont., in August.

Deaths

Osear Augustus King ☉ Chicago; Bellevue Hospital Medical College, New York, 1878; died, September 11, at Lake Geneva, Wis., aged 70. Dr. King was assistant physician, Wisconsin State Hospital for the Insane, 1879-1882; professor mental and nervous diseases, 1882; neurology, psychiatry and clinical medicine, 1894; vice dean since 1900 at the College of Physicians and Surgeons (University of Illinois), Chicago; professor neurology, Post Graduate Medical School. In 1883 Dr. King founded the Oakwood Retreat (for the insane), Lake Geneva, Wis., of which he was president and chief of staff; in 1896 he founded the Lake Geneva Sanatorium, and in 1901 amalgamated the two institutions of which he remained director. At the time of his death he was professor of neurology and psychiatry emeritus in the College of Medicine of the University of Illinois. He was one of the strongest factors on the faculty which finally brought about the incorporation of the College of Physicians and Surgeons into the university.

Louis David Wilson ☉ Wheeling, W. Va.; University of Pennsylvania, Philadelphia, 1870; died suddenly, August 27, from angina pectoris, aged 75. Dr. Wilson was a practitioner for nearly half a century, and county physician for fifteen years; at one time member of the House of Delegates of the American Medical Association; president of the West Virginia State Medical Association, 1890, and twice president of the Ohio Valley Medical Society; for twenty-five years on the staff of the Ohio Valley General Hospital (formerly the City Hospital), Wheeling, and since 1914 dean of that institution. For ten years he was editor of the *West Virginia Medical Journal*.

Theodore A. McGraw ☉ Detroit; College of Physicians and Surgeons (Columbia University), New York, 1863; died, September 7, aged 81. Surgeon and at one time president of the board, at St. Mary's Hospital, 1869-1914; founder of Detroit College of Medicine, and head of department of surgery, 1869-1912, and at one time president and dean of that institution. He was a practitioner for over fifty years; ex-president of the American Surgical Association; president of the Michigan State Medical Society, 1887; surgeon in the Civil War, with rank of captain, and a member of the Detroit Board of Commerce.

☉ Indicates "Fellow" of the American Medical Association.

Christian S. Reimstad ☉ Brainerd, Minn.; University of Minnesota, Minneapolis, 1896; formerly attending physician at the State Soldiers' Home; associate of the Northwestern Medical and Surgical Association, Inc., hospital staff as specialist in internal medicine; died, August 28, at the Northwestern Hospital, from a fractured skull, caused by a fall six weeks before, aged 54.

J. Irving Heritage, Langhorne, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1921; intern, Metropolitan Hospital, Blackwell's Island, New York; served in the M. C., U. S. Army, during the late war; died, August 24, in the Hahnemann Hospital, Philadelphia, from spinal meningitis following septic inflammation of the ear, aged 22.

Gustavus Ferdinand Theel, Philadelphia; Philadelphia University of Medicine and Surgery, 1869; Beach Medical Institute, Indianapolis, 1886; practiced in Philadelphia for fifty-two years; served two terms as mayor of Ambler, Pa.; died, August 27, at Lakeland, Fla., where he had resided for the last two years, from heart disease, aged 82.

Emanuel S. Wenger ☉ Lincoln, Neb.; University of Michigan, Ann Arbor, 1889; professor of orthopedic surgery, Nebraska College of Medicine, Lincoln; medical examiner for the Burlington Railroad, Brookfield, Mo., 1891-1904, and Lincoln, Neb., 1904 until his death; died, August 25, following an operation at St. Elizabeth's Hospital, aged 68.

Albert G. Henry, North Baltimore, Ohio; Columbus Medical College, 1881; member of the Ohio State Medical Association; gave \$175,000 to build the first electric light plant, opera house, and drug store in North Baltimore; surgeon for the Baltimore and Ohio Railroad for twenty-five years; died, August 27, from strangulated hernia, aged 72.

Edward William Swafford, Sturgis, S. D.; Bennett Medical College, Chicago, 1909; member of the South Dakota State Medical Association; he was confined to a wheel chair for years, suffering from arthritis deformans, but continued his medical work in his office; died in August, from atrophic cirrhosis of the liver, aged 43.

George Barnes, Killingly, Conn.; New York University Medical College, New York, 1896; member of the Connecticut State Medical Society; during the late war acted as examining physician for the district selective service board; died, August 27, in a Rutland sanatorium, from tuberculosis, aged 45.

Anson M. Norton, Bristol, Vt.; University of Vermont, Burlington, 1889; member of the Vermont State Medical Society; surgeon-general on the staff of the Governor Fletcher Proctor; member of the state legislature, 1906-1908; died, August 27, after a long illness, aged 57.

Mahlon Bolton, Rich Square, N. C.; Jefferson Medical College, Philadelphia, 1885; member of the Medical Society of the State of North Carolina; member of the state legislature for Northampton County; died suddenly, August 25, aged 58.

Eugene E. Haynes ☉ Memphis, Tenn.; Memphis Hospital Medical College, 1891; visiting physician to St. Joseph's Hospital; surgeon for Memphis Street Railway for twenty-five years; died suddenly, August 31, from heart disease, aged 52.

Samuel E. McCully, Victoria, Texas; Victoria University, Toronto, Canada, 1862; Missouri Eclectic Medical College, Kansas City, 1898; served as a surgeon during the late war; died suddenly, August 23, from heart disease, aged 80.

William R. Frisbie, Washington, D. C.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; retired pension examiner; died, July 3, at the Carrol Springs Sanatorium, Forest Glen, Md., from cerebral hemorrhage, aged 85.

William J. Goodman, Tyler, Texas; Medical College of the State of South Carolina, Charleston, 1855; practitioner for over fifty years; also a druggist; Confederate regimental surgeon in the Civil War; died, August 27, aged 88.

Harley H. Sutton ☉ Aurora, Ind.; Medical College of Ohio, Cincinnati, 1876; Jefferson Medical College, Philadelphia, 1877; president of the Dearborn County Medical Society; died, September 3, from heart disease, aged 71.

Aaron Lee Carmichael ☉ Little Rock, Ark.; University of Arkansas, Little Rock, 1904; assistant demonstrator of anatomy, Arkansas University Medical Department; died, August 29, after a long illness, aged 43.

Franklin Deare Sickles, Fredericktown, Ohio (license, Ohio, 1896); member of the Ohio State Medical Association; practitioner for over half a century; Civil War veteran; died, August 7, after a long illness, aged 71.

Asa Nathaniel H. Ballard, Birmingham, Ala.; Pulte Medical College, Cincinnati, 1876; several times president of the

Alabama State Homeopathic Medical Society; Civil War veteran; died, August 24, aged 79.

Franklin Henry Darby ☉ Columbus, Ohio; Medical College of Ohio, Cincinnati, 1875; state superintendent of the Children's Home Society of Ohio for twenty-eight years; died, August 29, from paralysis, aged 75.

Christopher C. Dalton, Slocumb, Ala.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1890; member of the Medical Association of the State of Alabama; died, August 21, at a Dothan hospital, aged 62.

Gertrude A. G. Bishop, Brooklyn; New York Medical College and Hospital for Women, New York, 1877; for seventeen years delegate to the New York State Homeopathic Society; died, September 5, aged 84.

Frederick Mixer Aitkin, Bristol, Ind.; College of Physicians and Surgeons (Columbia University), New York, 1868; practitioner for nearly half a century; died in August from cerebral hemorrhage, aged 75.

Samuel P. Longstreet, Scranton, Pa.; New York University Medical College, New York, 1886; member of the Medical Society of the State of Pennsylvania; died, August 16, from heart disease, aged 59.

William H. Metcalf, Marietta, Ohio; Cincinnati College of Medicine and Surgery, 1889; member of the Ohio State Medical Association; died, July 29, in Reno, near Marietta, from heart disease, aged 56.

Francis James Drake ☉ Phillipsburg, N. J.; University of Pennsylvania, Philadelphia, 1900; school physician since 1913; died, August 26, at the Easton (Pa.) Hospital, from epilepsy, aged 51.

Robert Benson McLaughlin ☉ Centerburg, Ohio; Starling Medical College, Columbus, 1905; captain, M. C., U. S. Army, during the World War; died, July 9, from cerebral hemorrhage, aged 48.

Henry A. Kimery, Knoxville, Ill.; Barnes Medical College, St. Louis, 1898; shot himself through the head with a shotgun, August 22, while suffering from mental derangement, aged 53.

Samuel Burton McGarry, Joice, Iowa; Drake University, College of Medicine, Des Moines, 1903; died, August 21, in a hospital at Mason City, from chronic nephritis; aged 47.

Henry W. Sawtelle ☉ Washington, D. C.; Georgetown University of Medicine, Washington, 1868; assistant surgeon of the U. S. Public Health Service since 1873; died, August 19.

James Harvey English, Flat River, Mo.; Missouri Medical College, St. Louis, 1890; member of the Missouri State Medical Association; died, July 12, from chronic nephritis.

Joel H. Barber, Pittsfield, Ill.; Missouri Medical College, St. Louis, 1891; member of the Illinois State Medical Society; died, July 29, from carcinoma of the liver, aged 67.

William J. Ware, Mount Union, Iowa; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1900; died in June from diabetes insipidus, aged 53.

John Frederick Wright, Keezletown, Va.; College of Physicians and Surgeons, Baltimore, 1876; member of the Medical Society of Virginia; died, June 26, aged 68.

Daniel Hampton Bowen ☉ Waukon, Iowa; Rush Medical College, Chicago, 1876; former speaker, Iowa house of representatives; died, August 27, aged 70.

G. H. Ferrall, Spokane, Wash.; Cleveland Medical College, Ohio, 1871; Civil War veteran; died, August 16, from cerebral hemorrhage, aged 77.

James K. P. Green, Nixon, Texas; Texas Medical College and Hospital, Galveston, 1870; died, July 18, from cerebral hemorrhage, aged 76.

Arthur White, Rockport, Ind.; University of Maryland, Baltimore, 1854; served as surgeon in the Civil War; died, August 11, aged 89.

Frank McRae, Melrose, Fla.; Albany Medical College, New York, 1870; at one time member of the state legislature; died in August, aged 71.

Amelia J. Prior, Cincinnati; Women's Medical College of Cincinnati, 1892; died, July 9, in a Zanesville hospital, aged 65.

Herman F. Raible ☉ Detroit; Michigan College of Medicine and Surgery, Detroit, 1900; died in June, aged 52.

George W. Hedgecock, Sidonia, Tenn.; Nashville Medical College, 1893; died, August 13, aged 52.

Joshua S. Barnes, St. Petersburg, Fla.; Louisville Medical College, 1875; died, August 4, aged 67.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Mott's Compound Female Pills.—The Williams Mfg. Co., Cleveland, Ohio, shipped a quantity of this product in January, 1920, from Ohio to Michigan. When analyzed in the Bureau of Chemistry, the pills were found to consist essentially of aloes, ferrous sulphate ("green vitriol") and cantharides ("Spanish fly"). Some of the claims made for these pills were:

"They restore the menstrual flow."

"In cases of Leucorrhea (the whites), Amenorrhea (suppressed menses), Menorrhagia (immoderate flow of the menses), Dysmenorrhea (painful menstruation) and . . . Nervous and Spinal Affections, Pains in the Back and lower parts of the body, Heaviness, Fatigue on Slight Exertion, Palpitation of the Heart, Lowness of Spirits, Hysteria, Sick Headache, Giddiness, and all the . . . complaints produced by a disordered system. . . . In Prolapsus Uteri or Uterine Weakness. . . ."

The claims made were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9155; issued July 25, 1921.]

Job Moses, J. Clarke's Female Pills.—In May, 1920, the Williams Manufacturing Co. of Cleveland, Ohio, and the Eastern Drug Co. of Boston, Mass., shipped a quantity of this product into the state of Michigan. When analyzed in the Bureau of Chemistry, the pills were found to consist essentially of aloes, a salt of iron, and oil of peppermint. Some of the claims made in or on the trade package for these pills were:

" . . . good for many . . . painful and dangerous disorders to which the Female . . . is subject."

"They moderate excessive menstruation and relieve suppressed menstruation."

"In . . . cases of Leucorrhea (the whites), Amenorrhea (suppressed menses), . . . Dysmenorrhea (painful menstruation), . . . speedy relief may be expected."

These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9156; issued July 25, 1921.]

Gono Capsules 761, Renol Capsules, and Gonna Specific.—A quantity of these various products was shipped in March, 1920, and February, 1921, by the Grape Capsule Co., Allentown, Pa., into the state of New York. Each of the products was labeled as a remedy for "Gonorrhea, Gleet and all Kidney and Bladder Troubles." When analyzed in the Bureau of Chemistry each of the preparations was found to consist of capsules containing, essentially, salol, oleoresin of cubebs, copaiba balsam, pepsin, cottonseed oil and plant extractives. Because of the false and fraudulent claims the stuff was declared misbranded and in March, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9239; issued Aug. 12, 1921.]

Haskin's Nervine.—The Haskin Medicine Co., Binghamton, N. Y., shipped in July, 1920, and January, 1921, respectively, a quantity of this product which the federal officials declared was misbranded. Some of the claims made on the trade package for this preparation were:

"Nervine The Great Nerve Tonic and Blood Purifier. . . . For Liver Complaint, Female Weakness, Nervous Affections, Rheumatism, Kidney Trouble, Dyspepsia, Indigestion, . . . Biliousness and Catarrh . . . Nervous Diseases, Pains in the Heart and Shoulders, . . . Indigestion, Headache, Heartburn, Loss of Appetite, Dizziness, Numbness, Nausea, Fluttering of the Heart, Faintness, Rheumatism and

Kidney Trouble . . . Nervous Prostration and Female Complaints

"It strengthens the nerves, Purifies the Blood, Tones up the System, makes New Rich Blood, Clear Skin, and Ensures Perfect Health."

These were only a few of the things for which Haskin's Nervine was recommended as a cure. When this marvel was analyzed by the federal chemists they found that it was nothing more mysterious than a solution of Epsom salt, sweetened, flavored and colored with caramel! Because of these fraudulent claims the stuff was declared misbranded and in March, 1921, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment No. 9234; issued Aug. 12, 1921.]

Correspondence

WHY SHUN SHORT WORDS?

To the Editor:—Two classes love to use long words when short words would do as well or better. Not that all darkies or all doctors have this trait. When Sambo, trying to impress his hearers with his learning, uses long words with which he is not familiar, he makes laughable mistakes. And he is not the only one who has this misfortune.

Possibly the doctor's motive in using long words when there are more appropriate short words is to give dignity to his paper—to give proof of his command of English, and incidentally of his professional ability. Not being able to write simple English, he attempts to write a more florid, pompous, impressive style, and succeeds in preparing something which the "T. and S." editor might welcome.

It is not urged that physicians should write their professional or scientific papers in words of one syl-la-ble for the use of the first-reader class. Technical terms are a sort of shorthand, and any attempt to write a scientific description in simple words without the use of technical terms would make the article long and tedious. This necessary use of scientific shorthand is not what is referred to, but the use of long words of classical origin, when the crisp Anglo-Saxon words are more appropriate.

As a familiar instance, the good Anglo-Saxon word *cause* is almost taboo. No disease ever has a *cause*; it has an *aetiology*! Doctors use the five-syllabled word as though it meant exactly the same as the monosyllable, which it does not, as a reference to Webster will show. It is not proper, for instance, to say that the *aetiology* (or *etiology*) of typhoid fever is the Eberth bacillus, or any sentence of like import. It might be proper, in discussing the disease, to have a sub-head, *Etiology*, and under this to state that the specific cause of typhoid fever is the Eberth bacillus. But *cause* is not "scholarly" enough!

GEORGE H. HEALD, M.D., Takoma Park, D. C.

QUESTION OF ANCHORING THE ENDS OF A SUBCUTICULAR SUTURE

To the Editor:—In THE JOURNAL, Sept. 3, 1921, p. 789, Dr. L. M. Van Meter gives a complicated description of a method of anchoring a subcuticular suture. I have used a subcuticular suture many times and have never seen the necessity of anchoring at all, either with catgut or silkworm gut, simply leaving both ends free.

E. L. CADDICK, M.D., Quincy, Ill.

"THE EXPENSIVE 'POOR MAN'S MEDICINE'"

To the Editor:—The editorial comment on "The Expensive 'Poor Man's Medicine'" (THE JOURNAL, September 10, p. 867) brings to mind a case in which a man recently died of cancer of the bladder and prostate. His widow came to see what

my bill was, and said that she had no money to pay me, but remarked that the old man had paid out more than \$50 for medicines he had had sent him from Atlanta, Ga.

H. H. SCHULTZ, M.D., Sutton, Neb.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OIL OF GURJUN

To the Editor:—A British colleague practicing in India makes mention, in a personal letter, of oil of gurjun, intimating its superior utility in the treatment of scabies and other parasitic affections of the skin. Sajous and others make fragmentary reference to its use in the treatment of leprosy, stating that the active principle is presumed to be gurjunic acid. Please give a résumé of its pharmacology. Has the possibility of its specificity for acid-fast bacilli been investigated as has been done in the case of chaulmoogra oil? Is there any structural resemblance between gurjunic acid and gynocardic acid? Please omit my name.

P. M. D., Granite City, Ill.

ANSWER.—Oil of gurjun (wood oil; gurjun balsam) has been known to Europeans since 1811, and has often been employed for the sophistication of copaiba. It is obtained from *Dipterocarpus turbinatis* and several other species, and contains a sesquiterpene and a resin, the latter composed chiefly of gurjunic acid. "Its similar action to copaiba balsam was made known in India by the physician O'Shaughnessy as early as 1812. It acquired a considerable reputation in India as a remedy against leprosy, later also in England in dermatological practice" (Gildemeister and Hoffmann: *The Volatile Oils*, Ed. 2, translated by Edward Kremers, p. 159). However, any remedial influence on diseased mucous membranes which it might possess is probably similar to that of the different turpentine. We know of no reliable pharmacologic or bacteriologic work with oil of gurjun. Gurjunic acid does not resemble the acids which have been isolated from chaulmoogra oil.

PHYSICIANS AND THE INCOME TAX

To the Editor:—It seems to me that you sometime ago published a ruling made by the U. S. Treasury Department to the effect that expenditures made by physicians in traveling to and from conventions and covering postgraduate study are deductible from income tax payment; or, such items are necessary and legitimate expenses incurred as part of the practice of medicine. I did postgraduate work last year and deducted the cost from my income and was surprised the other day by receiving a bill from the office of the local revenue collector for the tax on the amount deducted. Your prompt reply and advice in this matter will be greatly appreciated.

H. M. S.

ANSWER.—Articles on "Physicians and the Income Tax" appeared in *THE JOURNAL*, Jan. 10, 1920, p. 126; Jan. 15, 1921, p. 183, and Feb. 12, 1921, p. 455. Railroad expenses and living expenses in excess of expenses at home for the same period incurred in attending meetings of medical societies are deducted from the gross income as legitimate business expense. Expenses incurred in graduate medical study are not deducted, as they are regarded as an investment rather than as current expenses.

BÖHME'S SOLUTIONS FOR INDOL TEST

To the Editor:—Can you give me the formula of Böhme's solutions referred to in the description of Goré's indol test published in the *Indian Journal of Medical Research*, January, 1921, and abstracted in *THE JOURNAL*, Aug. 27, 1921, p. 735?

CURRAN POPE, M.D., Louisville, Ky.

ANSWER.—Two of these solutions are used in the performance of this test. Solution 1: Paradimethylamidobenzaldehyde, 1 gm.; absolute alcohol, 95 c.c.; hydrochloric acid, 20 c.c. Solution 2: Potassium persulphate, 1 gm.; distilled water, 100 c.c. The under surface of the cotton wool plug of the culture tube is moistened evenly with a few (from four to six) drops of the persulphate solution, and then with a few drops of Solution 1. The persulphate helps to oxidize the indol compound from a lavender to a rather intense rose color, even when the quantity of indol is as little as 0.0005 mg. per cubic centimeter of the broth culture.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

- ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
CALIFORNIA: Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 135 Stockton St., San Francisco.
COLORADO: Denver, Oct. 4. Sec. Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.
FLORIDA: Tallahassee, Oct. 11. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Oct. 11. Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.
IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.
KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.
MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Sept. 26-28. Sec., Dr. Cortez F. Enloe, State House, Jefferson City.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. Alexander MacAlister, State House, Trenton.
NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.
NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 26-29. Mr. Herbert J. Hamilton, Asst. Professional Examinations, Education Bldg., Albany.
OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.
PHILIPPINE ISLANDS: Manila, Oct. 11. Sec., Dr. Fortunato Pineda, 612 Rizal Ave., Manila.
PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Bac, Box 804, San Juan.
RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.
UTAH: Salt Lake City, Oct. 4. Sec., Dr. J. T. Hammond, Capitol Bldg., Salt Lake City.
WEST VIRGINIA: Clarksburg, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.
WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

REPORT OF SPECIAL COMMITTEE REGARDING THE UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

A report has recently been issued regarding conditions at the University of Minnesota Medical School as the result of a survey made last February by a special committee consisting of Dr. Frank Billings, professor of medicine, Rush Medical College, Chicago; Dr. J. M. T. Finney, professor of surgery, Johns Hopkins University Medical Department, Baltimore, and Dr. Victor C. Vaughan, dean of the University of Michigan Medical School, Ann Arbor. The survey was made at the request of President L. D. Coffman in an attempt to solve several problems that have confronted the medical school during the last few years.

During the last few years certain complaints have been made by the alumni of the University of Minnesota Medical School and by general practitioners of the state in regard to the conduct of the medical school. This led to the appointment by the president of a committee of three men who would be absolutely unbiased and unprejudiced to investigate the charges. The committee in its report in regard to the appointment of a dean—one of the main problems under discussion—suggested that he should be nominated by the medical faculty for appointment by the board of regents. The committee made it clear, however, that its recommendation in no way "questioned the ability, honesty or devotion to his work of the present dean," and that "the character of the man is the most important of all the factors which qualify one for deanship."

Another problem was that connected with the merger of the Mayo Foundation with the medical school. On this point the committee reported that it was "unable to find the slightest evidence that Dr. William J. Mayo's interest in the Mayo Foundation has in any way biased his action or impaired his fitness as a regent. The committee is of the opinion that the presence of Dr. Mayo on the board has not been and is not now characterized by any action on his part derogatory to the development of the medical school." The committee referred to the Mayo Foundation as "an asset which is not equaled in any other university in the world."

A summary of the committee's recommendations follows:

The dean of the medical school should be nominated by the medical faculty for appointment by the board of regents, heads of all departments in the medical school having votes in this selection.

The laboratory facilities, buildings and equipment should be enlarged as quickly as possible.

The salaries of laboratory men should be increased.

Heads of clinical branches should be part-time men.

Enlargement of the university hospital to provide approximately from 400 to 500 beds.

Administrative officers of the faculty of the medical school should recognize the fact that the chief function of this school is to supply the state with general practitioners of medicine.

Every effort should be made by the administrative officers and the faculty to cooperate with and assist the practitioners of the state in furnishing them with opportunities for refreshing their knowledge in both laboratory and clinical branches and by helping them in the diagnosis and treatment of their cases.

In a resolution appended to the foreword in regard to the committee's report, the board of regents declares that "subject to the definitions of its powers and duties by the laws of the state, these principles set forth (in the committee's report) for the development of the medical school were adopted as the general policy which the board of regents will follow hereafter in its conduct of the medical school."

Alabama July Examination

Dr. Samuel W. Welch, chairman, Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, July 12-15, 1921. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 33 candidates examined, 32 passed and 1 failed. Eight candidates were licensed by reciprocity. One candidate was licensed on government credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Emory University.....	(1921) 82.7, 83.3, 85.5, 86.5, 86.9		
Tulane University.....	(1920) 83.5, 84.7, 85.2, 85.8, 88.9		
	(1921) 75, 82.8, 85.8, 86, 86.8, 86.9, 87, 88.4, 89.6		
	89.7, 90, 91.1, 91.7, 93.1, 93.5.		
University of Pennsylvania.....	(1921)		84.5
Memphis Hospital Medical College.....	(1911)		77
Vanderbilt University	(1921) 87.1, 87.4, 87.5		
Meharry Medical College.....	(1921)		75.4
Undergraduate			89.4

College	FAILED	Year Grad.	Reciprocity
Meharry Medical College.....	(1921)		71.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University	(1919)		Dist. Colum.
Atlanta School of Medicine.....	(1913)		Georgia
Chicago College of Medicine and Surgery.....	(1915)		Louisiana
Kentucky University Medical Department.....	(1902)		Kentucky
University of Oklahoma.....	(1915)		Oklahoma
University of Tennessee.....	(1919)		Mississippi
Medical College of Virginia.....	(1899), (1908)		Virginia
College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Medical College of Virginia.....	(1917)		U. S. Navy

Louisiana June Examination

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, June 9-11, 1921. The examination covered 12 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 67 candidates examined, 63 passed and 4 failed. Nine candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Tulane University.....	(1920) 78, 87.1, 79.3, 79.4, 79.5, 79.8, 80.3, 81.2, 81.3, 81.6, 82, 82.1, 82.1, 82.2, 82.2, 82.3, 82.5, 82.8, 83, 83.4, 83.6, 83.7, 83.9, 84.3, 84.5, 84.6, 84.8, 85.1, 85.3, 85.4, 85.6, 85.6, 85.8, 85.8, 85.8, 86.1, 86.3, 86.3, 86.4, 86.7, 86.9, 87, 87.2, 87.5, 87.5, 87.6, 87.7, 88.1, 88.1, 88.1, 88.1, 88.6, 88.9, 89.3, 89.4, 89.4, 89.4, 90.6, 90.8	(1921)	78
Meharry Medical College.....	(1921)		75.1, 75.3
Vanderbilt University	(1919)		78

College	FAILED	Year Grad.	Per Cent.
Tulane University	(1921)		67.3, 73.8
Meharry Medical College.....	(1912)		66.2, 49.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama.....	(1902)		Mississippi
Atlanta College of Physicians and Surgeons.....	(1902)		Mississippi
	(1904)		Georgia
College of Physicians and Surgeons, Chicago.....	(1903)		Illinois
University of Louisville Medical Department.....	(1915)		Mississippi
University of Missouri.....	(1898)		Missouri
University of Pennsylvania.....	(1907)		Maryland
University of Tennessee.....	(1915)		Arkansas
University of Texas.....	(1920)		Texas

Social Medicine and Medical Economics

THE DOCTOR'S FEE

Some months ago, the trustees of the Johns Hopkins Hospital promulgated a regulation to the effect that \$1,000 should be the maximum fee for any major operation performed in that institution unless under exceptional circumstances, and that the cost of professional services rendered by physicians should not exceed \$35 a week, which should include at least three visits by the physician. The announcement created intense interest throughout the country and was widely commented on.

EASTERN OPINIONS

The New York *Tribune*, while recognizing the fact that the present system of fixing medical fees is economically unsound, points out that the fixing of a maximum fee is likely to establish that also as a minimum fee. There have been few abuses, it believes, under the present system, and it emphasizes that few physicians leave large fortunes. "The Baltimore ruling," it says, "seems at war with the spirit of benevolence which has so long marked the medical profession, and this spirit will not yield tamely." The New York *Telegram* adopts the same point of view, considering the matter one best left to the individual physician and beyond the scope of medical ethics. The New York *Times* emphasizes that the medical profession has been underpaid in the past and that the rewards are not commensurate with the service rendered. The New York *World* feels that the Johns Hopkins dictum "sets a standard equally for the protection of the patient and the guidance of the profession," and that "it is an action in keeping with the best traditions of American medical practice." The Boston *Herald* feels that the present methods of fixing fees are economically unsound, that charity rendered to the poor aids pauperization, and that the fixing of a fee limit will redound beneficially to the ethical instruction of medical students. The Boston *Post* believes, however, that the system of making the high fees of the wealthy pay for the service to the poor is an assessment of which the rich do not complain, and that lowering the fee to the wealthy will result in raising the fee to the poor. The Philadelphia *Inquirer* considers the incident as an attempt to establish a standard scale of charge and therefore a soundly economic one. The Brooklyn *Citizen* states that the action of the Johns Hopkins trustees may be taken as evidence that there has been medical profiteering, and believes that it will pay cities throughout the nation to investigate into the matter. The Baltimore *News* says that medical service is worth precisely what the man who receives it can afford to pay, and it makes the announcement an occasion for commenting on the iniquitous practice of passing patients from one specialist to another for the treatment of minor ills. It follows with a plea that the medical profession take the public more into its confidence. The Auburn, N. Y., *Citizen* considers that doctors' fees are reasonable without the necessity for restriction by authority. The editor points out that the medical profession is the servant of the public and that if high grade service is not forthcoming at reasonable rates, the public will become not charity patients but government patients, since the people will insist upon public hospitals employing adequate talent. The Watertown, N. Y., *Standard* and Oil City, Pa., *Derrick* believe that physicians should not be restricted in any way in the fixing of their fees, whereas the York, Pa., *Dispatch* believes that the suffering public will not voice any long and loud complaint over the Johns Hopkins dictum.

RESPONSE OF THE MIDDLE WEST

Turning to the Middle West, there is almost a unanimity of opinion that the medical profession may be trusted to give its public reasonable and honest consideration in the matter of fees. The Columbus, Ohio, *Journal* eulogizes the profession, stating that "very few ever succumb to commercial temptation and make their profession a mere means for getting money." The Indianapolis *News* points out that physicians are resenting not the amount at which fees are fixed but interference with their freedom. The traditional attitude of the profession is also emphasized. The Fort Wayne, Ind., *Gazette* considers the action at Johns Hopkins as little likely

to influence fees elsewhere in this country. The Toledo, Ohio, *Blade* fears that the fixing of fees is a first step toward state medicine, "which for every good point has a thousand bad ones." "Mankind, when it throws away an institution, adopts another that is worse," said a pessimistic Frenchman, and the *Blade* believes that, if the rest of the nation follows the plan of the Hopkins trustees, we shall be proving the truth of the Frenchman's assertion. The Grand Rapids, Mich., *News* concludes that it will be better to let conscience be the medical man's guide, and the Pontiac, Mich., *Press* considers the relation of physician to patient a most personal one, but hesitates to approve "a system which possibly leaves too much to the individual conscience when that conscience is a sort of elastic affair not controlled by high ethical standards or any fundamental conception of right and wrong." The Milwaukee, Wis., *Journal* states that no fee can balance the value of the doctor's work and that the best we can do is to cancel the obligation with gratitude. "The Johns Hopkins trustees," it says, "set themselves a hard task when they undertook to translate to figures in a ledger the value of a doctor's services." The Waukesha, Wis., *Freeman* also eulogizes the medical profession and states that "there is moral justification to the custom of physicians and surgeons to charge what their services are worth, founded mainly on the financial status of the patient." The Sioux City, Iowa, *Journal* takes a middle course and hesitates to enter into such a delicate controversy. The Dubuque, Iowa, *Times* believes that physicians would make a satisfactory income under the Hopkins dictum, because many physicians and surgeons whose practice is not among the wealthy and who have never received a fee as high as \$1,000 from any patient managed to roll up yearly incomes which successful business men or lawyers would consider satisfactory. The Rockford, Ill., *Star* discusses the great cost in time and money of the present medical education, as well as the increasing growth of medicine as a humane profession, and states that "to fix the charge arbitrarily would affront that fine quality of service to humanity which must actuate those who could assist in alleviating bodily ills," and "it would seem that development of a professional conscience is more to be desired than the reduction of the matter of fees to the bleak simplicity of printed figures, as in an inexorable time table." The East St. Louis, Ill., *Journal* believes that physicians and surgeons are entitled to freedom in fixing fees, and points out that there is no compulsion on the part of patients in the choice of doctors.

WESTERN OPINION

In the West, also, editors defend the freedom of the medical profession. The Tacoma, Wash., *Ledger* does not wish to see doctors placed in the category of trade-unions. The medical profession is a charitable one; "regardless of possible remuneration, they give generously of their services and skill in emergency. It is ethical, perhaps it is just, that they should get their pay from those who are able to pay." The Globe, Ariz., *Record* considers the controversy an interesting one with justice on both sides, and states that the precedent is a challenge to other professions as well.

SOUTHERN VIEWS

The Washington, D. C., *Post* traces the history of previous attempts to fix medical fees, and states that they have resulted everywhere in signal failure. The New Orleans *Times-Picayune* considers the Johns Hopkins promulgation an evidence that there is profiteering among the medical profession, saying: "The public worm does not turn until sadly tread upon." It also wonders at the wide divergence between the \$1,000 surgeon's fee and the \$35 physician's fee. "As we have said," it continues, "we fear the worst, but it is at least well to know that the game is being played with some kind of a limit even if the blue chip does represent one thousand dollars." The Winston-Salem, N. C., *Journal* points out that the physician or the surgeon of the past has been a benevolent Robin Hood, and concludes that "graded prices, according to the means of the patients with an eye to justice to all, is obviously the desirable plan." The Dothan, Ala., *Eagle* and the Montgomery, Ala., *Advertiser* agree that the present method of varying charges according to income is the correct one, stating that otherwise the greatest of the professions would be the most underpaid. The Tuscaloosa, Ala., *News* follows the same trend, but emphasizes that the remuneration

of the general practitioner is not proportionate to that of the specialist. The Atlanta, Ga., *Constitution* and the Savannah, Ga., *Press* believe that the vast majority of medical men can be trusted to be fair and just in their dealings. The Galveston, Texas, *News* believes that the public will approve of the Hopkins regulation, whereas the Louisville, Ky., *Times* is convinced that with our medical profession fees are secondary considerations. The Nashville, Tenn., *Tennessean* and the Morristown, Tenn., *Mail* believe that the question of a fee rightfully is one that should be left to the physician and his patient.

THE EDITORIAL CONSENSUS

On the whole, the editorial opinion of the United States has been against the arbitrary fixing of fees of physicians, either by hospitals or by any other authority. The announcement of the new Hopkins regulation has served well, however, to bring to light the highly complimentary opinion of our profession held by the editors of the country, and to cause them to announce their opinions in their editorial columns—an action which they might otherwise not have felt called on to take. What an outrage that a man should be compelled to expend the cost of a new set of tires for a life-saving operation or the cost of a single tire for one week of medical attendance.

Book Notices

DIAGNOSTIK DER KINDERKRANKHEITEN MIT BESONDERER BERÜCKSICHTIGUNG DES SÄUGLINGS. Eine Wegleitung für praktische Aerzte und Studierende. Von Professor Dr. E. Feer, Direktor der Universitäts-Kinderklinik in Zürich. Paper. Price, 40 marks. Pp. 275, with 225 illustrations. Berlin: Julius Springer, 1921.

In this volume is considered the diagnosis of diseases of infancy and childhood. The author finds that stress on signs and symptoms in infancy and childhood is of the greatest importance from the standpoint of clinical study and is also most instructive to the student. It is obvious that, in the case of the infants, only the objective symptoms are of importance, because it has not the power of intelligent vocal expression. In somewhat older children the same signs are of importance because the child has not sufficient judgment to interpret and express correctly his subjective feelings. In his long experience as a teacher, the author has found that it is of great value from the pedagogic standpoint to consider and analyze minutely the outstanding symptoms. Even after a diagnosis has been arrived at, he finds it instructive to reflect on the value of the single symptom or sign to ascertain whether or not a diagnosis may be established on such a finding. He thinks that the discussion of such points as these are of value to the student as well as to the practitioner; for example, he asks: Is swelling of the tibia sufficient evidence of late syphilis or does a Chvostek facial phenomenon indicate a spasmophilia or is a skin eruption of a certain kind sufficiently diagnostic of scarlet fever? The author attempts these discussions in his book. He brings out the points in differential diagnosis, and he draws from his long and rich experience in differentiating closely the various signs, and symptoms. He makes a strong plea for the simple and older methods of clinical examination. He says that owing to the great progress which medicine has made during the last decennium the vast amount of experience and skill which the older clinicians possessed is more or less neglected in the modern clinical examination. He thinks it is an important part of instruction to train the special senses of the examining physician. He has insisted on this point in his clinic, and has trained his assistants and his students according to this plan. In this way he thinks he has increased their diagnostic acumen and their powers of observation. The patient himself is observed and studied by the ordinary clinical methods first, and the aid of the laboratory is sought later to confirm and assist in the diagnosis. If a patient is brought to the clinic for suspected syphilis, the blood is not sent to the laboratory at once for a Wassermann examination, but an exhaustive physical examination is made first. The condition of every organ is carefully noted, and every sign and symptom receives careful thought and consideration, and after all this has been done, the Wassermann test is made.

The same is true in meningitis. Feer does not permit his assistants ordinarily to make a lumbar puncture at the outset, but he insists that a careful history be obtained and a thorough examination be made. After all this has been done, the lumbar puncture is performed.

In the text the author takes up a great number of signs and symptoms, and gives striking and valuable information as to their meaning and importance. In considering physiognomy and facial expression, he refers among other things to the significance of sudden pallor. He points out that in a case of bronchopneumonia a striking pallor is ominous. In a premature baby, if the normal rosy complexion suddenly changes to a waxy pallor, and the eyes are sunken, one should suspect a severe nutritional disturbance or a sepsis. In the same chapter he describes the face which is characteristic for infantile tuberculosis. The upper lip projects upward. The external nares are thickened and often ulcerated. The cheeks are spotted. Very characteristic is the unilateral conjunctivitis with percorneal injection, with phlyctenules and photophobia. There are numerous descriptions of the facial expressions of the mongol, the idiot and the hydrocephalic infant. He also shows the photograph of a 4 months old baby with wrinkled forehead associated with wasting and vomiting. He considers the wrinkling of the forehead suggestive of pyloric stenosis. In considering the skin eruptions of the acute infectious diseases, he gives careful consideration to diagnosis and differentiation of the common exanthems. He considers at some length erythema infectiosum (measles), which is not commonly treated in textbooks. At the onset the eruption consists of small, red macules which appear first on the face. It is characteristic of this eruption that the macules increase in size and coalesce to form a large red patch on the face. They occur also on the extensor surface of the arms and on the glutei. In treating of the examination of the lungs, he points out that in his opinion there are certain advantages in auscultating the thorax with the unaided ear, and that on account of the superficial breathing of young infants the real condition of the breath sounds and the presence of râles is most advantageously elicited if the baby cries. He presents a very thoughtful chapter on the diagnosis of appendicitis in infancy and young childhood, and in conclusion he remarks that in a doubtful case of appendicitis it would be better to open the abdomen than to wait too long, because while rupture of the appendix would confirm the diagnosis, it would also cost the life of the patient.

The material is well presented. The discussions are concise, and one is impressed by the fact that the matter presented represents the experience and thoughtfulness of a master. The illustrations are profuse and well made. We regret, however, that there are not a few colored plates to illustrate the acute infections and the color changes in the skin and nails.

ANATOMIE DES MENSCHEN. Ein Lehrbuch für Studierende und Aerzte. Erster Band: Bewegungsapparat. Von Hermann Braus, O.ö. Professor an der Universität; Direktor der Anatomie Heidelberg. Cloth. Price, 86 marks. Pp. 835, with 400 illustrations. Berlin: Julius Springer, 1921.

This is the first of four parts of a textbook of anatomy devoted especially to a study of the living body. It assumes familiarity through dissection with the parts, and teaches how these parts have been built together into a working machine. This part treats of the locomotor apparatus, including bones, joints and muscles; the second part will treat of the viscera; the third, the peripheral conducting apparatus, including vessels and peripheral nerves; the fourth part is to cover the skin, central nervous system and sense organs. This volume contains, first, a dedication to Fürbringer, von Kölliker and Boveri, former teachers of the author, and, secondly, an introduction of twenty-four pages considering (a) the field of the science of anatomy, (b) method for the practical study of anatomy, (c) the general form of the body, and (d) the constituent tissues. Then follows the main part of the volume, dealing with the structures serving locomotion. The facts commonly filling books on descriptive anatomy are mostly condensed into tables, and the text is devoted to an endeavor to elucidate the form and structure and working of these parts in the living body. Each part is briefly treated by itself and well illustrated. Then it is considered as part of the

whole body. The manner of its mechanical working in combination with other parts is excellently studied. This is the outstanding feature of the volume. The subject is of fundamental interest and importance, but is dismissed with inadequate treatment in most textbooks. The sources of form are sought in the long past, during which we lived in our ancestors. The fundamental structure of vertebrates and especially of mammals is exhibited, and its modification in the human body shown. The cycle of changes from development to age is followed. The biologic view is a necessary foundation for such a study, and the dissection of cadavers only one of many means of making it. Observation of the living model, roentgenograms, moving pictures, palpation, percussion, observation of other animals, and comparison are among the means utilized throughout. The chief aim of the author has been synthesis: "Die Hauptaufgabe dieses Buches ist zu zeigen, wie die im Praktikum erforschten Teile sich zum lebendigen Gesamtbild zusammenfügen." It is well printed and well arranged. The table of contents is exhaustive and convenient. The subjects of paragraphs are indicated in the margins. The illustrations are new and beautifully executed. The book is indispensable to teachers of anatomy. Students and practitioners will find their study of anatomy under its guidance a source of keen interest, of pleasure and of help. The publication of succeeding volumes will be looked for with much interest.

TYPHUS FEVER WITH PARTICULAR REFERENCE TO THE SERBIAN EPIDEMIC. By Richard P. Strong, M.D., S.D., Director of the American Red Cross and International Sanitary Commissions to Serbia; George C. Shattuck, A.M., M.D., General Medical Secretary, League of the Red Cross Societies; Hans Zinsser, M.D., Professor of Bacteriology, Columbia University; A. W. Sellards, A.M., M.D., Assistant Professor of Tropical Medicine, Harvard University Medical School, and J. Gardner Hopkins, M.D., Bacteriologist of the American Red Cross Sanitary Commission to Serbia. Cloth. Pp. 273, with illustrations. Cambridge: Harvard University Press, 1920.

The first part (Strong) deals with the Serbian epidemic of typhus fever, with special reference to the measures for relief and prevention. The second part (Shattuck) is devoted to the clinical observations on typhus in Serbia in 1915. The third part (Sellards) contains a report on laboratory examinations in typhus fever, and the fourth part (Zinsser) is the report of the bacteriologist of the American Red Cross Sanitary Commission to Serbia. The book is of special interest to the practical epidemiologist.

INFANT-WELFARE WORK IN EUROPE. An Account of Recent Experiences in Great Britain, Austria, Belgium, France, Germany and Italy. By Nettie McGill. U. S. Department of Labor, Children's Bureau. Community Child-Welfare Series No. 1; Bureau Publication No. 76. Paper. Price, 20 cents. Pp. 169. Washington: Government Printing Office, 1921.

This pamphlet is one of the Children's Bureau monographs devoted largely to infant welfare work carried on in Great Britain, Austria, Belgium, France, Germany and Italy during the war. In the introduction, Sir Arthur Newsholme is quoted as saying that infant mortality figures are the most sensitive index we possess of social welfare and sanitary administration. The object of infant welfare work is to insure that each parent has within reach accurate counsel as to the hygiene of childhood and the general domestic conditions necessary to insure its maintenance. This involves the prevention, early discovery and prompt treatment of minor ailments as a means of preventing more serious diseases. One of the most effective means for such supervision is the infant welfare center, which was first established in France and has now spread to all civilized countries and has replaced the earlier milk stations. Prematernal, prenatal and obstetric care is also important; many detailed methods for securing these objects have been developed. A summary of conditions in the six countries engaged in the late war shows that in Great Britain a striking decrease in infant mortality took place during the first ten years of the present century with a further decline in the next five years. In the first year of the war, the death rate rose but in 1916, 1917 and 1918 fell again to normal. In 1916 it was the lowest ever reached in the three countries. Infant welfare work in Great Britain is now firmly established by law. In Austria, the infant death rate increased during the first year of the war, but later decreased. In Belgium, the infant death rate was decreasing at the beginning of the war. No nation wide figures are

given since 1912. In France, the infant mortality rate was decreasing at the beginning of the war. In 1914, the number in deaths per year per thousand live births was 109, which rose in 1915 to 141, fell in 1916 and 1917 to 122, and then rose again in 1918 to 138. In Germany, the infant death rate has been declining steadily for the last twenty years. It rose in 1912 to 147 infant deaths per thousand live births. In 1914 the rate was 164, in 1915, 154 and in 1915, 136, being a lower death rate in the third year of the war than the previous low point of 147 in 1912. In 1917, it rose again to 155. If these figures are correct, the infant mortality death rate, which we are told is the index of social and sanitary conditions, was lower in the third year of the war than it had ever been before in Germany. In Italy, a steadily falling death rate had in 1914 reached the point of 130, and in 1916 had risen to 166. No attempt is made in the pamphlet to summarize or compare the results in the different countries.

DISEASES OF CHILDREN FOR NURSES, INCLUDING INFANT FEEDING, THERAPEUTIC MEASURES EMPLOYED IN CHILDHOOD, TREATMENT FOR EMERGENCIES, PROPHYLAXIS, HYGIENE AND NURSING. By Robert S. McCombs, M.D., Instructor of Nurses at the Children's Hospital of Philadelphia. Fourth edition. Cloth. Price, \$3 net. Pp. 538, with illustrations. Philadelphia: W. B. Saunders Company, 1921.

This textbook presents the subject in a clear and comprehensive form; it deals with each part of the anatomy, taking up in a brief and concise manner the disorders of the different systems. New topics included in this edition are dehydration; care of hernias; diseases of the spleen, bones and muscles, and the ductless glands; epidemic encephalitis; acidosis; intraperitoneal injections; the use of surgical solution of chlorinated soda, and the von Pirquet skin test. There is also a brief review on the recent progress in artificial feeding. The chapters on artificial feeding and therapeutics are particularly practical and helpful, as are also the diet lists for the different periods of infancy and childhood.

SURGICAL ASPECTS OF DYSENTERY, INCLUDING LIVER-ABSCESS. By Zachary Cope, B.A., M.D., M.S., Surgeon to Out-Patients, St. Mary's Hospital. Cloth. Price, \$5. Pp. 157, with illustrations. New York: Oxford University Press, 1920.

An unusually extensive experience with dysentery has given the author an opportunity of handling a large number of the surgical complications. These comprise chiefly perforative lesions, peritonitis and liver abscess. The pathology is well handled, as is also the question of differential diagnosis between dysentery and other colonic lesions. I believe that the author is open to criticism, in using the aspirating needle in the diagnosis of liver abscess. The operative treatment of perforative peritonitis and liver abscess is well presented. The value of the work in the practice of surgery in a temperate climate consists chiefly in indicating some of the diagnostic possibilities in obscure lesions of the colon.

OUTWITTING OUR NERVES. A Primer of Psychotherapy. By Josephine A. Jackson, M.D., and Helen M. Salisbury. Cloth. Price, \$2.50. Pp. 403. New York: The Century Company, 1921.

The authors of this book attempt a simple, comprehensive presentation of Freudian principles. The book is written in a chatty, feminine style with a somewhat condescending tone frequently adopted by those trying to make a scientific subject intelligible to the layman. Except for this defect in style, the material presented is solid, fairly accurate and quite intelligible. Each chapter is accompanied by a well-prepared summary. There are references to suitable literature, and the cases cited are practical and not sensational. On the whole, this volume appears to be one of the best thus far prepared for presenting the difficult subject of mental medicine to the layman.

ORGANIC DEPENDENCE AND DISEASE: THEIR ORIGIN AND SIGNIFICANCE. By John M. Clarke, D.Sc., LL.D., New York State Paleontologist. Cloth. Price, \$3. Pp. 113, with illustrations. New Haven: Yale University Press, 1921.

Many physicians will be interested in reading about the results of investigations into life conditions in their earliest appearances. The discussion of the fate of the dependent races of life, to which many pathogenic microbes belong, is stimulating as well as illuminating, showing that "the clue to human destiny and social adjustment lies concealed in the rocks at our feet" in greater measure than many suspect.

Medicolegal

States May Enact Antinarcotic Laws

(*State of Minnesota v. Martinson* (U. S.), 41 Sup. Ct. R. 425)

The Supreme Court of the United States affirms a judgment of the Supreme Court of Minnesota which sustained one construing the statute of that state as making it unlawful for a physician to furnish certain narcotic drugs to habitual users out of stocks kept on hand by himself, which statute one Whipple was convicted of violating. The Supreme Court of the United States says that the grounds of attack on the statute were based on an alleged deprivation of federal rights, it being contended: first, that the statute exceeds the authority of the state in the exertion of its police power, in that it undertakes to regulate a lawful business in the manner prescribed in the statute, in violation of the fourteenth amendment to the Constitution of the United States, and secondly, that the statute conflicts with the terms and provisions of the federal Harrison Narcotic Law, and is therefore beyond the power of the state to enact.

There can be no question of the authority of the state in the exercise of its police power to regulate the administration, sale, prescription and use of dangerous and habit-forming drugs, such as are named in the statute. The right to exercise this power is so manifest in the interest of the public health and welfare that it is unnecessary to enter on a discussion of it beyond saying that it is too firmly established to be successfully called in question.

As to the alleged inconsistency between the state statute and the Harrison Narcotic Law, the state court held that there was no substantial conflict between the two enactments. The validity of the Harrison act was sustained by this court in *United States v. Doremus*, 249 U. S. 86, 39 Sup. Ct. 214, as a valid exercise of the authority of Congress under the power conferred by the constitution to levy excise taxes. The provisions of the state regulating the sale, dispensing or prescribing of drugs were held to bear a reasonable relation to the collection of the taxes provided for, and to be valid, although the statute affected the conduct of a business which was subject to regulation by the police power of the state.

It may be granted that the state has no power to enact laws which will render nugatory a law of Congress enacted to collect revenue under authority of constitutional enactments. But this court agrees with the state court that there is nothing in this statute which prevents Congress from enforcing the revenue act in question. It is true that the provisions regulating the sale, dispensation and disposition of the prohibited drugs are somewhat different in the two acts. The prohibitory measures of the federal statute do not apply to the disposition and dispensation of drugs by physicians registered under the act in regular course of professional practice, provided records are kept for official inspection. Under the state law, physicians can only furnish prescriptions to addicts, and may not dispense the drugs to such persons at pleasure from stocks of their own. There is certainly nothing in this state enactment, as construed by the Supreme Court of Minnesota, which interferes with the enforcement of the federal revenue law, and this court agrees with the state court that there is no conflict between the enactments such as will prevent the state from enforcing its own law on the subject.

Epidemic (Lethargic) Encephalitis Following Bumping of Head

(*Donovan v. Alliance Electric Co. et al.* (N. Y.), 186 N. Y. Supp. 813)

The Supreme Court of New York, Appellate Division, Third Department, holds that an award of the state industrial commission under the workmen's compensation law where epidemic encephalitis (sleeping sickness) followed a bumping of the head of the claimant should be reversed, and the commission be directed to compensate the claimant for the injuries to his head, and not for the disease which was not shown to have resulted from the injury. The court says that it was unable to find evidence justifying the conclusion that a man whose head was bumped, and who subse-

quently developed epidemic encephalitis, was entitled to compensation for such sickness. Neither the constitution of the state, amended to permit of the workmen's compensation law, nor the statute, contemplates payment for diseases which are not the natural and unavoidable result of accidental injuries. The wholly undisputed testimony of a physician was to the effect that epidemic encephalitis is not the result of trauma, but of infection, and his testimony was that the fact that the claimant developed epidemic encephalitis following the bump on his head was merely a coincidence. Nor was it the finding of the commission that the disease was caused by the accident, but was in the disjunctive, that the disease was "caused or activated by the injury," which, of course, was not a finding that it was "such disease or infection as may naturally and unavoidably result" from the injury. Moreover, it is generally understood that an infection does not result from a mere bump, in any event. The alleged fact that the claimant never had any previous illness was not evidence that he would not have had epidemic encephalitis if this accident had never happened. The purpose of the statute, as sanctioned by the amendment of the constitution, was to provide compensation for industrial accidents, for accidents inherent in the modern system of production, and not for the pensioning of those who suffered from disease not caused by such accidents. The theory of the law is that the accidents of an industry are proper overhead charges, and the effort of the commission to impose the burden of infectious disease on the industrial life of the state ought not to receive the sanction of this court.

Authority of State Department of Health

(*State Department of Health v. San Miguel County (N. M.)*, 195 Pac. R. 805)

The Supreme Court of New Mexico, in holding that it was error to dismiss the petition of the state department of health, which sought to recover for services rendered and materials furnished by it to San Miguel County in the performance of health work and the enforcement of health laws and rules, says that the sole question involved was the authority of the state department to act when the county commissioners did not appoint a health officer whose appointment was approved by the department. The approval of the state department of health is a prerequisite to invest the nominee for county health officer named by the board of county commissioners of a county with authority, and without such approval there can be no such officer qualified to act. The disapproval by the state department of health of the nominee for county health officer, and the failure, neglect or refusal to nominate one who is approved by the state department of health constitutes a failure, neglect and refusal of the local health authorities to do the work which Chapter 85, Laws of New Mexico of 1919, designates shall be done by the state department of health, and authorizes the state department of health to perform such work at the expense of the county.

Testimony as to Pus Three Months After Injury

(*Schuh v. Oil Well Supply Co. et al. (Calif.)*, 195 Pac. R. 703)

The District Court of Appeal of California, First District, Division 1, says that, in this action brought to recover damages for personal injuries, a physician, who had not examined the plaintiff until about three months after his injury, was asked to tell the jury in what condition he found the plaintiff's arm the first time he examined it. Over a general objection, he replied that he found the wound discharging both serum and pus and some blood with a foul odor, and that on probing the sinus he had discovered a spicule of dead bone, but he could not say that the condition he found was part of or resultant from any improper treatment prior to the time that the plaintiff came to him. The part of the answer referring to the pus condition was attacked on the ground that the proper foundation had not been laid for the question in that it had not been shown that the pus condition might not have resulted from the carelessness of the plaintiff or some of his attendants; but the court holds that the evidence was competent, though whether or not this condition was one of the natural consequences of the accident was a question for the jury.

Society Proceedings

COMING MEETINGS

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Child Hygiene Association, New Haven, Conn., Nov. 2-5.
American College of Surgeons, Philadelphia, Oct. 24-28.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Oct. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 19-22.
Medical Association of the Southwest, Kansas City, Mo., Oct. 25-28.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
Missouri Valley, Medical Society of the, Kansas City, Mo., Oct. 25-28.
New England Surgical Society, Worcester, Mass., Sept. 21-22.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-5.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.

MINNESOTA STATE MEDICAL ASSOCIATION

Fifty-Third Annual Session, held at Duluth, Aug. 24-26, 1921

The President, DR. C. EUGENE RIGGS, St. Paul, in the Chair

Anaphylaxis to Food Proteins in Breast-Fed Infants and Its Probable Relation to Certain Diseases of the Nursing Infant, Especially Exudative Diathesis

DR. W. RAY SHANNON, St. Paul: Egg and veal protein may appear in the breast milk after their ingestion by nursing mothers. Colic, vomiting, diarrhea, repeated respiratory infections, milk crust, seborrhea and eczema in breast-fed babies are often the result of allergic reactions to foods coming to the infant through the breast milk. In the cutaneous tests on infants, the erythematous reaction is more common than the wheal and therefore more important. Sensitization often is multiple and may be to a majority of the foods in the mother's dietary. The repeated exacerbations of eczema may be due to newly acquired sensitization to foods the mother eats. The manifestations of exudative diathesis are the result of anaphylactic reactions to food proteins in the mother's dietary, and not a result of fat intolerance, in the majority of cases.

Circulatory Disturbances of the Feet

DR. EMIL S. GEIST, Minneapolis: The treatment is largely symptomatic, but careful attention often relieves the patient of pain. Sodium nitrite and potassium iodid may be tried. Alternate hot and cold foot baths often relieve and are of great value. Woolen stockings for day and night are to be recommended. Abstinence from coffee and tobacco is important. Heliotherapy is followed by good results in some cases. Rest to the feet is, of course, indicated.

The Treatment of Tuberculosis of the Spine

DR. WALLACE H. COLE, St. Paul: The treatment of tuberculosis of the spine in children should be routinely conservative, operative therapy being only occasionally indicated. The treatment in adults should be more radical. Operative measures are merely complementary to and do not replace the older classical methods of treatment, the underlying principle remaining always the same. The actual tuberculous infection remains for many months or years in the vertebrae, and it is probable that the operative fixation of the spine does not hasten its elimination more than the proper conservative methods.

Urinary Lithiasis in Children

DRS. GILBERT J. THOMAS and CHESTER O. TANNER, Minneapolis: Urinary lithiasis is frequent in childhood and infancy, the average occurrence in the three large series reported being 43 per cent. The average age is 7.8 years. The youngest patient in this series was 10 months old. We are unable to determine the etiology of urinary stones in infants, although infection is one of the factors. In 21 per cent. of our cases, stones were found in the kidney or ureters. The comparison of right kidney to left is as 21 to 8. Only 8 per cent. were arrested in the ureter. Sixty-nine per cent. of stones were found in the urethra or bladder. A large num-

ber of these had their origin in the kidney. The symptomatology in the order of occurrence is: (1) pain and colic; (2) hematuria; (3) frequency; (4) pyuria; (5) dysuria, and (6) nausea and vomiting. Cystoscopic examination can be made in very young infants. The infant ureter is proportionately large, is capable of great distention, and facilitates the easy passage of stone. The diagnosis is made from the following positive findings: (1) roentgen ray (55 per cent.); (2) urinalysis (52 per cent.); (3) cystoscopy (33 per cent.), and (4) clinical findings alone (11 per cent.). Surgery is indicated when stones do not progress through the urinary tract. Seventy-eight per cent. of operations were done on the bladder and urethra. When renal stones are bilateral, surgery should be carefully considered. The prognosis is unusually good. In this series, there were two deaths, one with bilateral stones, the other occurring in conjunction with urinary malformation; 50 per cent. were reported cured; 2.5 per cent. had recurrence of symptoms, and 47 per cent. were not reported. Urinary stone in children may remain symptomless for many years. In one of our patients, ureteral or bladder stone had been present for eight years with slight symptoms. Stones discovered during adult life may have their beginning during childhood or infancy.

Suspension and Traction in Treatment of Fractures of Extremities

DRS. A. W. IDE and B. I. DERAUF, Brainerd: Although suspension and traction treatment has been used for several decades, it is only during and after the recent war that there has been some standardization of the method. Reduction can easily be maintained and earlier restoration of function is obtained. Extension may be obtained by either skeletal or skin traction. Massage and passive motion should be started as early as is consistent with immobility of the fracture.

Cystocele and Prolapse

DR. ROBERT EARL, St. Paul: The uterus is maintained at its normal level in the pelvis by its ligaments. Because of the elasticity of these ligaments, it has a considerable range of motion. The pelvic diaphragm when in normal condition prevents the intra-abdominal pressure from stretching the supporting ligaments of the uterus. Any operative procedure for the cure of prolapse or cystocele should aim to restore to as nearly a normal condition as possible the normal supports of the uterus and bladder. The alteration of the normal relationship of the pelvic organs or their fixation to the abdominal wall should be measures of last resort.

Treatment of Pericarditis with Effusion

DR. CARL A. HEDBLUM, Rochester: Pericarditis with effusion occurs most frequently in association with acute rheumatism. In children, pericarditis usually follows pulmonary or pleural infection. The most characteristic symptoms are increased precardiac dullness, feeble or absent heart sounds, absent apex impulse, small rapid pulse, dyspnea and cyanosis. Exploratory pericardiocentesis may be necessary to establish the diagnosis of the presence of fluid and its nature. Exploratory pericardiocentesis with a short hypodermic needle which infiltrates the tissues with procain as it enters is as simple and painless, and will probably prove equally as harmless as exploratory aspiration of the pleural cavity. The point of election for aspiration seems to be in the region of the left mammary line, fifth interspace, just inside the left border of dullness. In case aspiration here is negative, alternate points are beneath the xiphoid process (Marfan) at the left sternal border and at the right sternal border in the fifth interspace. A negative aspiration at any one point, especially at the left sternal border, does not exclude the presence of fluid. A serous effusion is usually sterile, but it may be infected. A purulent exudate is usually infected, but it may be tuberculous or secondary to malignant disease. Preliminary partial evacuation of any exudate may probably be accomplished during exploration through an aspirating needle and a small syringe. A sterile exudate, except the persistently recurring type, should be evacuated by aspiration through a small, short needle. An infected exudate should be evacuated by pericardiotomy after preliminary resection of the cartilage, in order to secure wide

open dependent drainage. If the patient is critically ill, a bedside operation under local anesthesia is especially indicated. Knife section of the cartilage obviates the necessity of freeing it from underneath before it is resected.

Potter Version

DR. W. A. COVENTRY, Duluth: Our observations and those of others have been that Potter version, with proper kneading out of the perineum, does protect the maternal soft parts. The morbidity is decidedly lessened on account of the fact that the patient is saved the second stage of labor and the fatigue that goes with it, so that she is better able to resist infection.

Principles Governing the Treatment of Fractures

DR. E. K. GREEN, Minneapolis: Union is best obtained in the presence of a certain amount of mobility. Alinement is obtained only by studying the mechanics and properly applying extension, counterextension, etc. Complete reduction can be obtained only by sufficient weight properly applied.

Painful Scars

DR. J. E. CORBETT, Minneapolis: Surgeons should pay more attention to nerve supply and conserve nerves when possible. Blood vessel ligatures should not include nerves. In cases of amputation or whenever a nerve must be cut, the proximal part of the nerve should be injected with alcohol with the purpose of preventing neuromas. In all operations on nerves associated with pain, watch must be kept for neuromas in small, unimportant nerves. Neurologic examination may reveal nerve lesions in patients presenting themselves for reoperation for adhesions, etc. After alcohol injection of a nerve, the nerve stump should be so planned that it will not be subject to irritation.

Marginal and Jejunal Ulcers Following Gastro-Enterostomy

DR. F. C. SCHULTZ, St. Paul: Following gastro-enterostomy, a long period of prophylaxis should be carried out. Although the question of the suture is still in the balance, it is advisable to discontinue the use of nonabsorbable suture material. One factor in the etiology of jejunal ulcer lies in the new physiology of acid chyme impact, on mucous membrane with alkaline habits.

The Clinical Estimate of Myocardial Damage

DR. S. M. WHITE, Minneapolis: Auricular fibrillation with its absolute irregularities of time and force of ventricular contraction provides an extreme illustration of the fatigue which may result in the heart because of extreme irregularities, and the pulse deficit (that is, the failure of a certain number of pulse waves to be appreciable at the radial artery) is indicative of the extent to which ineffective ventricular contractions have occurred. Many cases of acute decompensation are due in large part to the increased rate and the irregularity of the ventricles in auricular fibrillation.

Tachycardias, of whatever origin, when the rate is high enough, result commonly in exhaustion of the heart muscle, and many instances of paroxysmal tachycardia of from twenty-four to forty-eight hours' duration or longer have been reported and several have been observed by the author in which clinical symptoms and signs of decompensation have occurred, to clear up promptly on the cessation of the tachycardia. It is not possible for the heart muscle to change its character in so short a time, and it can only be that the increased rate of the heart itself, probably accompanied by temporary nutritional changes, have been responsible for the temporary decompensation.

Blastomycosis: Clinical Pathology and Therapeutics

DR. BENJAMIN F. DAVIS, Duluth: In the treatment of any form of blastomycosis, certain general measures are worthy of consideration. As in the tuberculous, fresh air, rest and good food are of prime importance. This is especially true of the generalized cases. Certain drugs have been found of benefit. Potassium iodid by mouth in large doses has for years been routine in certain clinics with good results. Arsphenamin, intravenously, has given marked benefit in some cases, while from South America come reports of the efficiency of tartar emetic given intravenously. In cases of

cutaneous blastomycosis, in addition to general measures, clean surgical excision is a logical procedure when the lesion is so situated that serious mutilation will not be thus produced.

Results in the Treatment of Inflammatory Diseases of the Gallbladder and Its Ducts

DR. ORVILLE N. MELAND, Warren: The prognosis of cases following operative interference on the gallbladder and biliary tract is dependent on the group in which the patient falls. Those patients complaining of acute attacks of pain or a dull aching pain under the right costal border are practically always cured or benefited, and in case of recurrence of symptoms, they can be reoperated on with a good reassurance of recovery. However, one third or more of patients in whom symptoms are mainly gastric may return with the identical symptoms; and in those patients who come back and tell us how bad they feel after operation, we cannot recommend any further surgical interference with any degree of success.

Hysterical Dysphagia

DR. PORTER P. WILSON, Rochester: Although hysterical dysphagia is a functional disorder, the prolonged unbalanced diet gives rise to enlargement of the spleen and secondary anemia. Normal deglutition can be restored by passing an esophageal sound. Recurrences are liable to occur, but can be relieved by further passage of sounds and by constantly reassuring the patient. When normal deglutition is restored, the blood picture returns to normal, and the splenic enlargement subsides. Hypothyroidism may develop after the patient begins to swallow freely, owing to the inability of the thyroid to furnish secretion enough to care for the increased food intake.

Vital Capacity of the Lungs in Cardiac Disease

DRS. HENRY L. ULRICH and MORRIS H. NATHANSON, Minneapolis: The vital capacity of the lungs is found to be definitely reduced in cardiac disease when there is evidence of functional impairment. Vital capacity studies aid in differentiating cardiac dyspnea from other types. The reduction in vital capacity runs parallel to the impairment of heart function. The most reasonable explanation of the reduced vital capacity is on the basis of a physical change in the lung tissue due to an altered pulmonary circulation. Vital capacity studies are of practical aid in cardiac disease in diagnosis, prognosis and treatment.

Manifestations of the Spasmophilic Diathesis in Older Children

DR. C. A. SCHERER, Duluth: While the chemistry of the blood may not reveal changes in the calcium content, there is a hyperexcitability of the nervous system which can be shown by the electrical reactions. The condition is relieved by the use of liberal doses of calcium, combined with cod liver oil. The determination of the electrical reactions is a simple procedure, and the results obtained justify the further study of the condition.

Epidemic of Paratyphoid Fever Among University Students

DR. C. A. MCKINLAY, Minneapolis: In an epidemic of approximately 106 cases of paratyphoid fever among students, the clinical features were those of typhoid fever with variation in the occurrence of herpes about the lips in several cases, with unusually numerous and large rose spots, with comparatively sudden onset, and with frequent profuse sweating, intermittent fever and often quite rapid lysis of fever. Complications were present in about 4 per cent. of the cases, and the mortality rate was about 2 per cent. Infection probably occurred through the contamination of bulk milk by carriers. Vaccination from one to three years previously did not confer immunity in the twenty individuals who had been previously inoculated with triple vaccine, or appreciably alter the course of the disease.

Referred Pain in Heart Disease

DR. CHARLES N. HENSEL, St. Paul: Pain is a frequent finding in heart disease independent of angina pectoris. Pain is a warning signal of an improperly functioning organ, and in this sense is a protective reflex. Pain is not felt in the heart but is a referred pain, through the afferent sympathetic fibers from the heart to the spinal cord and out along the contiguous sensory and motor spinal nerves. The distribution

of the contiguous sensory and motor segments is to the body wall of neck, shoulder, chest, arm and hand. Constant afferent stimuli to the spinal cord may cause an area of hyperirritability in the cord constantly stimulating sensory and motor segments. There result areas of pain and tenderness in skin and body wall which are frequently diagnosed as intercostal neuralgia, muscular rheumatism or neuritis. These pains are protests from an overworked, engorged, inflamed, underfed or decaying heart. Pain similar to angina pectoris may arise from the heart rather than the aorta; consequently, all pains in these areas demand investigation of the cardiac function. If the result of the cardiac examination is doubtful, treatment of a laboring heart will often bring relief.

Carcinoma of the Lung

DR. MOSES BARRON, Minneapolis: Carcinoma of the lung is a rare disease, but its rarity is exaggerated by the non-recognition of many of those cases that do occur. It is only through necropsy that many are revealed. Carcinoma of the lung is a diagnosable disease clinically. However, a diagnosis is possible only when careful and detailed histories are taken and accurate physical examinations are made. Laboratory and roentgenographic studies may also be helpful. All facts obtained must be carefully correlated. Statistics show that complete examinations of the patients have in the hands of certain practitioners resulted in correct clinical diagnosis in from 80 to 95 per cent. of the cases. This disease is apparently increasing in frequency, especially during the last few years. Chronic inflammations, such as tuberculosis, are factors in the etiology of the disease. The last great influenza epidemic is perhaps another factor. The average incidence has been about 2 per hundred necropsies. In our series during the last few years the increase has been about fourfold. The disease has formed about 2 per cent. of the cases of cancers seen at the postmortem studies. Most pulmonary carcinomas develop from the bronchial epithelium. Some originate from the bronchial mucous glands and only a few arise from the alveolar epithelial cells. Epithelial metaplasia is relatively common in bronchial mucous membrane. This may explain the origin of the comparatively large number of squamous cell carcinomas in this region. Metastases are common in this disease and often are numerous. The frequency of secondary tumors to the brain, suprarenal and thyroid is very striking. Pain in the chest, cough and dyspnea occur early. Bloody sputum, cornage and asymmetry of the chest are important findings in these cases. Laboratory procedures and roentgenologic studies have thus far not proved of great assistance in the differential diagnosis. Bronchiectasis is an important complication, especially since it may give misleading physical and roentgenologic findings during the course of the disease. The study of the thirteen cases reported in this paper shows the importance of assuming a new attitude toward this disease with reference to its prevalence and diagnosability. The two cases encountered at the University Hospital during the last year were both recognized clinically; but ten of the remaining eleven of this series were not diagnosed correctly. This fact points strongly to the necessity of greater familiarity with the signs, symptoms and pathology of the disease.

Etiology and Laboratory Diagnosis of Actinomycosis

DRS. ARTHUR H. SANFORD and THOMAS B. MAGATH, Rochester: We wish to emphasize that actinomycosis, while an uncommon disease, is not so rare as many imagine. In a patient with an acute or subacute infection of the cervicofacial region, especially if there has been dental trouble on the affected side, or a history of definite injury, this disease must be suspected. A differential diagnosis must also be made in those types of abdominal lesions in which a sinus persists after drainage of an abscess. The careful examination of the discharge in either type of case for characteristic sulphur bodies will lead to the correct diagnosis clinically, which is readily substantiated by simple laboratory procedures. While the biologic characteristics of the causative organism and its place in the vegetable world has been defined, the etiologic factors concerned in the production of infection in man or beast are not known. It is still of interest to report accurately all details regarding cases of actinomycosis and thus stimulate further research in the life history of *Actinomyces*.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

August, 1921, 2, No. 2

- American Gynecology. W. W. Chipman, Montreal, Que.—p. 119.
Unsolved Problems in Gynecology and Obstetrics. W. B. Bell, Liverpool, England.—p. 130.
Frequency and Cause of Abortion. A. W. Meyer, Palo Alto, Calif.—p. 138.
*Spontaneous Evolution Following Transverse Presentation of Fetus. M. Marshall, Pittsburgh.—p. 152.
*Significance of Pelvic Outlet in Perineal Lacerations, Cystocele, and Prolapse. A. Morse, New Haven, Conn.—p. 159.
*Postoperative Tetany Due to Sodium Bicarbonate. W. P. Healy, New York.—p. 164.
Drainage of Pus-Forming Lesions of Abdominal Cavity. J. W. Kennedy, Philadelphia.—p. 170.
Use of Iodin in Preparation of Women for Delivery. B. Lankford, Norfolk, Va.—p. 176.
Behavior of Uterus in Eclampsia: Case Report. M. P. Rucker, Richmond, Va.—p. 179.
Two Cases of Fimbrial Cysts: One with Twisted Pedicle and Gangrene Complicating Pregnancy and One Simulating an Ectopic Gestation. H. Cohen, New York.—p. 184.
Histologic Study of Fetus and Implantation Site in Case of Missed Abortion. J. P. Greenhill, Chicago.—p. 188.

Spontaneous Evolution in Transverse Presentation.—The case reported by Marshall was the only one occurring in a total of about 3,500 deliveries at or near full term. He says that spontaneous evolution is so rare that it cannot be relied on to solve the problem of a fetus presenting transversely and impacted. The only accurately described mechanism of this delivery is that of Douglas, which was the type observed in this case.

Study of Pelvic Outlet.—In 100 women presenting perineal laceration, cystocele, or prolapse, mensuration of the pelvis demonstrated a bony outlet of normal dimensions in seventy-nine and a typical funnel pelvis in twenty-one. Of the seventy-nine women with a normal outlet, sixty, or 76 per cent., showed a cystocele or prolapse as the outstanding lesion, while in nineteen, 24 per cent., a perineal laceration was unassociated with these conditions. Of the twenty-one women in whom a funnel pelvis was diagnosed, lesions of the structures in the anterior half of the pelvic diaphragm were present in but seven, or 33 per cent. In fourteen, or 67 per cent., a plastic operation was necessary upon the perineum only. The significance of the forceps operation in the production of injuries to the supporting structures in the anterior portion of the pelvic floor is emphasized. Of nineteen women in whom the outlet was normal and unassociated with cystocele or prolapse, but, four, or 21 per cent., had been delivered by this procedure. On the other hand, of the sixty women with the same type of outlet, but presenting these lesions, twenty-four, or 40 per cent., gave a history of one or more labors terminated instrumentally. Cystocele or prolapse was most frequently found in women possessing an inferior strait of such dimensions that there could be no disproportion between a normal-sized, well-fixed head and the pubic arch. This association is attributable to the fact that as the occiput passes closely beneath the symphysis damage to the supporting structures occurs, predisposing to descent of the bladder and uterus.

Postoperative Tetany Due to Sodium Bicarbonate.—In the seven cases reported by Healy symptoms of tetany in its varied manifestations occurred after celiotomy for operations on the pelvic viscera. Onset of the typical hand symptoms was observed as early as seven hours after operation and the symptoms terminated within forty-eight hours after operation in each case—either in response to treatment, or by the death of the patient. There were four deaths and three recoveries. The patients received nitrous oxid and ether anesthesia administered by a specialist and the operations were done by four different surgeons. The last three patients recovered after the administration of calcium lactate by mouth. In one of these cases, the symptoms had been present twenty hours before the calcium lactate, with lime water, was

given. These cases occurred irregularly over a period of four months. The symptoms in the fatal cases were tachycardia, profuse diaphoresis, hyperpyrexia, epigastric distress, bilateral, symmetrical spasms and contractions of muscles, especially of the upper extremity, and convulsions. The source of trouble was apparently finally traced to the glucose and sodium bicarbonate enema administered as a routine in most of the major operation cases. This was supposed to contain 5 per cent. glucose and 5 per cent. sodium bicarbonate in eight ounces of water at a temperature of from 100 to 110 F. It was given as soon as possible after the return of the patient from the operating room, and was repeated again in four hours. The first enema also contained forty grains of sodium bromid. Through an error in calculation, 1,200 grains of sodium bicarbonate was given with enema instead of 180 grains; and enough of this was absorbed in a short time to upset the normal relations between the sodium, potassium, calcium, and other ions in the neuromuscular tissues, resulting in the symptoms described.

American Journal of Ophthalmology, Chicago

August, 1921, 4, No. 8

- Typical Siderosis of Crystalline Lens. No Clinical Evidence of a Splinter of Iron. D. Van Duyse and M. Danis.—p. 561.
Etiology of Chronic Meibomitis. S. R. Gifford, Omaha.—p. 566.
Some New Tests for Astigmatism. E. E. Maddox, Bournemouth, England.—p. 571.
Disciform Keratitis Secondary to Smallpox. H. K. Fleck, Baltimore.—p. 573.
Ocular Disturbances in Encephalitis Lethargica. P. J. Waredenburg, Arnheim, Holland.—p. 580.
Ocular Manifestations in Encephalitis Lethargica. G. I. Hogue, Milwaukee.—p. 592.
Barraquer Intracapsular Cataract Operation. A. S. Green, San Francisco, and R. P. Luna, Guatemala, C. A.—p. 595.
Simplified Intranasal Operation for Obstruction of Nasolacrimal Duct. R. H. Good, Chicago.—p. 597.
Subconjunctival Dislocation of Crystalline Lens. G. C. Albright, Iowa City, Ia.—p. 601.
Point in Technic of Iodin Treatment of Corneal Ulcers. H. Gifford, Omaha.—p. 604.
Illuminated Test-Card Holder for Near. A. Cowan, Philadelphia.—p. 604.
Magnetized Knife to Extract Small Magnetic Foreign Bodies from Anterior Chamber. J. M. Patton, Omaha.—p. 605.
Bilateral Dislocation of Crystalline Lens; Removal. W. G. Putnam, Yarmouth, N. S.—p. 605.

American Journal of Physiology, Baltimore

Aug. 1, 1921, 57, No. 1

- Physiologic Action Currents in Phrenic Nerve. Application of Thermionic Vacuum Tube to Nerve Physiology. H. S. Gasser and H. S. Newcomer, St. Louis.—p. 1.
Output of Heart in Dogs. G. N. Stewart, Cleveland.—p. 27.
Secretion of Pars Pylorica Gastrica. A. C. Ivy and Y. Oyama, Chicago.—p. 51.
Studies in Nutrition. IX. Nutritive Value of Proteins from Chinese and Georgia Velvet Beans. A. J. Finks and C. O. Johns, Washington, D. C.—p. 61.
Mechanism of Recovery or Maintenance of Systemic Blood Pressure After Complete Transection of Spinal Cord. A. B. Yates, Cambridge, Mass.—p. 68.
*Effect of Hemorrhage on Sympathetic Nerves. H. McGuigan and H. V. Atkinson, Chicago.—p. 95.
Changes in Concentration of Carbon Dioxid Resulting from Changes in Volume of Blood Flowing Through Medulla Oblongata. A. B. Hastings, H. C. Combs and F. H. Pike, New York.—p. 104.
Action of Neutral Isotonic Salt Solutions in Sensitizing Arbacia Eggs to Activating Influence of Hypertonic Sea Water. R. S. Lillie and M. L. Baskerville, Cleveland.—p. 110.
Is Catalase a Measure of Metabolic Activity? S. Morgulis, Omaha.—p. 125.
*Influence of Glands with Internal Secretion on Respiratory Exchange. II. Effect of Suprarenal Insufficiency in Rabbits. D. Marine and E. J. Baumann, New York.—p. 135.
Studies on Neuromuscular Transmission. I. Action of Procain on Muscle Nuclei. J. F. Fulton.—p. 153.
Types of Oscillations in Diaphragm Muscle. L. B. Nice and A. J. Neill, Norman, Okla.—p. 171.

Effect of Hemorrhage on Sympathetic Nerves.—McGuigan and Atkinson assert that hemorrhage in many cases sensitizes or stimulates the sympathetic system governing vascular tone. By the use of drugs that are known to stimulate or depress the centers and which have a lesser or no effect on the periphery, it is shown that the greater influence of the hemorrhage on the vasomotor mechanism is peripheral.

Effect on Metabolism of Removing Suprarenals.—Marine and Baumann found that removing or crippling (by freezing) the suprarenal glands in rabbits causes a disturbance in metabolism, usually characterized by increased heat produc-

tion and carbon dioxid output. This disturbance appears definitely related to the completeness of removal of the cortical function. The symptom complex including both anatomic and physiologic data which results from the destruction of the suprarenal function in rabbits resembles in many essential features the symptom complex of exophthalmic goiter.

American Journal of Public Health, Chicago

August, 1921, 11, No. 8

- Labor Camp Sanitation; Basis for Education and Citizenship. R. J. Miller, San Francisco.—p. 697.
Bactericidal Action of Water Treated by Ultra Violet Rays. W. F. Walker, Detroit.—p. 703.
Functions and Relationships of Bureaus of Child Hygiene and Bureaus of Public Health Nursing in State-Boards of Health. J. L. Marriner, Montgomery, Ala.—p. 707.
Value of Public Health Nurse in Public Health and Welfare Administration. C. J. Hastings, Toronto, Ont.—p. 712.
Health Teaching and School Health Program. C. E. Turner, Cambridge, Mass.—p. 717.
Measuring Rods of Infant Mortality. D. M. Lewis, Charleston, W. Va.—p. 721.
Maritime Quarantine a Constructive Health Agency. S. B. Grubbs, Panama Canal.—p. 725.
Practical Laboratory Diagnosis of Typhoid Fever. A. H. Strauss, Richmond, Va.—p. 729.
Testing of Antistreptococcus Serum. E. M. A. Enlows, Washington, D. C.—p. 733.
Study in Dental Prophylaxis. T. P. Hyatt, New York.—p. 739.
Applied Sanitation in Alabama. G. H. Hazelhurst and C. A. Abele, Montgomery, Ala.—p. 741.
Market Milk Rating from a Public Health Standpoint. R. S. Dearstyne, Raleigh, N. C.—p. 743.

American Journal of Syphilis, St. Louis

July, 1921, 5, No. 3

- Venereal Disease Control. C. C. Pierce, Washington, D. C.—p. 377.
*Experimental Observations on Effect of Cholesteremia on Results of Wassermann Test. C. F. Craig and W. C. Williams, Washington, D. C.—p. 392.
*Viability of *Spirochaeta Pallida* in Excised Tissue and Necropsy Material. G. R. Lacy and S. R. Haythorn, Pittsburgh.—p. 401.
*Case of Syphilis of Prostate. A. S. Warthin, Ann Arbor, Mich.—p. 409.
Flocculation Reactions in Syphilis: Meinicke and Sachs-Georgie Reactions. S. A. Levinson, Chicago.—p. 414.
Studies in Standardization of Wassermann Reaction. XIX. Factors Relating to Serum and Serum Control Tube. J. A. Kolmer, Philadelphia.—p. 439.
Id. XX. Study of Factors Influencing Amount of Hemolysin Employed in Complement-Fixation Tests. J. A. Kolmer, E. Yagle and A. M. Rule, Philadelphia.—p. 451.
Spinal Puncture in Diagnosis and Treatment. C. H. Bastron, Lincoln, Neb.—p. 463.
Diagnosis of Syphilis. H. H. Hazen, Washington, D. C.—p. 472.
Complement-Fixation Tests with Two Antigens. Comparison of Results of Series of Routing Public Health Complement-Fixation Tests for Syphilis with Two Antigens. M. E. Larkin, Seattle, Wash.—p. 476.
*Luetin. H. C. Ward, Detroit.—p. 482.
*Valuable Method of Treatment in Selected Cases of Syphilis. W. H. Guy, Pittsburgh.—p. 496.

Effect of Cholesterinemia on Wassermann Test.—The feeding of 1.25 gm. cholesterin per kilo of body weight to rabbits Craig and Williams found resulted in an enormous accumulation of cholesterin in the blood, an accumulation that persists, in some instances; for several days after the feeding is stopped. However, there is no relationship between the cholesterin content of the blood serum of rabbits and the results of the Wassermann test, all of the animals experimented on giving a consistently negative reaction despite the enormous increase in the cholesterin content of their blood serum resulting from the feeding of this substance.

Viability of *Spirochaeta Pallida*.—From the experiments made by Lacy and Haythorn it is evident that spirochetes kept in serum or moist tissue, either human or animal, may retain slight motility as long as three months or more. Complete drying is probably fatal to the *Spirochaeta pallida*, since each of our rabbits inoculated with dried spirochetes on scalpels, failed to develop syphilitic lesions, *Spirochaeta pallida* may, and in one case did, remain virulent in necropsy material for twenty-six hours or longer.

Syphilis of Prostate.—Warthin makes a full report of what he claims is the only positively demonstrated case of syphilis of the prostate existing in the literature at the present time. It is shown that the prostate may present characteristic lesions of syphilis relatively early in the course of the infection, and that these may exist in a marked degree without causing any enlargement of the organ, or any symptoms

directly referable to it. The histologic picture of syphilis in this organ is identical with that found in the myocardium, aortic wall, suprarenals, and other organs.

Luetin.—Ward calls attention to the finding of 27 per cent. positive luetin reactions in forty-seven syphilitics. In a second series of 200 unselected cases there were 75 per cent. corroborative returns. As an indicator of the value of anti-syphilitic treatment it has verified the Wassermann test in a high proportion of cases but remained positive in from 10 to 15 per cent. These findings are suggestive that luetin as a measure of the allergic reaction in syphilis has a much higher value both negatively and positively than has been emphasized heretofore.

Treatment of Syphilis.—Guy gives 1 gm. arsphenamin for each 30 pounds of body weight on each of three successive days. This is repeated after one month, and again after the same interval. In selected primary cases he occasionally gives the second three injections of arsphenamin after an interval of two weeks. The patients are also kept saturated with mercury during this same period, either soluble or insoluble salts being used intramuscularly, dosage being estimated according to the tolerance of the individual. On completion of the course a therapeutic rest of approximately eight weeks is given, after which rest the course is repeated, except in dark field positive, Wassermann negative cases. Three such courses are given in the average case, the amount of medication obviously being varied in different individuals.

Annals of Otology, Rhinology and Laryngology, St. Louis

June, 1921, 30, No. 2

- Anatomy of Human Temporal Bone. J. Goldstein, Stanford University, Calif.—p. 331.
Roentgenographic Study of Accessory Sinuses with Special Reference to New Technic for Examination of Sphenoid Sinuses. G. E. Pfahler, Philadelphia.—p. 379.
Experiments to Show Flow of Fluid from Region of Tegmen Tympani, Extradural to and Medial to Passage of Sixth Cranial Nerve Through Dura Mater to Lateral Wall of Cavernous Sinus. H. J. Prentiss, Iowa City, Ia.—p. 397.
Fossa of Rosenmueller. H. J. Prentiss, Iowa City, Ia.—p. 405.
Mastoid Process and Its Cells. H. J. Prentiss, Iowa City, Ia.—p. 417.
Use of Radium, Roentgen Ray and Other Nonsurgical Measures, Combined with Operations About Head and Neck. J. C. Beck, Chicago.—p. 425.
Tonsil Question—Relation to Ductless Glands—Futility of Operative Interference in Exudative Diathesis Type of Children. G. Selfridge, San Francisco.—p. 497.
Normal and Pathologic Pneumatization of Temporal Bone—A Review. N. H. Pierce, Chicago.—p. 509.
Sarcoma of Mastoid. H. Friedenwald and J. I. Kemler, Baltimore.—p. 521.
Minor Role of Conduction Apparatus in Slowly Progressive Deafness. F. P. Emerson, Boston.—p. 527.
Acute Hemorrhagic Otitis Media. H. C. Ballenger, Chicago.—p. 539.
Bacterial Flora and Weights of a Series of Excised Tonsils. E. J. Lent and M. W. Lyon, Jr., South Bend, Ind.—p. 545.
Epidemic Mastoiditis. J. E. Reeder, Sioux City, Ia.—p. 551.
Ethmoid Operations (During Latent Stage) Followed by Death. Report of Cases. L. Ostrom, Rock Island, Ill.—p. 556.
Abscess of Frontal Lobe Secondary to Sinusitis. G. W. Boot, Chicago.—p. 565.
Case of Orbital Abscess from Ethmoid Suppuration. C. M. Miller, Richmond, Va.—p. 569.
Argument in Favor of Preligation of Jugular in Sinus Thrombosis. T. H. Odeneal.—p. 572.

Annals of Surgery, Philadelphia

August, 1921, 74, No. 2

- *Malignant Tumors of Thyroid. L. B. Wilson, Rochester, Minn.—p. 129.
Clinical Experience with Synergistic Analgesia. J. T. Gwathmey and J. Greenough, New York.—p. 185.
Certain Fundamental Laws Underlying Surgical Use of Bone Graft. F. H. Albee, New York.—p. 196.
*Results of Treatment of 115 Cases of Fracture of Shaft of Femur at University of Pennsylvania Hospital. E. L. Eliason, Philadelphia.—p. 206.
Fracture of Metatarsal Bones. E. G. Alexander, Philadelphia.—p. 214.
*Chorio-Epithelioma Following Hydatiform Degeneration. R. L. Payne, Norfolk, Va.—p. 219.
*Perforated Gastric and Duodenal Ulcer without Previous Pain. G. P. Muller and I. S. Ravdin, Philadelphia.—p. 223.
*Polypoid Lipoma of Intestinal Tract. G. A. Carlucci, New York.—p. 230.
*Myoma of Rectum. V. C. Hunt, Rochester, Minn.—p. 236.

Malignant Tumors of Thyroid.—Attention is called by Wilson to the unappreciated relative frequency of the malignant tumors of the thyroid, and he summarizes the principal

observations in a pathologic study of the thirty-five cases which have been observed in the Mayo Clinic from Jan. 1, 1901, to Jan. 1, 1921. A bibliography covering the subject during the last fourteen years is appended.

Results of Treatment of Fracture of Femur.—In patients under 8 years of age Eliason says the Bryant or perpendicular treatment gave the best figures, 85 per cent. excellent, or 100 per cent. good results. In this group all results were reported as good. In the eighty-eight cases 10 years of age or older the primary reduction and dressing was not satisfactory in a single case. A small group of eight cases later set in plaster under traction, all showed shortening or nonunion. The next group of twenty cases dressed in the flexed position with weight traction gave 25 per cent. good results with no deformity. In operative cases infection occurred in none of the drained wounds. Every case however showed slight infection around the Steinmann nail. Internal fixation failed to hold the fracture in twenty-one of fifty-four cases. Causes of this failure were in the greater number of cases due to the position in which the limb was splinted, twenty being dressed in the flat position, and to a much less extent to infection, only three cases. Nonunion, or better, union delayed longer than seven weeks, was most often due to faulty fixation of the fracture, and occurred in 22.2 per cent. of the operative, 0.86 per cent. of the nonoperative and 10 + per cent. of the entire series. It is hardly fair to include these figures as other than undetermined, as they have not been heard from finally. Operation gave 81.6 per cent. good results; nonoperative methods gave 73.9 per cent. good results in the entire series of 115. Of the operative procedures, the use of plates and screws with wound drainage and the limb dressed in plaster, in flexed position, with postoperative traction maintained, gave 90 per cent. perfect results, plus 10 per cent. good. All other operative methods gave but 33⅓ per cent. perfect results plus 33⅓ per cent. good results.

Chorio-Epithelioma Following Hydatid Degeneration.—Of four cases cited by Payne, three patients are alive and well. One case is recent and the result cannot be reported. Payne suggests that a more extensive experience with radium in these conditions may lend hope in the treatment of the malignant transitions which heretofore have been considered necessarily fatal.

Perforation of Gastric Ulcer Without Previous Pain.—Four of fifteen cases seen by Muller and Ravdin in which the histories were complete, or 26 per cent. of them, were instances where perforation was the first sign of abdominal pathology.

Polypoid Lipoma of Intestine.—In the case cited by Carlucci the tumor was situated at the ileocecal junction. Anatomically, the patient showed distinct signs of incomplete development as evidenced by undescended testicles, congenital hernia, and apparent incomplete rotation of the large intestine as shown at operation by the finding of the ileocecal junction in the splenic region and the presence of a long mesentery attached to the first portion of the ascending colon. Pathologically, the tumor as a gross specimen had all the appearance of a malignant growth, but on section and microscopically no evidence of malignancy could be found.

Myoma of Rectum.—In an extensive review of the literature only twenty cases have been found by Hunt since 1872 which can be classified definitely as myoma or myofibroma of the rectum. Four additional cases have been seen in the Mayo Clinic.

Boston Medical and Surgical Journal

Aug. 25, 1921, 185, No. 8

*Unusual Cure of Large Hemangioma. D. S. Adams, Worcester, Mass.—p. 219.

Experience in Massachusetts and Few Other Places with Smallpox and Vaccination. J. E. Henry, Boston.—p. 221.

*Myocardial Lesions in School Children. H. W. Dana, Boston.—p. 228. High-Grade Neurasthenic. H. J. Hall, Marblehead.—p. 232.

Congenital Hypertrophic Pyloric Stenosis. C. A. Sparrow, Worcester.—p. 235.

Diagnosis of Paralytic or Early Poliomyelitis. S. A. Levine, Boston.—p. 238.

Cure of Large Hemangioma in New-Born.—A child, one of twins, was born with a tumor of the right chest wall. The attending physician aspirated, getting away several cubic centimeters of blood. The tumor became somewhat larger

on subsequent days, so that it was thought best to have hospital care. Attached to the right chest wall along mid-axillary line, by a sessile pedicle, was a hemangioma, rather malignant in appearance, lobulated, and rather tense, with a port wine colored stain near its apex, where the aspiration had been done. Measurements at that time were 17.5 cm. in length, 15 cm. in width, and 35 cm. at base or greatest circumference. It had no intrathoracic or bony origin. Iron was given daily in 5 grain doses. At first the tumor increased in size and became darker in color. There was fever. Slowly the tumor decreased in size. In places it broke down and sloughed, and from various places, a slight bloody discharge was noted. One month later the tumor was about half its original size. It had contracted down, was more firm in feel but continued to discharge a moderate amount of bloody fluid. At the end of the seventh week the tumor was practically gone, there being only a slight protrusion of reddish, dense tissue. In another week it was gone, leaving only a reddish scar. The rise in temperature is significant. Adams says at the end of this time, the tumor began to decrease in size. Either there was a secondary infection following the introduction of the trocar, or a thrombotic process was started, thus leading to the subsequent slough.

Myocardial Lesions in Schoolchildren.—Dana claims that proof of myocardial insufficiency is often to be found in supposedly healthy children. This may be evidenced in any one of the following ways: (a) in the production of a relative mitral regurgitation as the result of exercise; (b) in the movement of the apex beat outward or downward as the result of moderate exertion; (c) in the appearance of a gallop rhythm after exercise. Myocardial insufficiency of sudden onset is usually the result of an acute infection. Among infections affecting the heart, measles would seem to have an important place. After an acute illness, a child should not be discharged by his physician until an "effort test" produces no evidence of myocardial decompensation. In public schools, the school physician should make this test on each child returning from quarantine to the school.

Florida Medical Association Journal, St. Augustine and Jacksonville

August, 1921, 8, No. 2

Indirect Influence of Railroad Surgeon. R. B. Slocum, Wilmington, N. C.—p. 21.

Operations for Radical Cure of Inguinal Hernia. F. J. Waas, Jacksonville.—p. 24.

Accident Hernia, from Standpoint of Liability. L. S. Oppenheimer, Tampa.—p. 27.

Journal of Biological Chemistry, Baltimore

August, 1921, 47, No. 3

Simple Technic for Determination of Calcium and Magnesium in Small Amounts of Serum. B. Kramer and F. F. Tisdall, Baltimore.—p. 475.

*Vitamin Studies. VIII. Effect of Heat and Oxidation on Antiscorbutic Vitamin. R. A. Dutcher, H. M. Harshaw and J. S. Hall, St. Paul.—p. 483.

Simple Laboratory Gas Meter and Improved Haldane Gas Analysis Apparatus. H. S. Newcomer, Philadelphia.—p. 489.

Lipase Studies. I. Hydrolysis of Esters of Some Dicarboxylic Acids by Lipase of Liver. A. A. Christman and H. B. Lewis, Urbana, Ill.—p. 495.

*Studies on Experimental Rickets. VIII. Production of Rickets by Diets Low in Phosphorus and Fat-Soluble A. E. C. McCollum, N. Simmonds, P. G. Shipley and E. A. Park, Baltimore.—p. 507.

*Diffusible Calcium of Blood Serum. I. Method for Its Determination. L. von Meysenbug, A. M. Pappenheimer, T. F. Zucker and M. F. Murray, New York.—p. 529.

*Id. II. Human Rickets and Experimental Dog Tetany. L. von Meysenbug and G. F. McCann, New York.—p. 541.

Oxygen Dissociation of Hemoglobin, and Effect of Electrolytes on It. E. F. Adolph and R. M. Ferry, Cambridge, Mass.—p. 547.

Animal Calorimetry. Influence of Colloidal Iron on Basal Metabolism. E. Langfeldt, New York.—p. 557.

*Chemical Factors in Fatigue. I. Effect of Muscular Exercise on Certain Common Blood Constituents. N. W. Rakestraw, Stanford University.—p. 565.

Effect of Heat and Oxidation on Antiscorbutic Vitamin.—Dutcher, Harshaw and Hall found that the antiscorbutic vitamin is not destroyed by heating at pasteurization temperature (63 C.) for thirty minutes in closed vessels or by boiling (100 C.) for thirty minutes under reflux condensers. Hydrogen peroxid possesses some destructive action when added to orange juice at room temperature and the destructive action is increased when the orange juice-hydrogen

peroxid mixture is heated at 63 and 100 C. The antiscorbutic properties of orange juice are susceptible to oxidation but, in the absence of oxidizing agents, are stable to heat up to the boiling temperature of orange juice.

Production of Rickets by Faulty Diet.—Faulty rations containing 2 per cent. added calcium carbonate, gave rise to pathologic conditions in the skeleton essentially identical with those found in the human subjects of rickets. The addition of 0.5 per cent. butter fat, while insufficient to prevent the development of xerophthalmia, was sufficient to delay its advent and to diminish its rate of progress. It increased the duration of life and made possible, presumably, increased growth of the skeleton. The authors have repeatedly observed that, if calcium carbonate in large quantities (from 3 to 6 per cent. of the total ration) is added to a ration insufficiently supplied with the organic factor and only slightly or not at all deficient in its content of phosphorus, most pronounced changes occur at the growing ends of the long bones. The cartilage undergoes degenerative and metaplastic changes, and fails to take up calcium phosphate with any regularity, or to take it up at all. Patent flour is one of the most deficient foods which enters into the human diet, being exceeded in this respect only by isolated foods such as starch, sugars, fats, or polished rice. Bolted flour is rather poor in protein and this is of rather poor quality. It is very deficient in calcium, phosphorus, sodium, chlorine, iron, and possibly also in potassium. The only essential inorganic element which it probably contains in amount sufficient to meet the physiologic needs of an animal is magnesium. Bolted flour is also very deficient in the antineuritic substance water soluble B. It is exceedingly poor in fat soluble A, and in the organic antirachitic factor. Apparently in the rat the profound disturbances in the deposition of lime salts in cartilage and bone and the changes in the cells of those tissues which give rise to the pathologic complex known as rickets may be produced by disturbances in the diet of the optimal ratio between calcium and phosphorus in the absence of an amount of an organic substance contained in cod liver oil sufficient to prevent them. It would seem from the results of a large number of experiments, that in so far as calcium and phosphate are concerned, the physiologic relation in the diet between the two is of infinitely greater importance in insuring normal calcification than the absolute amount of the salts themselves.

Determination of Diffusible Calcium in Serum.—The diffusible calcium of the serum of normal men and dogs was found by von Meysenbug and his associates to comprise from 60 to 70 per cent. of the total serum calcium. Varying the carbon dioxid saturation of the serum between 17 mm. mercury tension and 62 mm. does not alter this percentage. The authors have devised a method of dialyzing serum against a buffer solution of the Ringer type, at the same time maintaining a constant carbon dioxid tension in the dialyzing system.

Rickets and Experimental Tetany.—In two cases of rickets, with serum calcium of 9.0 and 7.6 mg. per hundred c.c., the percentage of diffusible calcium was found by von Meysenbug and McCann to be between 58 and 70 per cent., within the range found in normal subjects. In four cases of experimental tetany in dogs, similar percentages of dialyzable calcium were found, 58 to 71 per cent., with serum calciums of 6.1 to 8.4 per hundred c.c. Two of these dogs showed a reduced carbon dioxid combining power of the plasma at the time the calcium determinations were made, showing that this form of acidosis does not affect the diffusible calcium. It, therefore, appears that, in so far as can be determined by in vitro experiment, the reduced serum calcium in experimental tetany is not due to a lowering of the diffusible as contrasted with the nondiffusible form. The proportion between the two remains constant in the presence of a reduced total. Also, this proportion does not change with varying carbon dioxid combining powers of the plasma.

Chemical Factors in Fatigue.—An investigation was undertaken by Rakestraw on twenty-one human subjects to determine the changes produced by severe muscular exercise on the following constituents of blood and plasma: nonprotein nitrogen, urea, sugar, uric acid, performed and total creatinin, cholesterol, and hemoglobin, as well as specific gravity, and the number and relative volume of corpuscles. Two types

of exercise were employed, representing, short, strenuous effort and longer, more tedious work. Short, strenuous exercise was invariably found to increase the blood sugar concentration both in plasma and corpuscles, while a longer period of exercise was generally accompanied by a drop in blood sugar, which was greater in the plasma than in the whole blood. Both kinds of exercise were accompanied by a small increase in uric acid, of about the same order, which was greater in the plasma than in the whole blood. Short, strenuous exercise had no effect on urea or nonprotein nitrogen, but longer work increased both slightly, in whole blood as well as plasma. In both types of exercise the total creatinin increased very little, while the preformed creatinin underwent almost no change. It is shown conclusively that there were no considerable changes in the total blood volume during the muscular exercise and that variations in the concentration of the blood are not, therefore, disturbing factors in the above conclusions. Cholesterol was found to decrease very slightly, although results were not thoroughly consistent. The decrease seemed to be somewhat more noticeable in the corpuscles than in the plasma. The specific gravity, hemoglobin, and the number and relative volume of corpuscles were found to increase during the periods of exercise. The viscosity of the whole blood was found to increase considerably and that of the plasma slightly. Some incomplete data are given suggesting that total nitrogen is increased in the blood by exercise and that urea, nonprotein nitrogen, and uric acid continue to increase for some time after a work period, while the sugar concentration, on the other hand, returns to normal within two and a half hours.

Journal of Industrial Hygiene, Boston

August, 1921, 3, No. 4

- Does Magnetic Field Constitute an Industrial Hazard? C. K. Drinker and R. M. Thomson, Cambridge, Mass.—p. 117.
Industrial Physician and Qualifications Essential to His Success. W. J. McConnell, U. S. Public Health Service.—p. 130.
Interchange of Physical Examinations in Industry. H. Myers, Mansfield.—p. 135.
Physiologic Effects of Automobile Exhaust Gas and Standards of Ventilation for Brief Exposures. Y. Henderson, H. W. Haggard, M. C. Teague, A. L. Prince and R. M. Wunderlich, New Haven, Conn.—p. 137.

Journal of Orthopaedic Surgery, Boston

August, 1921, 3, No. 8

- Report of Commission on Congenital Dislocation of Hip. J. F. Goldthwait, Boston.—p. 353.
Statistical Report of Commission on Congenital Dislocation of Hip, for 1921. Z. B. Adams, Boston.—p. 357.
Lessons from My Experience with Congenital Dislocation at Hips. J. Ridlon, Chicago.—p. 365.
Manipulation of Stiff Joints. R. Jones, Liverpool, England.—p. 385.
Fractures of Elbow in Children. J. S. Stone, Boston.—p. 395.
*Arthrodesis of Sacroiliac Joint. A New Method of Approach. M. N. Smith-Petersen, Boston.—p. 400.
Application of Muscle Physiology to Treatment of Paralysis. L. G. Teece, Sydney, Australia.—p. 405.

Arthrodesis of Sacro-Iliac Joint.—Lateral approach to the joint is advocated by Petersen. Curved incision is made from the posterior superior spine along the crest of the ilium, two thirds of the distance to the anterior superior spine. This incision is carried down to the bone and the reflection of the periosteum started. Then an incision is made from the posterior superior spine in the direction of the fibers of the gluteus maximus for a distance of 3 to 4 inches. This incision is carried down through the subcutaneous fat and gluteal fascia and the muscle fibers of the gluteus maximus separated by blunt dissection, until the junction of the ilium and sacrum between the posterior superior and posterior inferior spines is reached. The flap thus outlined is reflected subperiosteally, exposing the posterior portion of the lateral surface of the ilium. A window is now cut through the ilium within the projected area of the joint. On removal of the window the cartilaginous joint surface of the sacrum as well as its cortex is next removed bringing about a good exposure of cancellous bone. After removing the cartilage and cortex from the block of bone removed from the ilium, this is replaced in its original site and counter sunk, so that its cancellous surface will be in contact with the cancellous bone of the sacrum. The flap is now returned to its place and periosteum and soft parts sutured in layers. The position of the window should be varied according to the case encountered.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

August, 1921, 18, No. 1

- *Relative Amounts of Depressor and Bronchoconstrictor Substance Obtainable from Anterior and Posterior Lobes of Fresh Pituitary Gland. J. Roca, Baltimore.—p. 1.
- Pituitary Active Principles and Histamin. H. H. Dale and H. W. Dudley, Hampstead.—p. 27.
- Chronic Intoxications on Albino Rats. V. Arsenic Trioxid. T. Sollmann, Cleveland.—p. 43.
- Chemical Composition and Physiologic Characteristics of Brain Cephalin. F. Fenger, Chicago.—p. 51.
- Pharmacology of Chelidonium, Benzylisoquinoline Alkaloid of Chelidonium Celandine or Tetterwort) and Stylophorum. P. J. Hanzlik, Cleveland.—p. 63.

Depressor and Bronchoconstrictor Substances in Pituitary.

—Simple aqueous extracts of the posterior and anterior lobes of the pituitary gland prepared in such a way as to abolish their blood pressure raising properties and to preclude all chance of bacterial activity Roca found possess blood pressure lowering and bronchoconstrictor properties. Extracts of this kind made from the posterior lobe of the gland are from seven to eight times more depressant for the arterial pressure than are similar extracts of the anterior lobe, equal weights of the two lobes being used as the basis of comparison. The bronchoconstrictor action of extracts of the posterior lobe is very marked in comparison with that exhibited by extracts of the anterior lobe and the ratio of the activity of equivalent extracts of the two lobes is certainly greater than 8:1. Chloroform takes up from a properly prepared and dried extract of sterile posterior and anterior lobes of the pituitary gland a determinable amount of a substance which acts like histamin on the arterial pressure, the uterus and the bronchi. The posterior lobe yields to chloroform about twenty times more of this substance than does the anterior lobe, weight for weight of fresh material. The substance which passes into chloroform and which has the pharmacodynamic action of histamin is thought to be this latter compound, because of its behavior during the chemical manipulations to which it was subjected by Roca, as also on the ground of its physiologic properties.

Kentucky Medical Journal, Bowling Green

August, 1921, 19, No. 8

- Radium Treatment of Cancer: Plea for Cooperation Between Surgeons and Radiotherapists. W. J. Young, Louisville.—p. 450.
- Treatment of Skin Tumors. M. L. Ravitch, Louisville.—p. 452.
- Malignancy of Face and Jaws. F. T. Fort, Louisville.—p. 456.
- Follicular and Perifollicular Urethritis with Sequels. J. G. Carpenter, Stanford.—p. 462.
- Local Versus General Anesthesia in Tonsillectomy. R. H. Cowley, Berea.—p. 468.
- Intensive Study of Cardio-Renal Disease. C. W. Dowden, Louisville.—p. 472.
- Relation of Mouth Infection to Systemic Diseases. G. H. Heymann, Louisville.—p. 478.
- Esophagoscopy and Bronchoscopy in Diagnosis and Treatment. Safe Rules to Follow in Emergency Cases. G. C. Hall, Louisville.—p. 482.
- Ocular Symptoms of Brain Tumor. S. G. Dabney, Louisville.—p. 491.
- Misleading Symptoms in Synovitis and Bursitis. B. A. Washburn, Paducah.—p. 498.
- End Results of Surgery of Kidney. J. R. Wathen, Louisville.—p. 501.
- Tertiary Syphilis: Report of Three Cases. J. G. Sherrill, Louisville.—p. 504.
- Proper Position of Roentgen Ray in Diagnosis. D. Y. Keith, Louisville.—p. 508.
- *End-Results in Surgery of Gastric and Duodenal Ulcer. L. Frank, Louisville.—p. 514.
- End Results Following Operations on Bile Passages. G. Aud, Louisville.—p. 516.
- *Epigastric Hernia. O. Bloch, Louisville.—p. 520.
- Fifty-Cent Piece in Esophagus for Three Months. Removal Through Mouth. S. S. Watkins, Louisville.—p. 523.
- *Occupational Pain: Tuberculosis; Case Report. J. J. Moren, Louisville.—p. 526.

Surgery of Gastric and Duodenal Ulcer.—Surgical treatment of gastric and duodenal ulcers Frank asserts is superior in results to medical treatment. In from 75 to 85 per cent. of cases the results of surgical treatment are quite satisfactory to the patient. Many of the failures to completely relieve he claims are due to delay in instituting surgical intervention. Failures are also due to incorrect diagnosis and to the performance of gastro-enterostomy when no ulcer is present, the cause of the digestive disturbance being other than ulcer. In the presence of ulcer, lack of cure may also be the result of imperfect technic or of an incorrect type of operation, thereby leaving the way open to postoperative complications or sequels.

Epigastric Hernia.—Four patients with epigastric hernia form the subject of Bloch's paper. One of these came with a diagnosis of hernia or lipoma from a diagnostic clinic; at operation careful dissection around the rounded extra abdominal lobule of fat showed its protrusion through an opening in the median line; this opening was enlarged to a sufficient extent to permit of ligation of the round ligament, with suturing of the stump to the abdominal wall. This patient's clinical symptoms were mental and physical; he complained of indigestion; pain after eating; belching and irregular appetite. His mental symptoms were such as to make him a neurasthenic suspect. His operative recovery was perfect, with complete abatement of his symptoms. Another patient entered the hospital with a clinical diagnosis of probable pancreatic growth from a diagnostic laboratory; a very small hernia was found in the middle line, about midway between the umbilicus and the sternum; this hernia disappeared when the patient lay down, but the abnormal opening was readily felt, when the abdominal recti muscles were made tense by the patient's lifting his head. This man's outstanding symptom was pain, more or less constant, increased by food or by exercise. Entire relief resulted from the operation. The other patients came into the hospital without previous examination and the hernias were readily found; operation relieved them.

Tuberculosis Causing Pain in Arm.—Moren cites the case of a young man, a pianist, who had pain in his left arm. He gave the history of having had occupational pains, attributed to overexertion in playing the piano. The pain always started in the middle of the left anterior chest. The roentgen ray disclosed a cavity in the left lung, probably an old process which had healed, and in appearance was typically tuberculous. There was also an active tuberculous process in the right lung. The man had no elevation of temperature, no shortness of breath, and no other significant symptoms so far as the neurologic examination was concerned. Moren believes that possibly adhesions started the pain in his left chest which radiated downward into the left arm.

Medical Record, New York

Aug. 27, 1921, 100, No. 9

- *Orthopedic Treatments in Chronic and Severe Nervous Diseases. S. W. Boorstein, New York.—p. 353.
- Treatment of Epileptic Manifestations in Children from Standpoint of Constitutional Basis. E. B. McCready, Pittsburgh.—p. 358.
- Disease as Seen Through Therapeutics. G. Leven, Paris, France.—p. 360.
- Etiology of Hypertension. J. F. Yarbrough, Columbia, Ala.—p. 362.
- *Acute Anterior Poliomyelitis of Unusual Type. L. Hannah, Sylvania, Ga.—p. 364.
- Foreign Bodies in External Auditory Canal. J. Friedman and S. D. Greenfield, New York.—p. 365.
- Treatment of Pulmonary Tuberculosis with Sulphur Dioxid. F. Tweddell, Great Neck, N. Y.—p. 367.
- Induction of Gradual, Normal, Menopause After Ovariectomy. A. G. Hulett, East Orange, N. J.—p. 369.

Orthopedic Treatment in Nervous Diseases.—Boorstein pleads for more frequent application of orthopedic methods in neurologic cases and details the methods employed in Montefiore Hospital. The treatments include medications, but the main work is left to the orthopedic surgeon.

Acute Anterior Poliomyelitis of Unusual Type.—The features of interest in connection with Hannah's case were the total absence of fever, headache, pain, and convulsions, and the presence of a hemiplegic type of paralysis, with facial involvement.

Michigan State Medical Society Journal, Grand Rapids

August, 1921, 20, No. 8

- Local Tonsillectomy Technic. J. M. Robb, Detroit.—p. 303.
- *Vaccine Treatment of Asthma. A. D. Wickett, C. Corley and J. T. Connell, Ann Arbor.—p. 305.
- Prophylaxis and Treatment of Anal Incontinence Following Operations for Fistula. L. J. Hirschman, Detroit.—p. 309.
- Tonotomy of Inferior Oblique Muscle. W. R. Parker, Detroit.—p. 313.
- Sequels of Epidemic Encephalitis. C. D. Camp, Ann Arbor.—p. 314.
- Woman in Labor. W. P. Manton, Detroit.—p. 316.
- *Hemophilia. G. C. Stewart, Hancock.—p. 317.

Vaccine Treatment of Asthma.—The authors regard bronchial asthma as the sequel of focal infection, and have sought for a primary focus mainly in the tonsils, accessory sinuses

and in the bronchi. The focal infection is treated surgically if possible, and as much of the infection eradicated as seems advisable. So far they have no occasion to regard the teeth as the cause of bronchial asthma. The medium used for the preparation of the vaccine is 2 per cent. peptone broth with a p_H 7.6 to which 10 per cent. rabbit serum has been added. This is inoculated with material from the tonsil, sinus or sputum, and incubated for twenty-four hours. If the growth is good, it is then diluted with sterile physiologic sodium chlorid solution, to a concentration of two hundred million organisms per c.c. This standardized vaccine is placed in sterile test tubes sealed off in a flame, and when cool, immersed in a water bath at 60 F. for one hour. It is then tested for sterility and if sterile it is ready for use. The routine initial dose is 50,000,000 bacteria; second, 100,000,000; third, 150,000,000, and the fourth and succeeding doses, 200,000,000. The interval between doses is from five to seven days. Treatment is continued for several weeks after the patient is free from asthma. Of thirteen cases reported ten patients show complete relief.

Familial Hemophilia.—Stewart cites the case of a family of bleeders. Beyond the immediate family none of the relatives on either side were troubled with bleeding. The father and his brothers when quite young, used to have profuse nosebleeds, but none ever suffered any ill effects and as they became older they gradually became less frequent until they ceased entirely. Of eleven children, four girls and seven boys all but one boy died before reaching the age of 12. In fact all died in infancy with the exception of three boys and two girls; the girls dying of disease while one boy died as the result of biting his tongue. The wound was very small but he died after one week of continuous bleeding. The other boy had a hemorrhage of the stomach although he was not known to have injured himself in any way. The remaining boy, who is the only survivor of the children, has had several very close calls because of his hemophilic tendencies.

New Orleans Medical and Surgical Journal

August, 1921, 74, No. 2

- Safety Factors in Supra-Pubic Prostatectomy. A. Nelken, New Orleans.—p. 78.
Statistical Study of Three Thousand Cases of Mental Diseases. II. Daspit, New Orleans.—p. 84.
Epidemic Encephalitis. L. V. Lopez, New Orleans.—p. 90.
Prognosis in Insanity. C. V. Unsworth, New Orleans.—p. 101.
Nitrous Oxid, Oxygen Analgesia and Anesthesia in Obstetrics. T. B. Sellers, New Orleans.—p. 109.
Child Welfare. R. M. Crawford.—p. 116.
Hypertrophied Anal Papillae. A. G. Heath, Shreveport.—p. 121.
Preventable Vocational Eye Injuries. W. B. White, Shreveport.—p. 126.

New York Medical Journal

Aug. 17, 1921, 114, No. 4

- Predisposing Factor in Diphtheria. B. Schick, Vienna.—p. 197.
Medical Supervision of Destitute Child. M. Ladd, Boston.—p. 199.
Nervous Child. C. W. Burr, Philadelphia.—p. 205.
Psychoses and Potential Psychoses of Childhood. E. A. Strecker, Philadelphia.—p. 209.
Problems of Personality in Disease. M. E. Kenworthy, New York.—p. 211.
Personality in Making. W. H. Grossmann, Plainfield, N. J.—p. 215.
Pulmonary Tuberculosis in Young Children. A. E. Siegel, Philadelphia.—p. 223.
Hyperchlorhydria in Childhood. L. Berman, New York.—p. 226.
Prevention of Measles. I. W. Brewer, Watertown, New York.—p. 228.
Children's Fears. F. Russ-Barker, London.—p. 229.
Suggested Form of Treatment for Mental Deficiency in Children. J. A. Miller, New York.—p. 231.
Chronic Effects of War Gassing. Z. I. Sabshin, New York.—p. 232.

Northwest Medicine, Seattle

August, 1921, 20, No. 8

- Nephritis. W. Ophüls, San Francisco.—p. 199.
Treatment of Sarcoma with Radium: Report of Cases. S. W. Mowers, Seattle.—p. 206.
Causes and Results of Deflection of Nasal Septum. E. A. Woods, Ashland, Ore.—p. 210.
Clinical Interpretation of Wassermann Test. A. R. Robertson, Seattle.—p. 215.
Arsphenamin in Treatment of General Paresis. D. R. Ross, Salem, Ore.—p. 218.
Surgical Significance of Parasitism in Human Host. J. B. McNerthney, Tacoma, Wash.—p. 219.
Plea for Phototherapy in Surgical Tuberculosis. E. Hoff, Seattle.—p. 221.
*Acute Dilatation of Heart. Together with Associated Pathology in Case of Sudden Death. F. R. Menne, Portland.—p. 222.

Acute Dilatation of Heart.—A man about 40 years of age dropped dead. He was engaged in hunting coyotes, in the process of which he dug pits and blasted with nitroglycerin. The salient features of the necropsy in the way of anatomic changes found by Menne were: Acute dilatation of the chambers of the heart, marked hypertrophy of the musculature of the heart, pronounced obliterative sclerosis of the posterior coronary artery; marked senile and syphilitic arteriosclerosis with slight supervalvular aneurysm formation, chronic interstitial myocarditis, marked diffuse nephritis (arteriosclerosis) marked emphysema of the lungs, edema of the brain. The syphilitic lesions are ridgelike and are most pronounced in the first portion of the arch. The opening of the posterior coronary artery could not be identified.

Pennsylvania Medical Journal, Harrisburg.

August, 1921, 24, No. 4

- Cancer of Breast with Study of Results Obtained in 218 Cases. W. E. Sistrunk, Rochester, Minn.—p. 781.
Bubonic Plague: Its Prevalence in United States and How Danger Should be Met. E. B. Krumbhaar, Philadelphia.—p. 786.
Diagnosis of Functional Capacity of Kidneys in Various Types and Stages of Nephritis. R. R. Snowden, Pittsburgh.—p. 791.
Duty of Pediatrician to Mother of New-Born. O. N. Chaffee, Erie.—p. 794.
Pediatrics in Small City. H. E. Hall, Uniontown.—p. 796.
Practical Use of Barany Tests Away from Medical Centers. W. H. Sears, Huntingdon.—p. 798.
Relation of Intranasal Pressure to Heterophoria. J. M. Griscom, Philadelphia.—p. 804.
Altered Blood Pressure and Its Relation to Imbalance. D. J. McCarthy, Philadelphia.—p. 806.
Infantilism in Children. J. D. Leebron, Philadelphia.—p. 810.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Aug. 13, 1921, 2, No. 3163

- Early Diagnosis and Treatment of Acute Poliomyelitis. E. F. Buzzard.—p. 225.
Asthma and Allied Disorders. H. Rolleston.—p. 231.
Adolescent Tetany and Its Relation to Guanidin. F. J. Nattress and J. S. Sharpe.—p. 238.
*Sachs-Georgi Precipitation Test for Syphilis. T. Taniguchi and N. Yoshinare.—p. 239.
Typhoid Fever in an Infant Complicated by Suppurative Arthritis. E. N. Russell.—p. 240.
Anaphylaxis Due to Antistreptococcal Serum. C. L. Graham.—p. 240.
Caesarean Section. C. L. Forde.—p. 241.

Comparison of Sachs-Georgi and Wassermann Tests.—In a series of 1,575 serums, the following results were obtained by Taniguchi and Yoshinare in comparing the Wassermann test with the Sachs-Georgi test. Of 1,418 cases the reaction was positive in both tests in 553; negative in both tests in 845 and doubtful in both tests in twenty cases. When cases of syphilis which have undergone specific treatment are grouped by themselves the proportion of positive results with the Sachs-Georgi test is greater than with the Wassermann reaction. Results in 316 serums from treated cases: Parallel results: 256 cases (81 per cent.). Reaction positive in both tests in 152 cases; reaction negative in both tests in ninety-seven cases; reaction doubtful in both tests in seven cases.

Practitioner, London

August, 1921, 107, No. 2

- *Successful Treatment of Leprosy by Chaulmoogra and Other Oils. L. Rogers.—p. 77.
Protean Applications of Antigen Therapy in Practice. H. L. Lyon-Smith.—p. 102.
A "Course" of Vaccines. A. McKendrick.—p. 118.
Misuse of Autogenous Vaccines. C. E. Jenkins.—p. 123.
Use of Constant Electric Current in Treatment. A. R. Friel.—p. 126.
Instinct and Conflict. E. W. Jones.—p. 138.
*History of Tuberculosis. E. Cureton.—p. 145.

Chaulmoogra Oil and Sodium Morrhuate in Tuberculosis.—The success that has attended the use of sodium morrhuate in several cases of that particularly chronic tuberculous affection, lupus, together with experimental evidence that chaulmoogra oil preparations at least are inimical in vitro to acid-fast bacilli, including all three types of tubercle, Rogers says, still leaves ground for hope that further work on similar lines may, in time, lead to improvement in the

treatment of at least the more chronic human forms, of which lupus and surgical tuberculosis appear to furnish the best field. On the other hand, Rogers is more doubtful regarding the advisability of the general use of these preparations in pulmonary tuberculosis except by experts under carefully controlled conditions, at least until further evidence is available regarding their value in more localized and superficial tuberculous affections, any reactions in which will be visible and easily watched.

First Tuberculosis Sanatorium.—Cureton calls attention to the fact that Herman Brehmer, who opened an institution at Gorbardsdorf in the Waldenberg Mountain during 1859 for the treatment of tuberculosis was not the first to do this. George Bodington started, in the little village of Sutton Coldfield, an establishment for the reception and treatment of "consumptives" prior to 1830, but so hostile was the medical profession then to his methods of treatment that its author was considered a little better than a lunatic, and "however resolutely he maintained his position, however firmly he supported his ideas, disapproval so universal drove patients from his establishment, where, several years previous to the publication of his essay, he had acted according to his principles and effected many cures. He finished by giving up the curing of consumption and transformed his hospital into a lunatic asylum."

Tropical Medicine and Hygiene, London

Aug. 1, 1921, 24, No. 15

- *Unclassified Fevers in Jamaica. W. F. M. Loughnan.—p. 201.
- Acute Bacillary Dysentery. N. Crichtlow.—p. 204.
- *Treatment of Tinea Imbricata. O. G. F. Luhn.—p. 206.

Unclassified Fevers in Jamaica.—Three types of unclassified fevers are described by Loughnan: Type I: A fever closely resembling sand-fly fever, which is very common. Type II: A fever which may be regarded as an atypical dengue, which exhibits much variation in its signs and symptoms, which corresponds to Rogers' seven-day fever, which is rare. Some of these fevers have been previously described as occurring in the West Indian Islands, under local names, such as Antilles fever and five days fever.

Treatment of Tinea Imbricata.—The combined serum and saline treatment seems to be the most successful form of treatment in Crichtlow's experience. The patient is kept in bed and uses a bedpan if possible. The diet consists of milk, rice water, barley water, albumen water and whey during the acute stage. Afterward, arrowroot, cornflour, sago, beef or chicken broth, milk custards and soft boiled rice are given when the blood and mucus are absent from the stools. On admission, 1 ounce of castor oil and 20 minims of tincture of opium or tincture of chloroform and morphin compound are given. On the following day the following mixtures are administered: bismuth salicylate, 5 grains; compound ipecac powder, 3 grains; calomel, $\frac{1}{4}$ grain. To be mixed and made into a powder. Dose: Two to four powders every four hours. These powders are followed by a saline aperient— $\frac{1}{2}$ ounce magnesium sulphate or 1 dram sodium sulphate—every morning, administered daily until the blood and mucus disappear from the stools. If these powders are administered for too long a period mercuric poisoning may develop. But generally the blood and mucus disappear from the stools within a week. If the case is taken at the beginning of the attack the dysenteric symptoms may be checked within two days. When the blood and mucus have stopped the following powder is then given: bismuth salicylate, 5 grains; phenyl salicylate, 5 grains. To be mixed and made into a powder. Dose: Two to four powders three or four times a day. These powders are given for at least a week. As constipation is very apt to result, the bowels are kept opened by a mild aperient. In conjunction with the above treatment, emetin is sometimes administered, $\frac{1}{8}$ grain emetin hydrochlorid, hypodermically night and morning for two consecutive days. Rectal injections are found useful, and whenever possible are resorted to. The solutions used are weak potassium permanganate solution, Condy's fluid, weak boracic acid solution, or saline solution. A mixture of salicylic acid, 4 ounces, glacial acetic acid, 4 ounces, and methylated spirit, 36 ounces, proved very efficient in Luhn's experience in the treatment of tinea imbricata.

Archives des Maladies de l'Appareil Digestif, Paris

August, 1921, 11, No. 4

- *Gastro-Enterostomy for Perforation. A. Basset and P. Uhlrich.—p. 225.
- *Initial Symptoms of Cholelithiasis. M. E. Binet.—p. 242.
- Varicose Lymphatics of Intestine. Bouchut, Mazel and Devuns.—p. 255.
- Cancer of Pelvic Colon. F. Moutier and A. L. Girault.—p. 260.
- *Gastric Ulcer Simulating Tabetic Crises. M. Klippel and M. P. Weil.—p. 280.

Emergency Gastro-Enterostomy for Perforated Ulcer.—Basset and Uhlrich comment on the conflicting views that prevail as to the advantage of gastro-enterostomy at once after the perforation has been sutured. They compare the experiences at different clinics, their conclusion being in favor of postponing the gastro-enterostomy until conditions are more favorable, unless there is impermeable stenosis of the pylorus-duodenum region. Even then, the general condition should be the guide whether to risk spreading the infection through the whole peritoneal cavity. The puckering up of one wall of the duodenum, after suture of a perforation, does not call for immediate gastro-enterostomy; much less anything of the kind in the stomach remote from the pylorus. The perforation should be sutured perpendicularly to the axis to avoid making the passage any smaller than necessary. Supervision should be kept up for several months, and gastro-enterostomy or resection should be advised if there is retention, etc.

Initial Symptoms of Cholelithiasis.—In 43.9 per cent. of Binet's cases of gallstones in women, the first signs of abnormal conditions in the biliary apparatus were noted during puberty. The cholesterin content of the blood is exceptionally high at puberty, and waves of gastric disturbances at this age warn of possible gallstone mischief later. In one woman of 23 complaining of fleeting, vague, digestive disturbances involving the pylorus region, the cholesterin content of the blood was 3.48. He accepted this as a sign of impending or installed cholelithiasis, and it was not long before calculi made their presence felt and fifty-one were found. A tendency to cholemia as well as cholesterinemia is common with cholelithiasis, also migraine. Binet has been impressed by the fact that in 96 of his 288 operative gallstone cases there had been some previous operation on the internal genital organs in 12; on the appendix in 81, and on the stomach in 3. The primary disturbances for which these operations had been done might have been the work of the otherwise latent and unsuspected cholelithiasis. This assumption was sustained by the persistence of the disturbances in many cases after the operation. Closer scrutiny of the gastric disturbances, noting their connection with menstruation, and with slight fever, might have obviated the unnecessary and futile operation. "The clinical age of a process is not the pathogenic age."

Gastric Ulcer Simulating the Crises of Tabes.—Klippel and Weil explain that hematemesis with tabes generally occurs during a gastric crisis and after vomiting, while the hematemesis with gastric ulcer or cancer may occur at any time, and the blood is bright red. Gastric ulcer may be accompanied by polyneuritis, the pains resembling those with tabes; they have had three cases of this kind, with necropsy in one. Tabetic hematemesis is so rare that they have found only half a dozen cases published in France.

Archives des Maladies du Cœur, etc., Paris

July, 1921, 14, No. 7

- *Paroxysmal Tachycardia. J. Yacoel.—p. 289.
- *The Ventricle Group in the Electrocardiogram. E. Bordet.—p. 301.
- *Reaction of the Small Arteries: Denivellation Test. G. Richard.—p. 316.
- *Clinical Polygraph. R. Lutembacher.—p. 327.

Classification of Paroxysmal Tachycardia.—Yacoel explains that there are three types of paroxysmal tachycardia corresponding to the location of the essential focus in the Tawara or the Keith node or in the primitive bundle. He analyzes the different subgroups in each type, as he has studied them for many years with electrocardiography.

The Ventricle Group in the Electrocardiogram.—Bordet emphasizes the importance of analyzing the ventricle group as well as the variations in the auricle wave. It throws light on certain points obscure from all other angles.

The "Deleveling Test" of the Smaller Arteries.—Richard means by this the instructive behavior of the smaller arteries

according as they are on a level with the heart or are above or below its horizontal plane. This *denivellation* test was applied in various forms to 42 patients with high blood pressure; 22 cases of valvular disease; 16 of arteriosclerosis, and a large number of normal adults and children. The findings show the exact condition of the muscular walls of the small arteries. This is a factor the importance of which has not been duly appreciated hitherto.

Clinical Polygraph.—Lutembach's instrument records the tracings by optical means.

Bulletin de l'Académie de Médecine, Paris

July 26, 1921, 86, No. 30

*Grafts of Ovaries. T. Tuffier.—p. 99.

*Experimental Research on Medicinal Shock. E. Jeanselme and M. Pomaret.—p. 106.

*Medicolegal Aspect of Epidemic Encephalitis. P. Chavigny and E. Gelma.—p. 113.

*Latent Conjugal Neurosyphilis. Cestan, Riser and Stillmunkés.—p. 116.

*Home for Nursing Mothers. G. Schreiber.—p. 119.

Grafts of Ovaries.—Tuffier analyzes his 230 cases of graft or shifting of an ovary. The results were better in the younger the woman. One woman has had fairly regular menstruation for twelve years since the ovary was removed to another region from the infected area, at the age of 18. Menstruation cannot be restored if more than two thirds of the uterus has been removed. In his 203 cases of these autografts, both ovaries were thus shifted in 18 cases. Menstruation was never restored with an ovary grafted from another woman (20 cases), but in 76.71 per cent. of the 73 women whose ovary had been shifted, menstruation returned in from five to seven months; in a few instances not until after months or more. One woman thus regularly menstruating had the grafted ovary removed, and there was no further menstruation. The menses were not as regular as in normal conditions, and menstruation did not usually continue very long; in 14 of 51 operative cases only for six months; in 4 for two or three years, and in only 2 for longer than this.

Arsphenamin Shock.—The results of Jeanselme and Pomaret's research suggest that the acidity of the solutions of the drug or of the body fluids is what activates the precipitating power of the phenol element in the arsenicals. Flocculation ensues, and this entails the symptoms resembling those after inhalation of amyl nitrite.

Medicolegal Aspect of Epidemic Encephalitis.—Chavigny and Gelma are legal authorities, and they discuss the forensic import of the misdemeanors and possible crimes that may be committed by persons under the influence of epidemic encephalitis. They refer particularly to the vigilambulism and impulsive actions during the prodromal stage, before the presence of the disease is recognized. They cite two instances in which young men were arrested, one for seizing and riding away with a bicycle, the other for aimless wandering at night. Both seemed to be in normal health, but symptoms of epidemic encephalitis became evident the next day, with long gap in the memory on recovery. In a third case the mental confusion had been ascribed to nervous strain and fatigue the day after a fire, but the diagnosis was soon corrected by other symptoms of the disease.

Reduction of Infant Mortality.—Schreiber extols the excellent work of the *asiles d'allaitement* where homeless women nursing their babes are given shelter. The first one in France was founded at Nanterre in 1909, and 557 mothers nursing infants less than 3 months old have been given shelter. Only 3.2 per cent. of the infants died during the four or five months they were under this supervision.

Bulletin Médical, Paris

July 16, 1921, 35, No. 29

*Digestive Disturbance of Endocrine and Sympathetic Origin. G. Lyon.—p. 581.

The Tuberculosis Dispensary at Carhaix. Marchais.—p. 584.

Digestive Disturbances of Endocrine-Sympathetic Origin.—In concluding this long study of the effect on the digestive apparatus of abnormal conditions in the endocrine or sympathetic system or both, Lyon remarks that, aside from organotherapy, treatment has to be mainly symptomatic.

Journal de Médecine de Bordeaux

July 25, 1921, 92, No. 14

Prolapse of Valve Through Cecal Anus. Bégouin and Papin.—p. 401.

Morphology of Membranous Internal Ear. G. Portmann.—p. 402.

*Treatment of Dental Fistula. Despin.—p. 405.

*Incisions After Roentgen Ray Exposures. Arnould.—p. 407.

Serodiagnosis of Tuberculosis. C. Massias.—p. 410.

Sulphur in the Human Organism. J. Creignou.—p. 411.

Treatment of Fistulas of Dental Origin.—Despin warns to suspect a dental origin even with a fistula under the jaw toward the neck. A glandular process had been assumed in three cases of the kind, but curetting the fistula had had no effect. He then forced hydrogen dioxid of 100 volumes into the pulp cavity of the suspected tooth, and forced it through the tooth. It made its way out through the fistula; a saturated solution of phenic acid followed, and in a week the fistula had healed.

Incisions After Roentgen Ray Exposures.—Arnould reports a case which warns of the danger from incising the skin at a point previously sensitized by roentgen exposures. If the skin shows pigmentation from the exposure, this area should be avoided in incising. In the case described, the scar left by the incision in the sensitized area was the seat of severe pains, stabbing, lancinating, twisting pains or a dull deep ache or burning, varying from day to day, for six months. The intolerable pains and atony of the tissues were relieved by heliotherapy, supplemented by superheated air.

Journal d'Urologie, Paris

July, 1921, 12, No. 1

*The Ureter Reflux. André and Grandineau.—p. 1.

A Calcified Renal Hydatid Cyst. H. Minet.—p. 13.

*Emetin Treatment of Bilharziasis. M. Bonnet.—p. 15.

*Voelcker's Ischiorectal Prostatectomy. A. W. Fischer and O. Orth.—p. 63.

The Ureter Reflux.—The three cases reported by André and Grandineau differ from the thirty on record in which there was reflux into a tuberculous kidney, in that in their cases the reflux occurred into the sound mate. They summarize two other cases of the kind from the literature, and ascribe the anomaly to the intensity of the contractions of the bladder in renal tuberculosis, and a gaping ureter mouth. Necropsy in one of their cases revealed the damage from the reflux. The ureter had become dilated, and the kidney pelvis, and a tuberculous process had started in the lower end of the ureter. This ascending infection in time would have crept up to the sound kidney as in Wildbolz' experimentally induced ascending renal tuberculosis. Reflux into the second kidney may mislead in interpreting the findings with catheterization of the ureter. A gaping ureter and pain in the second kidney pelvis or ureter from distention, when fluid is injected into the bladder, are instructive. If this pain occurs spontaneously, its coincidence with contraction of the bladder or micturition must be evident. In old cases it may be necessary to place a lumbar drain permanently in the pelvis of the kidney subject to the reflux. This was done in two of their cases, permitting nephrectomy a little later in one case; the other was inoperable.

Emetin Treatment of Bilharziasis.—Bonnet reports the cure of a case of bilharziasis under nine intravenous injections of emetin at intervals of two or three days, the doses increasing from 2 to 10 cg., and then six injections of 10 cg. each on alternate days. After suspension for six days, another series of 10 cg. was given at three day intervals. The drug was discontinued the fifty-third day. Aside from the characteristic asthenia under this treatment and tendency to vertigo toward the last, there were no appreciable by-effects. No living parasites or living ova could be found after the fifteenth injection.

Ischiorectal Prostatectomy.—Fischer and Orth's article was summarized in these columns, Feb. 12, 1921, p. 487, when it appeared in German. This condensed French translation reproduces the twenty-one illustrations.

Paris Médical, Paris

Aug. 6, 1921, 11, No. 32

*Urology in 1920-1921. Papin.—p. 105.

*Calculus in Ureter. G. Marion.—p. 109.

*High Frequency Current in Urinary Surgery. Heitz-Boyer.—p. 112.

*Bladder Disturbance with Anteversion of Uterus. J. Oraison.—p. 117.

*Prostatectomy. F. Marsan.—p. 120.

Hydronephrosis. E. Pillet.—p. 123.

Urology in 1920-1921.—Papin comments on two important publications of recent date on benign tumors of the prostate and the remote results of prostatectomy. Papin and Verlica, in the first, presented evidence that hypertrophy of the prostate often belongs in the category of tumors of embryonal origin, urethral rather than prostatic. The problems of the small hard prostate and the stenosis after prostatectomy are still waiting for solution. Ambard's ureosecretory index is not accepted by all, although Legueu places implicit reliance in it. Papin says of cancer of the bladder that all eyes are turned now on the remote results of radium treatment, all other measures having so often proved disappointing. The action of radium emanation needles, introduced after suprapubic incision, seems promising to date.

Calculus in Ureter.—Marion emphasizes that a calculus in the ureter calls for removal even more systematically and promptly than a calculus in a kidney. With anuria from a calculus which it is impossible to dislodge, he advises nephrostomy, attacking the calculus later.

High Frequency Current in Urinary Surgery.—Heitz-Boyer for ten years has been seeking to improve the technic and extend the fields of this method of treatment. In certain cases it permits the destruction at a single sitting of large hypertrophied lobes of the prostate, or the liberation of a calculus in the terminal ureter, or the cure of tuberculous ulceration in the bladder after nephrectomy, or the electric curettage of cystitis, or the cure of any and every subacute and chronic lesion in the urethra, including polyps and inflammatory pseudopolyps. Some of his patients have been cured for nearly ten years to date.

Bladder Disturbance from Anteversion of the Uterus.—The puzzling feature of these cases is that the anteversion may not be causing any symptoms otherwise, and the bladder disturbances are ascribed to everything but the true cause. There is usually secondary dyspepsia. The bladder is scarcely sensitive to contact or distention, but very sensitive to bimanual palpation which induces pains like those at micturition, with imperious desires. The pains are aggravated during menstruation, but they subside completely as the woman lies in bed. The cystoscope shows a normal aspect, at most a little redness at the neck. In one case the search for the cause of the disturbances had entailed futile catheterization of the ureters. These patients are always of the nervous, impressionable type, and develop neurasthenia readily. In three cases the disturbances ceased during a pregnancy but returned later. After failure of all other measures, he found that the most effectual way to relieve the mechanical injury of the bladder was to apply astringents to the uterus, injecting a weak solution of alum, followed by introducing into the vagina a tampon impregnated with starch glycerite and tannin. The action is palliative only, but some patients were relieved for a year when this treatment had been kept up for a month. Pessaries never answered the purpose.

Prostatectomy at Two Sitzings.—Among the advantages of this technic Marsan enumerates the reduction of the routes for absorption of infection as the skin down to the bladder and the prevesical space have healed over before the prostate is enucleated. He advises a very small incision, a good fingerbreadth above the pubis. In Rafin's 132 cases, the interval before the prostatectomy followed was from two to four weeks in 10; from one to three months in 43, and up to two years in the others. Time enough must be allowed for the urine to clear up and the azotemia and Ambard index to decline and the general health improve. In 168 prostatectomies at one sitting, the mortality was 16.07 while it was only 7.57 per cent. in the 132 two-sitting cases, and in the last 109, only 5 per cent. This is also Legueu's figure.

Presse Médicale, Paris

Aug. 3, 1921, 29, No. 62

*Total Colectomy. Sir Arbuthnot Lane.—p. 613.

The Manometer Mask Test of Vital Capacity. M. F. Carrieu.—p. 616.

Total Colectomy.—Lane's conclusions from his twenty years of study of chronic intestinal stasis are to the effect that total colectomy is indicated when digestive disturbances and signs of autointoxication accompany the chronic intestinal stasis. Also when there are merely phenomena indicating autointoxication, such as neuralgias, general depression,

emaciation, abdominal malaise, cold hands, menstrual disturbance, etc., accompanying the chronic intestinal stasis. Also in conditions resulting from the intestinal stasis, such as deforming rheumatism, tuberculous rheumatism, Addison's disease, chronic mammitis, exophthalmic goiter, Raynaud's disease, etc. In all these conditions, if radioscopy reveals intestinal stasis, he urges to operate. The patients will recuperate and improve considerably, especially if the pathologic condition is not of long standing. If there is infection, a sample of the intestinal flora should be secured during the operation and utilized to make an autogenous vaccine. The results of the operation should be supervised for several months. The physician should be on the alert to detect and correct the various insufficiencies for which the chronic stercoremia is responsible: insufficiency of muscles, nerves, glands, etc., and train in physical reeducation. The great majority of the colectomized have their life transformed, an actual resuscitation. The technic, etc., and the advantages of the total over partial colectomy are discussed.

Aug. 6, 1921, 29, No. 63

Oscillometer Study of the Pulse. A. Mougeot.—p. 621.

*Ear Test for Inherited Syphilis. J. Ramadier.—p. 624.

Physiology of Appendix. L. Binet and G. J. Dubois.—p. 625.

Ear Test for Inherited Syphilis.—Ramadier gives an illustrated description of a pneumatic test of the vestibule, a positive response being nystagmus or a slow movement of the eyeballs, under compression or aspiration of the air in the external ear. This "sign of a fistula without fistula" is evidence of some lesion in the internal ear alone, and this is comparatively common with inherited syphilis. He never found this test positive in the normal nor in other forms of ear disease. No case has yet come to necropsy, but a specific osteitis of the bony capsule of the labyrinth would explain the clinical manifestations. This Hennebert test is applied with a speculum and rubber bulb.

Progrès Médical, Paris

July 23, 1921, 36, No. 30

*How to Administer Pepsin. M. Loeper and J. Baumann.—p. 345.

Technic for Spinal Anesthesia. P. Delmas.—p. 347.

*Brain Tumors in Children. A. Broca.—p. 348.

Administration of Pepsin.—Loeper and Baumann give 0.1 gm. of pepsin exactly one hour before the meal. It then regulates stomach secretion, they say, and seems to exert a general harmonious, preventive and antitoxic action. When given during the meal, it has merely a transient substituting action.

Brain Tumors in Children.—Broca recently reexamined a girl whom he had treated by a decompressive operation nine years before. In this, and in two other cases he describes, the symptoms indicating pressure on the brain were pronounced. Choked disk is the effect of pressure, and it can retrogress without entailing atrophy of the optic nerve if the pressure is relieved in time. As long as the skull is elastic, the pressure from a brain tumor is seldom so great as in older children and adults. The pressure may spread the sutures; in this case temporary relief follows. In one such case the vomiting and headache lasted only a month although the diagnosis of a brain tumor was beyond question. In his case with an interval of nine years since the palliative operation, the girl, now 20, is still blind, and the mental condition has deteriorated, but she does not suffer and has a good appetite. The large decompressive operation followed seven months after the first symptoms of the brain tumor, but there were no focal signs. In such cases, when it is impossible to locate the tumor, all we can do is to watch for the first indications of choked disk, and operate at once to ward off blindness from the intracranial pressure.

Revue Franç. de Gynécologie et d'Obstét., Paris

May, 1921, 16, No. 5

*Blood Pressure in Eclampsia. P. Balard.—p. 257.

Draining After Supravaginal Hysterectomy. C. Daniel.—p. 278.

The Blood Pressure in Eclampsia and the Albuminuria of Pregnancy.—Balard estimates the blood pressure with Pachon's oscillometer. He declares that the diastolic pressure throws light on the prognosis and shows the effect of venesection and other measures. Every intoxication toward

the close of a pregnancy is accompanied by high blood pressure. The figures reached sometimes were the highest he has ever known. The diastolic pressure rises with peripheral vasoconstriction, especially in the glomeruli. It occurs elsewhere, but here it blocks the kidneys more or less. The heart struggles against this with vigorous systoles, and treatment must aim to unblock the kidneys and sustain the heart. The guide here is the blood pressure. A rise in the diastolic pressure, proportionately higher than the systolic, is a bad omen. A high blood pressure therefore calls for treatment of albuminuria in the pregnant with as much energy as if there were already convulsions. This is the only means to ward off damage of the kidneys, possibly irreparable and fatal. Venesection relieves the heart, and the blood pressure drops at once. Balard has had cases in which delivery proceeded without hemorrhage, and the eclampsia persisted afterward as before. Venesection is the only salvation, and it should be ample enough for the diastolic pressure to decline decidedly at once, and there should be no guesswork as to the decline; it should be carefully measured. In one case he had to draw up to 1,200 gm. of blood to accomplish the purpose. No by-effects were noted. Morphin also reduces the blood pressure, but only slightly and temporarily. When the patient is kept too long on milk alone, the diastolic pressure declines as desired, but if the systolic pressure and the index decline likewise, warning that the heart is growing weak, more nourishing food is required. Purgatives and moderate doses of chloral to combat the nervous excitability should supplement the venesection.

Schweizerische medizinische Wochenschrift, Basel

July 21, 1921, 51, No. 29

- *Cataract with Myotonia Atrophica. Alfred Vogt.—p. 669.
- *Ether Treatment of Peritonitis. B. Lienhardt.—p. 674.
- Indications for Operative Treatment of Hernia. Nigst.—p. 679.

Cataract with Myotonia Atrophica.—Vogt has seen four cases of myotonic dystrophy and he knows of only four cases seen by others in Switzerland. A strange feature of this disease is the frequent involvement of other organs besides the muscles, the resulting symptoms a remarkable mixture. Cataract is common. It was evident in five of the eight Swiss cases, and in all the disease showed a marked familial and hereditary character. In one of Vogt's cases the father, one son and one daughter presented both the myotonic dystrophy and the cataract, while one other son had the former; the four other children escaped both. In Vogt's other case the woman was bald on the front of the head, with disturbance in speech, and she is crippled from the extreme atrophy of the hands and arms. A number of cases are known in this family also. The cataract in all these myotonia cases gave evidence of a peculiar abundance of cholesterin during the early stages, which confers a characteristic structure on it.

Ether Treatment of Peritonitis.—Lienhardt had one instance of collapse among the 101 cases of peritonitis in which he rinsed out the peritoneum with ether, but a few others have reported similar experiences. Not more than 100 gm. should ever be used. It seems to tend to reduce the temperature and stimulate leukocytosis, in addition to the striking postoperative analgesia; but the principal advantage is the reactive inflammation and exudation which pours out antibodies on the infectious process. The local chilling from the ether stimulates the bowel and vessels to contract, and thus it promotes peristalsis and the circulation. The great drawback is the development of adhesions and bands later. These were not prevented by associating camphorated oil with the ether, and hence this ether treatment should be reserved for only the severest cases. The mortality in his 22 cases was 18.1 per cent.

Pediatrics, Naples

July 15, 1921, 29, No. 14

- *Contagiousness of Tuberculosis in Infants. O. Cozzolino.—p. 633.
- Smallpox. V. Triputi.—p. 638.
- *Craniotabes. S. de Stefano.—p. 643.
- Peculiar Behavior of Measles. A. Bellei and B. Maggesi.—p. 653.

Contagiousness of Pulmonary Tuberculosis in Infants.—The 3 months infant and girl of 2½ years must have acquired the tuberculous infection in some casual manner outside the

family circle. An older child in each of the families soon developed acute miliary tuberculosis or tuberculous meningitis. No tubercle bacilli could be found in the sputum of the infant and young child; they swallowed their sputum.

Craniotabes.—De Stefano tabulates the findings in fifty-two cases of craniotabes. They justify the assumption of inherited syphilis in every case of craniotabes. All but nine of the fifty-two were breast fed. Over 71 per cent. of all presented signs of syphilis. In the others thyroid insufficiency or rachitis was evident. Craniotabes is often the first manifestation of rachitis.

Policlinico, Rome

Aug. 8, 1921, 28, No. 32

- *Tuberculosis and Chvostek's Sign. R. Pollitzer.—p. 1067.
- Leukemoid Crises in Malaria. I. Bersani.—p. 1069.
- Medical Inspection of Merchant Marine. G. Oreste.—p. 1071.
- Prostitution and Abolitionism. S. Sberna.—p. 1073.

Tuberculosis and Chvostek's Sign in Children.—Pollitzer cites figures to show that Chvostek's phenomenon is observed in about 78.2 per cent. of children with rachitis and in about 18.4 per cent. of other children. His research has demonstrated the surprising frequency of tuberculosis in this group of nonrachitic children with positive Chvostek sign. Radioscopy in each one he examined showed some process in lung or bronchial glands, although percussion and auscultation had been negative. He theorizes that the demineralization which is common in tuberculosis may be responsible for the overexcitability of the nerves entailing the Chvostek sign.

Riforma Medica, Naples

July 23, 1921, 37, No. 30

- Hematuria. C. Bruni.—p. 697.
- *Adaptability of Bacteria to the Opsonins. M. Gulino.—p. 699.
- *Access to Foot Through Achilles Tendon. O. Nuzzi.—p. 701.
- Trauma as Contributing Factor. E. Aievoli.—p. 702.

Adaptability of Bacteria to the Opsonins.—Gulino's experiments were made with staphylococci and the bacterium of Malta fever. The facts observed explain the failure of Wright's vaccines at times, and suggest the advisability of changing to a heterogenous vaccine.

Access to the Heel Through Achilles Tendon.—Nuzzi illustrates the technic for the transachilleal operation, and the means to restore approximately normal conditions afterward.

Rivista Critica di Clinica Medica, Florence

June 25, 1921, 22, No. 18

- The Corpus Striatum Syndrome Left by Epidemic Encephalitis. A. Furno.—p. 205.
- Conc'n No. 20, p. 229.

July 15, 1921, 22, No. 20

- *The Alcohol Test Meal. E. Sanfilippo.—p. 232.

The Alcohol Test Meal.—Sanfilippo has been applying parallel tests with the Ewald-Boas and the Ehrmann or da Silya purely chemical test with merely 300 c.c. of a 5 per cent. solution of alcohol to which 0.05 c.c. of sodium salicylate has been added. The stomach content is aspirated half an hour after the fluid has been ingested. He tabulates the findings in ten cases. They confirm the prevailing views on the action of alcohol on the secretory and motor function of the stomach, and demonstrate that this test does not answer the desired purpose.

Archivos Españoles de Pediatría, Madrid

May, 1921, 5, No. 5

- *Syncope and Apparent Death in Whooping Cough. A. Martinez Vargas.—p. 257.
- To Ward Off the Chronic Stage. H. R. Pinilla.—p. 270.
- Polyglandular Derangement. Dámaso Rodrigo.—p. 279.

Syncope and Apparent Death in Whooping Cough.—Martinez Vargas has found very few references in the literature to syncope and apparent death as a complication of pertussis, although convulsions and sudden actual death in whooping cough have been recorded by a number of writers. One child of 4 stopped breathing and the heart stopped beating, for one or two minutes or more, in its paroxysms of coughing. Investigation revealed that the family were giving the child an advertised remedy for whooping cough which reduced bronchial secretion and raised the blood pressure.

The paroxysms were thus rendered less frequent but each one more violent. Under an expectorant, the paroxysms soon became much less violent, and there were no further syncope. In two other families the syncope and paralysis of respiration in the infants were so severe that the parents had to keep the forceps ready for traction of the tongue, and give ether or chloroform and rub the heart region to revive the children. One infant of 6 months had to be given for sixteen consecutive days chloroform to actual anesthesia to ward off fatal arrest of the heart action. In all the cases he has observed, the syncope occurred at the onset of the paroxysm. The children felt the aura, and the syncope followed before bystanders heard the cough. The syncope was less liable to occur when the air was moist. The communication between the larynx and the heart innervation, by means of the superior laryngeal nerve and the cardiac branches, once established, the syncope was brought on more readily and by weaker stimuli each time. He has found autogenous vaccines useful in whooping cough, giving great relief and warding off complications. For about a year his practice has been to give a daily intramuscular injection of 1 c.c. of ether to a total of six, and with highly satisfactory results.

Brazil-Medico, Rio de Janeiro

June 11, 1921, 1, No. 24

- *Braun's Flap Grafts. R. David de Sanson.—p. 299.
- Freud's Theories and Psychoanalysis. A. Lellis.—p. 300.
- Cure of Abscess of Liver Under Emctin. F. Fignolini.—p. 303.

June 18, 1921, 1, No. 25

- The Medicinal Flora of Northeastern Brazil. F. de Lima Lisboa.—p. 313.
- Public Health Questions. L. Ribeiro, Jr.—p. 317.
- Water in Transmission of Disease. A. Ricardo.—p. 318.

Braun's Skin Grafts.—De Sanson extols the ease, the simplicity and the successful outcome of Braun's method of burying in the granulating surface of a wound scraps of sound skin, planting them in rows like shoots or seedlings. The method was described recently in *THE JOURNAL*, June 4, 1921, p. 1621. He was impressed with the rapid healing even in apparently the most unfavorable cases, and adds that the technic is within the reach of almost any one.

July 16, 1921, 2, No. 1

- *The Cutaneous Manifestations of Plague. E. Araujo.—p. 1.
- Chemical Cauterization of Tonsils. P. Mangabeira Albernaz.—p. 4.

The Cutaneous Manifestations of Plague.—Araujo noted only sixty cases with cutaneous manifestations among the 827 plague cases in the isolation hospital at Bahia. The cases were all grave in which the pustules or patches of inflammation developed, forty of the sixty dying.

Semana Médica, Buenos Aires

June 9, 1921, 28, No. 23

- *Syphilitic Disease of the Kidneys. C. P. Waldorp and O. Behr.—p. 661.
- Physiologic Nystagmus. R. Argañaraz.—p. 666.
- *Hydatid Cyst of the Gallbladder. A. Gutiérrez.—p. 671.
- The Vitamins. C. F. Speroni.—p. 679.

Syphilitic Nephrosis.—Waldorp and Behr have noted that an intercurrent disease, especially malaria, is frequently the immediate cause of the development of the syphilitic nephrosis in acquired or inherited syphilis. It is also liable to develop in chronic malaria when syphilis is contracted. But syphilis alone is capable of generating it; the resulting "lipoidic nephrosis" develops usually during the secondary stage. They have witnessed its development during the course of specific treatment. The first symptoms are increasing weakness with loss of appetite and energy, pain in lumbar region, and anemia. Then comes a tendency to general dropsy with a very fluid opalescent effusion in chest and abdomen, free from sediment and cholesterol, with 7 or 8 per thousand chlorids; albumin and lipoids scanty. The course is long although the edema may subside in a few cases, but chronic interstitial nephritis is liable to be the outcome. In addition to the usual specific treatment of the underlying syphilis, thyroid treatment was required in some of their cases, especially in those with the syphilis inherited. Castex and other writers have been emphasizing recently the benefit from thyroid treatment in certain cases of kidney disease accompanied by edema. The edema with kidney disease resembles that in myxedema. The albuminuria is also favorably influenced by thyroid treatment in some cases.

Hydatid Cyst of the Gallbladder.—Gutiérrez adds a thirteenth case to the twelve already published in Argentina. In his case four cysts and a calculus were found in the gallbladder.

Siglo Médico, Madrid

May 28, 1921, 68, No. 3520

- *Electric Conductibility of Blood Serum. R. Novoa Santos and J. Arijón Gende.—p. 501.
- *Extraction of Cataract in the Capsule. I. Barraquer.—p. 502. Cont'n No. 3521, p. 532.
- Gastric Symptoms with Chronic Appendicitis. Rodríguez López.—p. 507.
- *Habitual Scoliosis. J. Decref.—p. 508.
- Partial Tetanus. E. Chauvin.—p. 510. Cont'n.

Electric Conductibility of Body Fluids.—In the experimental and clinical research described, no characteristic modification of the electric conductivity of the urine could be detected after removal of one or both kidneys or ligation of the pedicle, nor in clinical cases with and without uremia.

Vacuum Extraction of Cataract in the Capsule.—Barraquer gives an illustrated description of his method of "phacoeresis" and presents arguments to demonstrate its superiority over other technics.

Habitual Scoliosis.—In concluding this review of the modern treatment of habitual scoliosis, Decref mentions a case in which the thyroid was injured in the course of a tracheotomy, and the child developed severe scoliosis afterward. It was arrested and cured by repose, reclining on the back, and thyroid treatment. Tincture of iodine internally seems to regulate the functioning of the whole system of ductless glands, and he says that he has never found anything else so useful for this. The only objection is the danger of stomach derangement from it, and this can be avoided by using vaporized iodine introduced under the skin. The iodine appears rapidly in the urine; the general health improves and the benefit is soon evident in the pretuberculous or tuberculous lesions. Bondreau's experience corroborates that of San Martín and others in respect to the value of large doses of iodine internally. It acts predominantly on the thyroid which Decref always found functioning defectively in these cases of scoliosis. Heliotherapy is a very useful adjuvant. He recalls that it acts on the blood in the superficial capillaries, and hence the more blood that can be attracted to the surface and the greater the area exposed and the longer the exposure, the more effectual its action. He urges more general application of heliotherapy as a heroic remedy for all these conditions.

Deutsche medizinische Wochenschrift, Berlin

July 7, 1921, 47, No. 27

- *Sterility in Women. G. Winter.—p. 765. Cont'n.
- Experimental Investigations on the Disinfection of Infected Wounds. F. Neufeld and A. Reinhardt.—p. 768.
- *Value of the Clinical Blood Picture. V. Schilling.—p. 771.
- *Roentgen Ray in Polycythemia. A. Böttner.—p. 773.
- Treatment of Polycythemia with Phenylhydrazin. Taschenberg.—p. 774.
- Practical Value of E. Hoffmann's Illumination Method. Silberstein.—p. 775.
- Turpentine in Dermatology. W. Lüth.—p. 776.
- Acute Ileus of the Small Intestine as First Symptom of Tuberculosis of Mesenteric Glands; Cure by Enteroplasty. O. Homuth.—p. 777.
- Origin and Treatment of Enuresis. A. Lippmann.—p. 777.
- Typical Mongolian Spot in Child of German Extraction. Jacobi.—p. 779.
- Present Status of Knowledge of "Colds." A. Bickel.—p. 780.
- Hemorrhages Preceding Expulsion of Placenta. L. Blumreich.—p. 781.

Causes and Treatment of Sterility in Women.—While admitting the difficulty of judging the causes of sterility in a given case, Winter thinks that he gives therewith an accurate idea of the relative frequency of the various causes of sterility in women: Out of 178 cases of his private and clinical material, he states the causes of primary and secondary sterility to have been as follows: infantilism, 18 cases; colpitis, 1; stenosis of the external os, 17; stenosis of the cervical canal and os internum, 22; catarrh of the cervix, 5; endometritis, 17; parametritis, 7; perimetritis, 5; antelexion of congested uterus, 12; retroflexion of the uterus, 14; lateroversion of the uterus, 3; carcinoma of the uterus, 1; myoma, 10; adnexa affections, 34, and perineal tears and prolapse, 12.

Value of the Clinical Blood Picture.—Schilling holds that the clinical value of the morphologic blood picture, in spite of the vast amount of work done in this field, is far from being adequately appreciated. To be sure, recognized dis-

eases of the blood, as leukemia, pernicious anemia, chlorosis and polycythemia have received proper attention and have caused morphologic details of the blood to be studied to a certain extent, but the general practitioner is prone to leave blood tests to the experts. Schilling emphasizes, however, that the practical value of blood examinations has a much wider range than this. He declares that the blood test is one of the few tests that may be routinely applied with great advantage in every case that presents any particular difficulties. He places it on a par with the taking of temperature, urinalysis, counting the pulse, auscultation and percussion. It has a fundamental value in determining the status praesens. It aids not only in the judgment of symptoms and thus in establishing a diagnosis, but throws also a vivid light on the prognosis. Basing his statements on his ten years' practical experience, he proceeds to defend his position that the differential blood count has great value not only in certain characteristic blood diseases but for universal application.

Roentgenotherapy in Polycythemia.—In a former communication, Böttner reported the case of a patient with pronounced polycythemia with tumor of the spleen and typical changes of the skin and mucous membranes (hemoglobin, 145 per cent.; erythrocytes, 9,800,000), who was completely cured by two series of roentgen-ray treatments. An interval of a year and a half has elapsed since the last irradiation, and there has been no relapse. However, in two more recent cases of polycythemia in which he employed similar methods, the results have not been so good. Only partial relief of the patients has so far been effected. He concludes, therefore, that while roentgenotherapy effects a cure in some cases, in others again all that can be accomplished is temporary, though effective, symptomatic relief.

Medizinische Klinik, Berlin

July 3, 1921, 17, No. 27

- Present Status of Treatment of Syphilis. A. Buschke.—p. 801.
Rejuvenation and the Puberty Gland. A. Kohn.—p. 804.
*Tuberculosis of Bronchial and Cervical Glands. H. Gerhartz.—p. 806.
Symptomatology of Myelomas. J. Citron.—p. 808.
Eczema as Vagotonic Manifestation. E. Pulay.—p. 808.
*Puncture of Longitudinal Sinus. E. Krasemann.—p. 809.
*Hirschsprung's Disease. E. Moser.—p. 810.
*Cheyne-Stokes Psychosis. S. Wassermann.—p. 814.
*Biologic Tests for Tuberculosis. R. Korbach.—p. 816.
The Practitioner's Examination of the Middle Ear. K. Grahe.—p. 817.
The Subjective Element in Medical Certificates. W. Heyl.—p. 818.

Relations Between Tuberculosis of the Bronchial and the Cervical Glands.—Gerhartz reports four cases in which a tuberculous process in the bronchial glands seemed to have entailed secondarily a similar process in the cervical lymphatics above. In two of the four young men the lungs seemed to be intact.

Puncture of Longitudinal Sinus.—Krasemann did not hesitate to withdraw up to 40 or 80 c.c. of blood to relieve high pressure in the lesser circulation in some cases. As a rule, however, 8 to 10 c.c. was the limit. The procedure has been applied 300 times to date at the Rostock children's clinic, including his own 250 cases. The original suggestion to obtain blood in infants by puncture of the longitudinal sinus he attributes to Marfan, 1914, but numerous writers have reported its use since, and none mention any injury therefrom. His own experience with it has been favorable, but he adds that it had better not be attempted outside of the clinic at present.

Hirschsprung's Disease.—Moser reports two cases, in a woman and an infant, which teach the necessity for combating spasm as the indispensable first measure in treatment of Hirschsprung's disease. They teach also that some congenital anomaly, a constricting band or the like, is frequently a factor in the disturbances. In the first case a membranous band could be palpated; in the infant a muscular spasm simulated a band, but a spastic element was evident in the woman also. In short, he reiterates, the tendency to spasm, with or without an organic basis, is the essential element in Hirschsprung's disease, and the one to be combated first and foremost.

Cheyne-Stokes Psychosis.—Wassermann has observed the development of psychic disturbances along with the onset of Cheyne-Stokes respiration in the course of chronic heart disease, especially aortic valve defect. The psychosis which

develops as compensation fails is accompanied by conditions resembling cardiac asthma, with intense motor agitation. The psychosis is of the usual symptomatic type, without special features.

Intradermal Test with Own Spinal Fluid.—Korbach relates that a specific reaction was attained in two cases of tuberculous meningitis when he injected intradermally some of the patient's own cerebrospinal fluid obtained by lumbar puncture. Control tests on the healthy were constantly negative. The reaction is even more pronounced when the fluid is kept, slanting, in the incubator for one to three days. The test can be made also on immunized guinea-pigs, and the urine and serum used likewise for the test reaction.

Monatsschrift für Kinderheilkunde, Berlin

April, 1921, 21, No. 1

- Diet of German Children During the World War. Czerny.—p. 2.
Acromegaly in Childhood. G. Petényi and L. Jankovich.—p. 14.
*Influence of Diet on Premature Children. K. Neubauer.—p. 21.
Urea Content of Blood in Alimentary Intoxication. Wilmanns.—p. 31.
Sexual Glands in Predisposition to Tuberculosis. H. Mautner.—p. 38.
A Case of Meningococcus Sepsis. L. Mendel.—p. 43.

Influence of Diet on the Growth and the Development of Premature Children.—Neubauer recalls that infants prematurely born present marked differences from the healthy infant born at term. He examined 100 premature children with an average weight of 1,500 gm. He noted their physical development and height in earlier years and compared it with their development in later years. The theory that premature infants need more salt was confirmed. Physical development—height and weight—may be materially improved by the addition of mineral salts of milk. This may be accomplished by adding a buttermilk preparation to human milk. The advantage lies not only in better growth during the first year but also in later years.

Münchener medizinische Wochenschrift, Munich

July 8, 1921, 68, No. 27

- *Cerebrospinal Fluid in Rabbits. F. Plaut and P. Mulzer.—p. 833.
*Modern Protein Therapy. F. Rolly.—p. 835.
*Varying Composition of Spinal Fluid. W. Weigeldt.—p. 838.
Circulation in Spinal Arachnoid Sac. E. Becher.—p. 839.
*High Blood Pressure in Pregnancy. H. Hinselmann.—p. 840.
Early Diagnosis in Campaign Against Tuberculosis. Saathoff.—p. 842.
Total Volume of Erythrocytes in Tuberculosis. H. Kämmerer and L. Geisenhofer.—p. 844.
*Decortication of Lung in Pleural Empyema. A. W. Fischer.—p. 846.
*Coagulation After Irradiation of Spleen. F. v. d. Hütten.—p. 846.
Roentgen Irradiation of Infected Sweat-Glands in the Axilla. F. Peyser.—p. 848.
Treatment of Ozena. B. Griessmann.—p. 849.
*Indexes of Nutrition, etc. F. Rohrer.—p. 850.
Intravenous Injections Without Assistant. Fantl.—p. 851.
Concentration of Roentgen Rays. H. Chaoul.—p. 851.
Zosteriform Skin Necrosis After Intramuscular Injections of Mercury Succinimid. J. Jadassohn.—p. 852.
Poisoning from Thorn-Apple Leaves. A. Solmsch.—p. 852.
Tuberculin for Diagnostic Purposes (Moro). Krtschmer.—p. 852.
Intradermal Reaction. F. Mendel.—p. 852.
Discharges from Genital Tract; Treatment. M. Nassauer.—p. 853.

Cerebrospinal Fluid in Rabbits.—Plaut and Mulzer tabulate the findings in thirty-eight normal and in twenty-two syphilitic rabbits.

Protein Therapy.—Rolly's review of what has been accomplished in this line to date concludes with the warning that protein therapy is still in the tentative stage but is very promising.

Cerebrospinal Fluid at Different Levels.—Weigeldt reports experiences which show that the cerebrospinal fluid presents regular differences in its composition at different levels of the subarachnoid space. The cell content of the very first portion of the fluid withdrawn should be estimated separately from the last portion. He has made a study of this in 382 pathologic and 124 normal cases, with far above 1,500 lumbar punctures. A few cases are described which show the difference in the diagnosis and prognosis according as the fluid is examined as it first spurts or at the last few drops, or the average of the whole.

Capillary Insufficiency with Pregnancy Nephritis.—Hinselmann relates that he has frequently noted blocking of the capillaries in the nail-fold in pregnant women with high

blood pressure and kidney disturbances. It may be intermittent; and may sometimes be relieved by venesection. This blocking of the capillaries was most pronounced in three severe cases of eclampsia. By supervision of the capillary circulation in the pregnant with high blood pressure, we can be warned of impending disturbances.

Decortication of Lung for Chronic Pleural Empyema.—Fischer reports a case of complete cure of a pleural empyema following a wound of the lung in 1918. Various plastic operations were undertaken without permanent benefit, but a complete cure was realized with Delorme's method of decortication of the lung, applied in 1920.

Coagulation After Roentgen Exposures of the Spleen and Liver.—Hütten was not able to detect any material influence on the hemorrhage at operations in thirty-five patients with pathologically retarded coagulation time, given prophylactic treatment with roentgen-ray exposure of the spleen, with exposure likewise of the liver in fifteen cases. The operations followed twelve or twenty-four hours later. His record shows that after a brief preliminary lengthening of the coagulation time, the coagulation time was materially shortened. This was most pronounced at the fourth and fifth hours, and it had disappeared by the eighth hour.

Indexes of Nutrition.—Rohrer suggests a number of indexes based on the height, the width, and the sagittal chest measure from front to back. By dividing the weight with the product of these three linear measures and multiplying by 100 we obtain a good objective index to serve as a basis for further discrimination.

Wiener klinische Wochenschrift, Vienna

July 7, 1921, 34, No. 27

American Food Distribution Among Schoolchildren of Austria. C. Pirquet.—p. 323.

The Austrian Food Administration for the Provinces. E. Mayerhofer.—p. 324.

American Food Relief Commission in Austria. E. Nobel.—p. 325.

Determination of Dry Substance in Relation to Diet-Kitchen Management. R. Wagner.—p. 330.

Zeitschrift für Tuberkulose, Leipzig

June, 1921, 34, No. 5

*Primary Tuberculous Foci in Children. G. Simon.—p. 345.

*Protection Against Tuberculosis in the Home. F. Ickert.—p. 355.

Prophylaxis of Tuberculosis. W. Kruse.—p. 381.

*Tubercle Bacillus Septicemia. Karl Nather.—p. 390.

*Arthropathies with Pulmonary Tuberculosis. M. Weinberger.—p. 391.

Periosteum Lesions in Tuberculous Dogs. D. Wirth.—p. 393.

The Primary Tuberculous Focus in Children.—Simon includes the connected glands in his conception of the primary focus, the primary complex, as Ranke calls it. His analysis of thirty-six cases showed that the right lung was involved three times more frequently than the left. The course of the cases was traced with roentgenography during the following years. The primary complex displays a striking tendency to heal, but when it displays a tendency to progress, the course may be acute or chronic. Metastatic foci do not have the characteristic satellite glands. The roentgen picture of the primary complex may be very much alike in adults and in children.

Protection of Children Against Tuberculosis in the Home.—Ickert reports the experiences in this line in 939 cases at Stettin. In 536 the contagious member of the family was isolated in the house; in seventy cases away from home; in 103 the children were removed from the home.

Tubercle Bacilli Septicemia.—Nather found miliary tubercles in a goiter in four cases and in a fifth case the thyroid was riddled with cheesy foci. The rarity of this finding suggests that the thyroid does not offer a favorable soil for tuberculosis. If the bacilli lodge there the process heals.

Osteo-Arthropathy with Cancer of Lung.—Reviewed when published elsewhere. See page 742.

Zeitschrift für urologische Chirurgie, Berlin

July 26, 1921, 7, No. 4

*Prostatectomy at Two Sitzings. H. Rubritius.—p. 109.

Case of Cyst in Parenchyma of Kidney. A. Zinner.—p. 123.

*Tests of Functional Capacity of Kidneys. O. Schwarz.—p. 128.

*Cause and Treatment of Nocturnal Enuresis. S. Gottfried.—p. 160.

Fibrosclerotic Paranephritis. A. Brenner.—p. 166.

Prostatectomy at Two Sitzings.—Rubritius expatiates on the advantages of diverting the urine by cystostomy as a preliminary to prostatectomy. This allows measures to cure existing infection, and enables the kidneys to recuperate, while the patient, being relieved of his distress at micturition and the inconveniences of retention, has his sleep restored and his general health rapidly improves, thus materially improving conditions for the prostatectomy proper. By thus operating at two sittings, the scope of operative treatment of hypertrophied prostate becomes much broader, embracing many cases hitherto deemed inoperable. He adds that certain patients will find the relief sufficient and may decline further intervention, and there is the further disadvantage that these cystostomized will require considerable after-treatment, but these drawbacks do not outweigh the benefits from the two-sitting method in the graver cases. He gives the details of eleven experiences of the kind.

Functional Tests of the Kidneys.—Schwarz' article was read at a joint meeting of the Vienna Surgical and Urologic societies. He seeks to draw the balance sheet as to what has actually been accomplished by the numerous functional tests introduced in the last decades, and their practical value for internal medicine and surgery. After passing them in review, from the determination of the freezing point of the urine to the Ambard ureosecretory index, etc., he remarks: "But one fact throws a bright light on the whole situation, namely, that this whole recent development of functional tests of the kidneys has passed by German urologic surgery without making any impression on it. Of all the problems and the results of attempts at solution which I have been here systematically chronicling, German surgery has taken no heed. It is evident therefore that German surgery did not feel any necessity for them. A glance at the literature shows that, aside from determination of the freezing point, residual nitrogen, absolute and proportional excretion of the elements of the urine and the water freshet test, the majority of German surgeons have been fully satisfied with the phlorizin and the indigo carmin test findings." . . . "These however lack a physiologic perspective." He then proceeds to show, from his own experiences in 274 cases of surgical kidney disease, without a single death from renal insufficiency in the course of fourteen years, that an early diagnosis by catheterization of the ureters and the progress in surgical skill have been the solid bases for the successful surgery. From the standpoint of internal medicine, however, the finer methods of estimation of the various elements of kidney functioning are of extreme importance. The internist can apply a whole series of therapeutic measures beyond the point where the surgeon recognizes the limits of surgery. In conclusion he remarks that true post-operative renal insufficiency has been eliminated; and that this is possible with the simplest of means. To estimate the exceptional cases in which postoperative insufficiency of the kidneys is not directly connected with the secretory quality of the kidney, requires a clinical sense; no measurements will answer here.

Nocturnal Enuresis.—Gottfried reiterates that tenacious enuresis nocturna is the result of three factors: a substandard development of the nerve tracts controlling bladder functioning; exceptionally profound slumber; and some one of various inducing factors which differ in different cases and at different times. Treatment has to combat each of these three factors.

Zentralblatt für Chirurgie, Leipzig

July 9, 1921, 48, No. 27

*Radium Applicator for Mouth. G. Perthes and O. Jüngling.—p. 958.

Drainage in Carcinoma of Bile Ducts. G. Hotz.—p. 959.

Resection or Gastro-Enterostomy in Gastric Ulcer Distant from Pylorus. M. Krabbel.—p. 960.

Sphincter for Artificial Anus. W. Goldschmidt.—p. 961.

Affection of Sheath of External Popliteal Nerve. C. Sultan.—p. 963.

Plastic Correction of Defects in Larynx and Trachea. Pfeiffer.—p. 965.

Plaster Splint for Fractured Clavicle. B. v. Mezö.—p. 968.

Plastic Radium Applicator for Buccal Cavity.—Perthes and Jüngling describe and recommend plastic applicators for radium irradiation of the mouth. The plaster cast is prepared in much the same manner as a dentist prepares a cast of the teeth, and the radium tube is fitted into this. They have made use of this technic especially in radium irradiation for cancer of the tongue. By this method, the radium could be retained in the correct position up to twelve hours. Roent-

gen irradiation from without was added. Although they admit that combined radium and roentgen therapy does not constitute a sure cure for cancer of the tongue, it occasionally effects a marked improvement. They have observed complete clinical cures for up to two years and a half.

Zentralblatt für Gynäkologie, Leipzig

July 2, 1921, 45, No. 26

- *Signs of Pregnancy. K. Holzapfel.—p. 917.
- Measuring True Conjugate Diameter of Pelvis. Kirstein.—p. 919.
- Malformations of Fetus in Relation to Hydramnion. Lau.—p. 923.
- Ventrifixation of Uterus, an Obsolete Procedure. Albert.—p. 928.
- Eclampsia and Endocrine System of the Child. Fraenkel.—p. 929.

Signs of Pregnancy.—Holzapfel recalls that softening of the tissues of the corpus uteri is the first distinct sign of pregnancy. Such relaxation is usually noted by palpation of the uterus between the hand and forefinger. He describes another way of demonstrating the change in consistency. Allowing the palpating forefinger and hand to glide along the corpus and beyond the fundus, with a slight exertion of pressure, the nongravid uterus snaps back as soon as the pressure is removed, but the gravid uterus resumes its shape more slowly. With a little practice this will become a reliable, though not infallible, sign for the early determination of pregnancy.

Zentralblatt für innere Medizin, Leipzig

July 9, 1921, 42, No. 27

- Rapid Methods for Determination of Urea in Urine, Blood and Other Body Fluids. H. Strohmam and S. Flintzer.—p. 545.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 18, 1921, 1, No. 25

- *Sensitiveness of the Cornea. E. Marx.—p. 3338.
- *Neo-Arsphenamin in Malaria. A. Nieuwenhuys.—p. 3349.
- *Extension of Cancer into Vessels. W. van Raamsdonk.—p. 3355.
- *Sarcoma of Mamma. A. Norden.—p. 3361.
- *Convergence Spasm of the Eyes. S. J. R. de Monchy.—p. 3366.
- Work of the Muscles and Lactic Acid. W. E. Ringer.—p. 3372.

Sensitiveness of the Cornea.—Marx shows that the cornea grows less sensitive from the center to the periphery.

Neo-Arsphenamin in Malaria.—Tertian malaria is prevalent in northern Holland, and Nieuwenhuys frequently encounters persons who are unable to take quinin. These he treats with neo-arsphenamin, and the symptoms often subside after one injection and no further parasites can be found in the blood. No effect was observed in a case of quartan malaria, and even with tertian malaria, a relapse later sometimes exceptionally occurred.

Extension of Carcinoma Into Blood Vessels.—Van Raamsdonk found evidence that the cancer had grown into the blood vessels in 24 of 30 cases of mammary carcinoma; in 11 of 30 uterine cancers, and in 5 of 30 cancers of the tongue, mouth and skin. The proportion was thus 5:2:1, and this corresponds to the tendency to metastasis of these different groups. Involvement of the blood vessels thus detracts from the operability even in poorly vascularized regions.

Sarcoma of the Mamma.—The left breast was enlarged and the seat of erysipelas when Norden first saw the case, two weeks after the first symptom. This had been merely a little pain ascribed to pressure from a new corset. The woman of 45 was in florid health, and not a trace of malignant disease could be discovered, but the woman died the seventh month from the small-cell, round-cell sarcoma masked by the erysipelas at first.

Convergence Spasm of the Eyes.—The rhythmical convergence spasms of the eyeballs in the boy of 14 are not so frequent or regular as with nystagmus. There is also convergent strabismus, but there are no signs of meningitis. A tendency to choreic athetotic movements, slight incoordination of the fingers, and slight tendency to scanning speech suggest some disturbance in the corpora quadrigemina region.

Hospitalstidende, Copenhagen

July 13, 1921, 64, No. 28

- *Medical Bibliography of Greenland. A. Bertelsen.—p. 439. Cont'd.

The Medical Bibliography of Greenland.—Bertelsen gives a long list of publications on Greenland compiled in honor

of the two hundredth anniversary of the colonization of Greenland by Denmark.

July 20, 1921, 64, No. 29.

- *Iso-Agglutinins in Human Blood. E. W. Johannsen.—p. 449.

Iso-Agglutinins in Human Blood.—Johannsen examined the blood of 150 subjects, his findings confirming the many problems connected with agglutination of the blood. Of the four generally accepted types of donors, 4 per cent. belonged to Group I; 36.7 to Group II; 12 per cent. to Group III, and 47.3 per cent. to Group IV.

Norsk Magazin for Lægevidenskaben, Christiania

August, 1921, 82, No. 8

- *Volitional Control of Artificial Hands. E. Platau.—p. 545.
- *Thrombosis of Sinus Cavernosus. K. Høst.—p. 559.
- *Atony of the Uterus. F. Jervell.—p. 568.
- Relaxation of Right Diaphragm. L. Nicolaysen.—p. 575.

Cineplastic Prostheses.—Platau describes the principle and application of means for volitional control of an artificial hand, his illustrations showing the development of the principle and his own experience in three cases in which he applied the Sauerbruch technic. This has been applied in Germany, he says, in over 2,000 cases, and with a success which before the war would not have been deemed possible. It allows the countless small uses of the hand in daily life which do away with the sense of helpless mutilation. The earning capacity is correspondingly augmented, although heavy work cannot be resumed.

Thrombosis of the Sinus Cavernosus.—Høst concludes from the two cases of thrombosis of the cavernous sinus encountered at the Copenhagen Rikshospital that the prognosis is hopeless; it is beyond the relief of surgical intervention. Treatment can be only preventive, excising the primary focus as early and thoroughly as possible to ward off the thrombosis. In his two cases the primary focus was in the sphenoidal sinus, or throat. In the throat case a peritonsillar abscess had to be evacuated five days after the onset of the first symptoms, and pyemia followed the next day. Necropsy the seventeenth day after the first symptoms disclosed necrosis of both sphenoidal and occipital bones in addition to the thrombosis in the sinus cavernosus. An operation was attempted in both cases, but proved futile.

Atony of the Uterus.—In the two typical cases of atony of the uterus described, the blood from the genitals lost the power of coagulation although coagulation was not modified in the blood taken from other regions. The excessive hemorrhage occurred after manual separation of the placenta, and one of the women became fatally exsanguinated in a few hours, notwithstanding the most vigorous measures. The other recovered under transfusion of blood, this being followed by the immediate subsidence of the dangerous symptoms, while the uterus began to contract and the hemorrhage was arrested. The contractions stopped after a time and the bleeding began again; this time Momburg's method of compressing the abdominal aorta with a rubber tube was applied, and the hemorrhage was arrested anew and permanently. The compression of the aorta did not seem to do any harm, but the anemia from the losses of blood was intense for the first two weeks. After this, the woman rapidly recuperated and was dismissed in good condition the thirty-fifth day after delivery. The blood from the genitals regained its coagulating properties a few days afterward. This inability to coagulate provides a special danger which must be guarded against.

Ugeskrift for Læger, Copenhagen

July 14, 1921, 83, No. 28

- *Metabolic Findings in Obese Boy. E. Begtrup.—p. 923.

Obesity in Children.—Begtrup tabulates the metabolic findings on various diets in a boy of 11 who weighs 68 instead of the normal 33 kg. for his height. The father and mother are both corpulent, and nothing to indicate abnormal functioning of any endocrine gland can be discovered in the boy. The intake of food could be restricted to half the normal without the boy's suffering from this either subjectively or objectively. He seems well and lively. Now, at 16, he weighs 105 kg. He never has been an unusually hearty eater, and his working capacity seems to be as good as his mates'.

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THE TEACHING OF GASTRO-ENTEROLOGY AND PROCTOLOGY*

LOUIS J. HIRSCHMAN, M.D.

DETROIT

Those of us who have attended the sessions of our section since its establishment in 1916 feel that it has more than justified its existence. The birth of the section occurred after a long and stormy, and not to say discouraging, struggle against unexpected, unwarranted and plainly hostile opposition.

The growth in scope and importance of the specialties represented was so great, however, and the demand for an outlet for the discussion of their problems so insistent, that the formation of this section could no longer be opposed or denied.

It has been a source of gratification to those who have had the founding and development of the section at heart to note, not only the numbers in attendance at these annual gatherings, but to observe that men high in the estimation of the Association and prominent figures in the medical world have been regular attendants and participants in its scientific deliberations.

The interest of the profession in our fields of special medical endeavor is in direct relation to the demand of the public for specialized professional attention for the relief of diseases which come within the scope covered by the activities of the Section on Gastro-Enterology and Proctology.

That the demand for specialized service is increasing will be admitted by all. That practitioners of medicine and surgery have been endeavoring to equip themselves properly to cover these fields satisfactorily is evidenced by the many requests we receive for postgraduate instruction along these lines. The public for a number of years has been evincing an increased interest in health and medical matters generally, and an increasing percentage are insisting on special service for special ailments.

Physicians engaged in general practice are constantly being requested by their patients for information as to whether there are not specialists in this or that disease, and if so, they wish to have the benefit of their special knowledge. As a result of this demand, and coincidentally on account of the rapid strides which the study and practice of medicine have made, specialization has come into existence.

Among the organs particularly prone to a multiplicity of pathologic disturbances, those of the gastro-

enterologic tract take high rank. The American public in particular has been more careless regarding the ingestion of food, its digestion when taken, and the elimination of its waste products, than any other people. As a result of a demand thus created, the special fields of gastro-enterology and proctology were early opened for specialization. That this demand has not yet been satisfied and that the field is still a broad one is evidenced by the increased interest being shown by students of medicine and practitioners alike.

The medical literature shows an increasing number of contributions on gastro-enterologic and proctologic subjects, and more demands are being made on the teaching institutions for special instruction than ever before.

For the benefit of those who continue to place obstacles in our path, let it be said that we will continue to fight for "a place in the sun" as long as the public can be benefited by the specialized service which we are prepared to give.

There has been a gratifying increase in the number of medical teaching institutions that impart special training in gastro-enterology and proctology to their students. The number of important general hospitals that find it necessary to include gastro-enterologists and proctologists on their staffs is also on the increase. Practitioners who seek postgraduate instruction in these branches almost outnumber those seeking for special instruction in any of the other limited specialties.

Those men who seek special instruction will not be satisfied with ampieater instruction and didactic lectures, but want the closest personal contact with both teacher and patient that it is possible to secure.

Individual instruction in history taking, diagnosis, laboratory technic and in the medical and surgical treatment of gastro-enterologic and proctologic patients is of the utmost importance. The closest personal contact, which formerly existed between the good old preceptor and his student, had many arguments to recommend it.

The man who seeks to become a specialist in our fields should secure as near that type of personal contact as is possible for us to bestow. If each Fellow of the Association, a member of this section, could provide this type of personal postgraduate instruction constantly to two or three physicians, what a boon it would be to those earnest individuals who really want to be specialists, and do not receive the type of instruction that they wish from the short course postgraduate school type of instruction.

All gastro-enterologists have developed from keen, progressive internists. To be a successful proctologist, it is of prime importance not only that one is experienced in the general practice of medicine; one must also have served a thorough surgical apprenticeship.

* Chairman's address, read before the Section on Gastro-Enterology and Proctology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Part of the physician's duty is to treat his patients, part to indulge in original research work, but of equal importance is his obligation to impart his knowledge to others of his profession. That this applies to undergraduate teaching goes without saying. That it applies with greater force in postgraduate teaching is more to the point.

On those few who practice the specialties represented by our section, to whom have been given specialized knowledge and special skill, a profound obligation has been laid. This obligation is to teach, train, encourage and assist those who are entering the study of our specialties that they may not only be put in possession of what knowledge we have gained, but qualified to carry it on from our furthest point of advance.

If those Fellows of the American Medical Association registered in this section, who have given so much to American medicine by their contributions to the Association's scientific activities, will continue to do so, they will contribute a great deal to the world's sum of gastro-enterologic and proctologic knowledge. If, in addition, they will conscientiously give of their time and knowledge to the special personal training of those who are to be their successors in the march of progress, they will then have fulfilled by far their largest and highest sphere of scientific and professional activity.

Kresge Building.

PNEUMOPERITONEUM AS AID IN THE ROENTGENOLOGIC DIAGNOSIS OF LESIONS OF URINARY TRACT*

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Assistant Professor of Roentgenology, St. Louis University School of Medicine; Roentgenologist, City Hospitals 1 and 2

ST. LOUIS

While the roentgen ray has found its place among the many aids in diagnosis of the urinary tract, still its use in the past has been in many respects very limited. The advent of pneumoperitoneum, or gas introduced into the abdominal cavity, as an aid in the diagnosis of lesions of the urinary tract has enhanced the value of the roentgen ray many fold. Since the first introduction of the method into this country by Stewart and Stein¹ of New York in 1919, the method has been taken up with great enthusiasm, and hundreds of examinations have been made by many different men.

As is customary in the evolution of every new method of diagnosis, conceptions of the normal must be acquired, and only after a sufficient number of examinations can any inference be drawn as to pathologic conditions. A long time must necessarily elapse and the results of many different workers be correlated, before the full value of this method will be known.

The stage has arrived, however, in the natural development of the process where general examinations of the intra-abdominal organs can be displaced by examinations of more specific character, taking into account the lesions and pathologic conditions which in the past have proved amenable to this method of examination.

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of several illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Stewart, W. H., and Stein, A.: Am. J. Roentgenol. 6: 533 (Nov.) 1919.

THREE GROUPS

On reviewing our cases of pneumoperitoneum, those in which it has been of distinct advantage fall very closely into three groups:

The first group constitutes those cases in which information is desired concerning the presence, position, size, form or outline, mobility and attachments of the kidney. At times, when the patient cannot undergo cystoscopy, the actual presence or absence of a kidney is a difficult matter to determine. The kidney may have been removed at a former operation or may be completely destroyed by a pathologic process. Usually the kidneys are found lying close to the spine in the region between the last dorsal and third lumbar vertebrae; the right is usually somewhat lower than the left, but in a considerable number of instances we have found this condition reversed—the left being lower than the right. This may be in association with pathologic enlargement of the spleen, causing mechanical displacement, or may be present in perfectly normal individuals. The kidneys vary in size with the size of

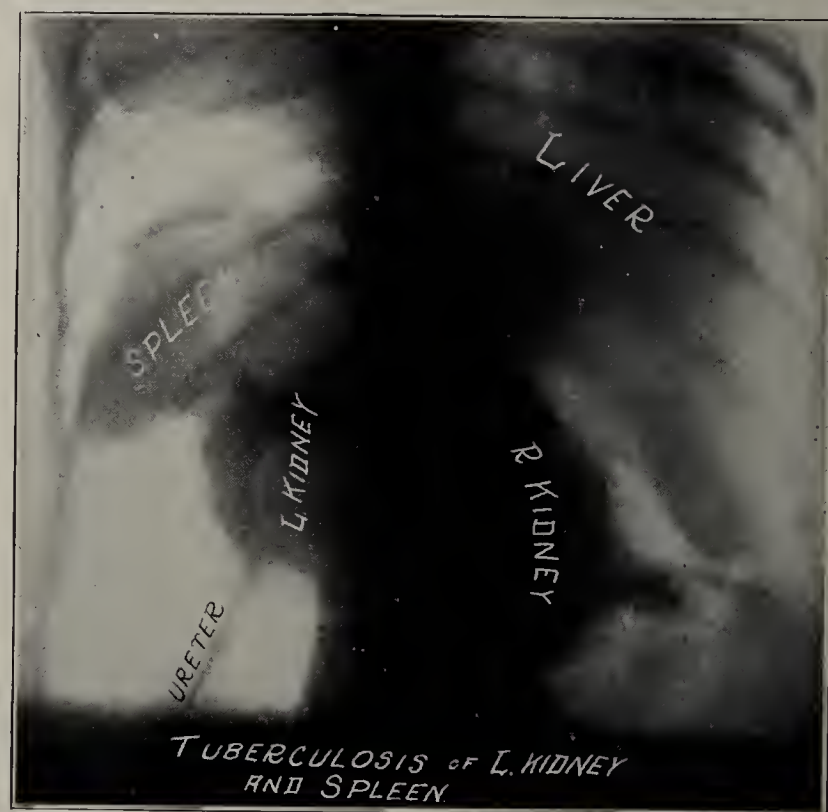


Fig. 1.—Tuberculosis of spleen and left kidney.

the individual, but they are usually of the same relative size; in no instance has marked variation in size in the two kidneys been noted in a normal individual. Any distinct variation in the size of the two kidneys can be readily detected, and should be considered as definitely pathologic. The kidney outline can be clearly seen, and any pathologic condition which affects the outline of the kidney can be detected. Tuberculosis of the kidney with destruction of the kidney substance, small carcinomatous nodules studding the surface of the kidney, too small to make definite palpable masses and yet definite evidence of pathology, all have been demonstrated by this method of examination.

Congenital cystic kidney, both by its enlargement and by its lobulated appearance, can be detected. The normal range of motion of the kidneys varies from slight displacement during respiration to a wide range of mobility from changes in position. Both extremes have been noted in otherwise apparently normal individuals. The present day conception of the pathology of mov-

able kidneys, which determines the extent of pathology present by the amount of obstruction of the ureter caused by the displacement, would seem to be confirmed by this observation. In pyogenic inflammations of the kidney, definite destruction and adhesions of the kidney to the surrounding organs can be seen. Occasionally

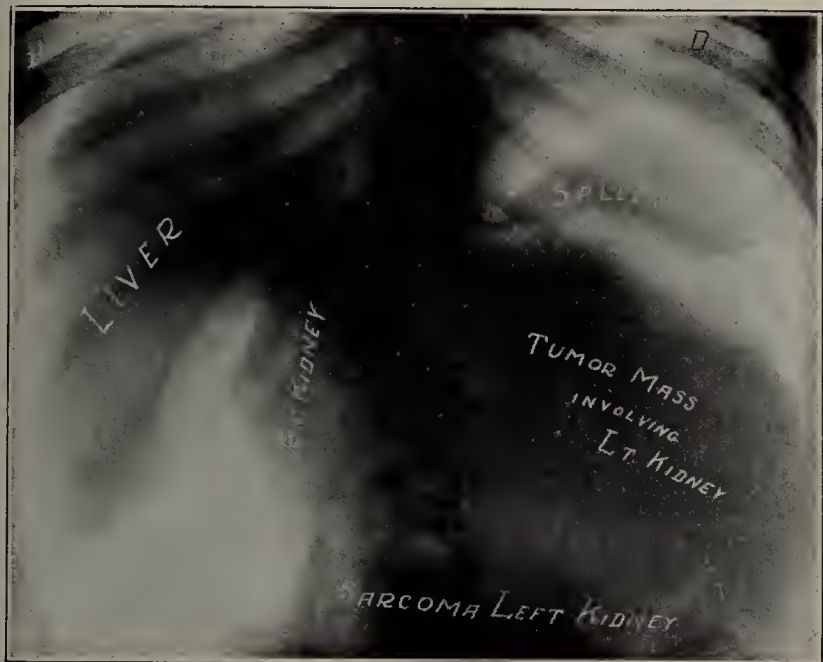


Fig. 2.—Sarcoma of left kidney in anteroposterior view, showing extent of growth and separation of the spleen. In the retroperitoneal position, the mass was shown involving the kidney and almost obliterating the prevertebral clear space.

adhesions form to the kidney from surrounding pathologic conditions, and we have been able to demonstrate adhesions to the left kidney from a carcinoma of the descending colon. The kidney was shown to be only secondarily involved, and the condition, which was thought to be a perinephritic abscess, was definitely determined to be a carcinoma of the descending colon.

In the second group the method is of use in determining the origin and attachments of all intra-abdominal masses. Definite palpable masses may be visualized, their origin determined and the extent of their involvement of surrounding structures demonstrated. Tumor masses of the liver—carcinoma, cirrhosis; pathologic enlargements of the gallbladder due to gallbladder disease and stones; ruptured gallbladder or appendix with surrounding reaction resulting in an inflammatory mass; carcinoma or cyst of the head of the pancreas; fibroid of the uterus; fecal impactions in the intestine—all are examples of conditions in which we have found the method helpful. The mere establishment of the identity of a palpable mass as a displaced but otherwise normal organ may be sufficient to clear up an obscure diagnosis. Displacements of the kidneys and spleen are notable examples of this condition. Falling within this group, and of special interest in the diagnosis of kidney lesions, is the detection of retroperitoneal masses, both those involving the kidney and those closely associated with, but not taking origin from, its structure. By placing the patient in the retroperitoneal position,² the retroperitoneal character of an abdominal mass can be definitely determined. This consists in placing the patient, previously somewhat overinflated, in the prone position, chest and thighs supported by two blocks, which takes all pressure off of the abdomen and allows the anterior

abdominal wall to sag freely forward. The stomach, intestines and all organs with mesenteric attachment fall forward, leaving the retroperitoneal space clearly visible. A prevertebral clear space is produced which renders the presence of any retroperitoneal mass readily visible. Sarcoma, hypernephroma or any other tumors of the kidney can be clearly shown. The relation to the kidney of retroperitoneal masses, either metastatic new growths in the retroperitoneal space or inflammatory masses, can be definitely shown. Carcinoma of the retroperitoneal lymphatics closely associated with the kidney; perinephritic abscess; psoas abscess forming a definite palpable mass on the lower abdomen; carcinoma of the descending colon infiltrating the retroperitoneal space—all are examples of conditions which we have encountered and in which the method was found most helpful.

The third group is composed of special conditions peculiar to urinary tract examination. Examination of the kidneys for stone by this method should be undertaken only after the other methods have failed to reveal the desired information. Under certain conditions, when there is a suspicious shadow over the kidney area and when the ureters cannot be catheterized and injected, this method is quite useful. Occasionally even after injection of the kidney pelvis there remains some doubt as to the character of a shadow—when the shadow falls outside of the kidney pelvis. Under these conditions, examination by the aid of pneumoperitoneum is almost indispensable to a correct diagnosis. When there is a very large round stone, presumably in the pelvis of the kidney, which might have a ball valve effect and cause retention of injected material in the pelvis, I feel that pneumoperitoneum is by far the most desirable procedure, since I do not consider the filling of

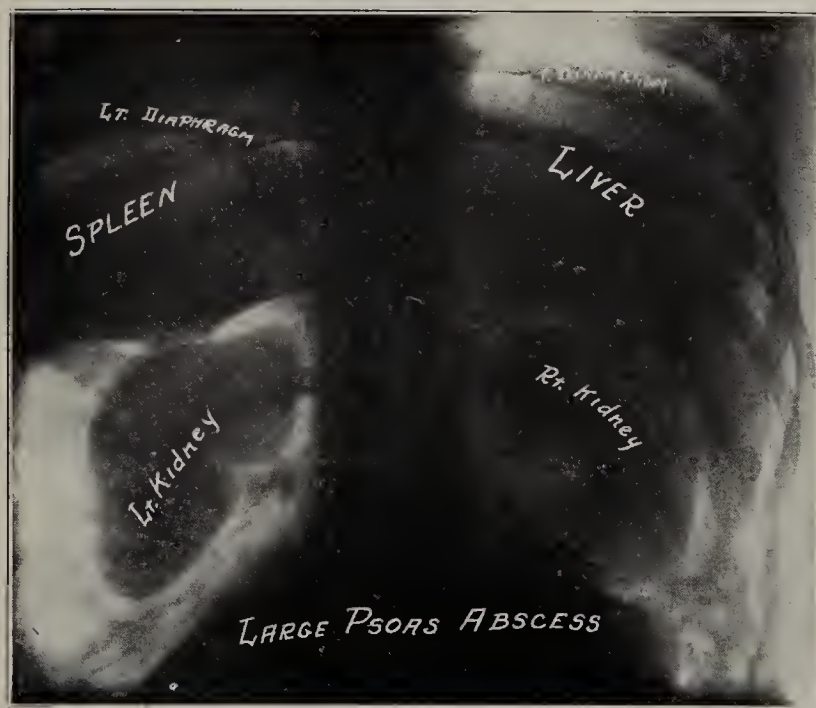


Fig. 3.—Psoas abscess differentiated from a perinephritic abscess, showing its separation from the kidneys. There is destruction of the psoas muscle, which permits the kidneys to flare out from the spine on each side—a distinctly pathologic position.

the abdomen with air attendant with as much danger as cystoscopy and ureteral injection. The differentiation from gallstones becomes quite a simple matter.

In the examination of the ureters a great advantage can be gained by observing the opaque material as it is being injected. Unless the patient is very stout, this can readily be done. When a stone blocks the ureter, when

2. Sante, L. R.: The Retroperitoneal Position in the Detection of Retroperitoneal Masses by the Aid of Pneumoperitoneum, *Am. J. Roentgenol.* 8: 129 (March) 1921.

there is a definite kink in the ureter, or when a pathologic stricture is present, the condition can readily be observed; and, what is even of more importance when such lesions occur, the emptying of the pelvis and ureter can be noted. For studying the injected pelvis, the lateral view is sufficient; but for involvement of the ureter, the retroperitoneal position is the most advantageous.

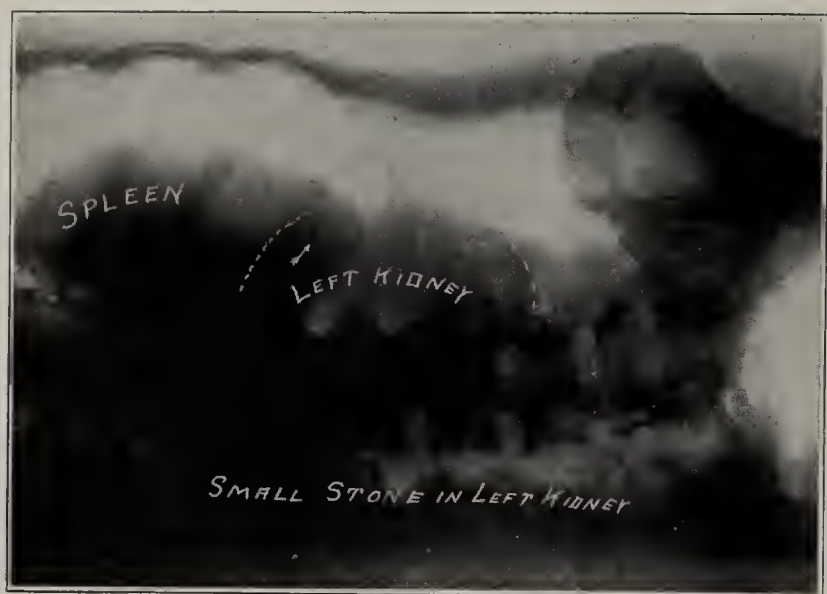


Fig. 6.—Urinary stone seen in the lateral position localized to the kidney area. Where a small shadow appears outside the injected kidney pelvis, pneumoperitoneum is of great aid in localizing the shadow to the kidney area.

For the examination of the bladder, the method is of greatest value in determining its relationship to pelvic masses. Examination of the bladder for tumor, and observation of the elasticity of the bladder wall can be readily carried out by inflation of the bladder with air in conjunction with pneumoperitoneum. Diverticula of the bladder do not show well with this method of examination unless quite large, and even then injection of the bladder with opaque mediums gives much the best conception of the condition.

Demonstration of the prostate is often possible in conjunction with air inflation of the bladder, but it is doubtful whether the simple inflation of the bladder does not give as good results. In one case the diagnosis of a mass springing from below the peritoneum and posterior to the bladder was made, which at operation proved to be a pelvic abscess arising from the seminal vesicle.

In this outline of lesions amenable to examination by pneumoperitoneum, it should be borne in mind that our experience is limited to about 110 cases. As the technic and methods of examination improve and our experience becomes more extensive, still other conditions may present themselves in which pneumoperitoneum can be employed with advantage.

METHOD OF PROCEDURE

It would hardly seem complete to dismiss the subject without brief mention of our present technic and a statement as to some constitutional conditions under which pneumoperitoneum has been induced.

After a thorough evacuation of the bowels and bladder and the administration of one-sixth grain of morphin, the patient is prepared for inflation. Tincture of iodine is applied over the left lower quadrant of the abdomen, and an ordinary lumbar puncture needle is inserted, directed slightly upward and inward. A very simple apparatus is used, consisting of the pump of a

Potain aspirator connected by tubing and suitable connectors to the needle, with a rectal drip interposed as a trap (vent hole plugged) to prevent introduction of foreign material from the pump. Everything is sterilized but the pump. No attempt is made to measure the quantity or pressure of the air, and no sterilization or filtration of the air is necessary. By using a stethoscope over some remote portion of the abdomen, the rushing air heard with each stroke of the pump is sufficient evidence of the presence of the needle in the abdominal cavity. We use as a criterion of proper distention the slight rounding of the abdomen; development of a tympanitic note, and the appearance before the fluoroscope. We use air in place of oxygen, or a mixture of oxygen and carbon dioxide, and at the conclusion of the examination deflate by introduction of another needle. Since we have used this method, no difficulty has been encountered in inflation, and very little discomfort has been experienced by the patient.³

CONDITIONS IN WHICH PNEUMOPERITONEUM HAS BEEN INDUCED

Some of the coexisting pathologic conditions and lesions under which pneumoperitoneum has been induced may be briefly set forth. We have used it in advanced diabetes without ill effect and in mild cardiac lesions, but never when marked signs of decompensation were present. In general carcinomatosis and tuberculous peritonitis it seems to do no harm, and when adhesions are present either postoperative, inflammatory or malignant, no damage has been noted. The inflation of the abdomen has never resulted in the rupture of such adhesions, even when recently formed in association with ruptured gallbladder or appendix, or subdiaphragmatic inflammations. The lowest blood



Fig. 7.—Same case as that illustrated in Figure 6, showing stone localized to kidney area in the retroperitoneal position. More than one position is essential in order absolutely to localize a stone.

pressure existing prior to injection in any case in which it was preformed was 80 systolic, associated with carcinoma of the head of the pancreas and obstruction of the common duct; the highest was 180 systolic, associated with nephritis and edema. One patient had a thoracic aneurysm, and in another an aneurysm of the

3. For a more detailed account of the technic, the reader is referred to Sante, L. R.: Missouri State M. J., April, 1921; J. Radiol. 2 (June) 1921.

abdominal aorta was detected at the examination. In one patient, owing to faulty apparatus, the needle was inserted into a small abdominal artery. The needle was withdrawn, the patient put to bed and, showing no ill effects, was subjected to a successful pneumoperitoneal examination two days later. One patient suffering with extensive pulmonary tuberculosis had a slight pulmonary hemorrhage four days after an oxygen infla-

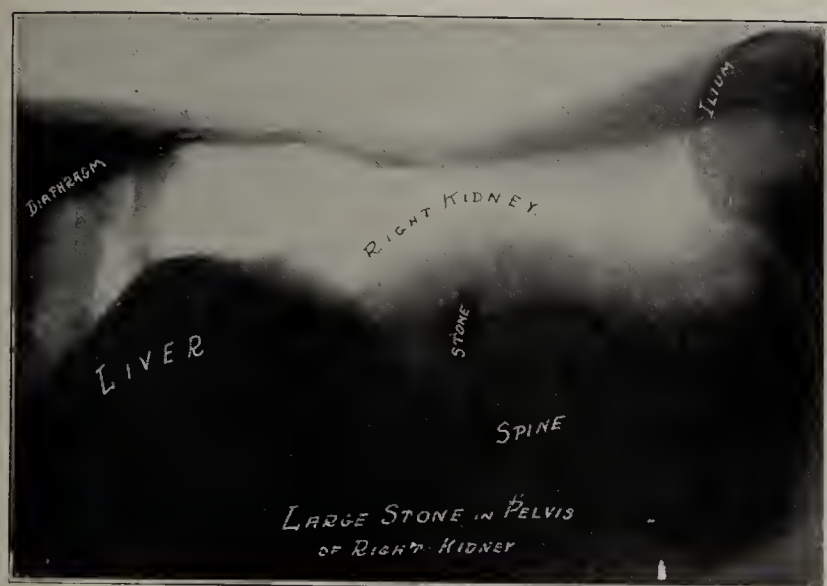


Fig. 8.—Large stone seen in pelvis of kidney. In such cases, pneumoperitoneal examination is to be preferred to injection of the pelvis of the kidney with opaque salts.

tion. The patient stated, however, that she had had many previous hemorrhages. Other than these we have had no ill effects.

On taking up pneumoperitoneum, we tabulated certain conditions under which we felt pneumoperitoneum should not be induced, merely dictates of good judgment, and have had no reason, to date, to change our opinion: (1) cardiac lesions with marked decompensation and edema; (2) advanced cases of nephritis with edema and very high blood pressure; (3) acute intra-abdominal lesions, and (4) acute pulmonary lesions, such as pneumonia.

In reviewing the literature it is surprising to find such slight mention of the subject. The kidneys are given passing mention in many papers,⁴ but only one short paper of a few hundred words by Rautenberg⁵ is devoted entirely to the study of kidney examination by pneumoperitoneum. He considers the lateral position the best for study of the kidney, and devotes most of the paper to a technic for securing an accurate measurement of the size of the kidneys. He mentions tuberculosis of the kidney, an atrophic kidney and pyelitis; he also has seen stones in the kidney, but makes no mention of injection of the ureters in connection with this examination.

It seems unfortunate that more observations have not been made on the urinary tract with pneumoperitoneum, since its use is undoubtedly of great advantage in diagnosis. The fault, no doubt, lies in the fact that its advantages are not widely known. As the method comes more into general use, I look for a great increase in the list of conditions in which its use will be of aid.

4. Goetze, O.: Die Röntgendiagnostik bei gasgefüllter Bauchhöhle; eine neue Methode, München. med. Wehnschr. **65**:1275, 1918. Rautenberg, E.: Roentgenographie der Leber, der Milz und des Zwerchfells, Deutsch. med. Wehnschr. **40**:1205, 1914. Faschingbauer, H., and Eisler, E.: Diagnostische Erfahrungen mit dem künstlichen Pneumoperitoneum, Wien. klin. Wehnschr. **33**:853 (Sept. 23) 1920.

5. Rautenberg, E.: Pneumoperitoneale Röntgendiagnostik der Nieren, Berl. klin. Wehnschr. **45**:203 (Feb. 20) 1919.

CONCLUSIONS

1. Pneumoperitoneum can be produced without great discomfort to the patient, and with comparative safety.
2. It can be used to determine the presence, position, size form or outline, mobility and attachments of the kidney.
3. The demonstration of intra-abdominal masses and the determination of their origin and attachment is possible.
4. The retroperitoneal character of masses can be established, and their involvement of the kidney determined.
5. Shadows suspicious of stone over the kidney area can be definitely localized to the kidney.
6. Injection of opaque material into the ureter and kidney pelvis can in most instances be observed during its injection, giving valuable information as to obstruction from kink or stricture of the ureter.
7. Observations on the bladder wall are possible, and the connections of pelvic masses to the bladder can be shown.

515 Lake Avenue, Webster Groves.

ABSTRACT OF DISCUSSION

DR. LOUIS LEFRAK, New York: There are advantages and disadvantages in the pneumoperitoneum method of diagnosing urinary diseases. One advantage over the ordinary roentgenographic method is that by getting the location, size and shape we not only find the guilty organ but we can often determine the pathology. The disadvantages are quite numerous: In the first place, there are the usual contraindications for pneumoperitoneum: valvular heart disease; acute abdominal or pelvic lesions; adhesions and chronic alcoholism. A second disadvantage is: Why resort to the somewhat drastic method of pneumoperitoneum when we can get good roentgenograms and pyelograms with sodium bromid and thorium nitrate solutions? The chief disadvantage, however, is that it is mainly institutional—that it can best be



Fig. 9.—Injection of the ureter and pelvis as seen in the retroperitoneal position. The injected material can be followed under the fluoroscope in this position. Kink or obstruction of the ureter can be noted.

done at a hospital. If the method could be so simplified that it could be done as routine office work it would be of general utility. At present, it is a very expensive procedure, takes a great deal of time, is not without danger in inexperienced hands, and is limited in its practicability because of these things.

DR. ABRAHAM HYMAN, New York: In females, abdominal puncture can be dispensed with by using the method of intra-uterine abdominal insufflation described by Dr. Rubin last

year. Dr. Rubin reported about 200 cases a few months ago without any untoward results. The method is very simple; a metal catheter is introduced into the cervix, and the air from an oxygen tank is allowed to flow through into the abdominal cavity. In the cases with closed tubes there will be a regurgitation of the air alongside the catheter. The pressure to which the gas is subjected during the insufflation is under the control of a mercury manometer, which is part of the apparatus used. The highest pressure in cases in which the tubes are nonpatent should not exceed 200 or 220 mm. of mercury. There has been some objection raised regarding this method, on account of the possibility of spreading a latent pelvic infection. This danger is very remote if the patients are carefully examined prior to injection. The procedure takes only a few minutes, and does away with the dangers of abdominal puncture.

DR. BENJAMIN S. BARRINGER, New York: I wish to report one fatality following air inflation of the peritoneum in a patient with carcinoma. The injection was made with aseptic precautions; some days after the injection the patient died. I saw the necropsy performed by Dr. Ewing. The patient had a generalized peritonitis, the infection manifestly entering by way of the needle. I presume this patient, because of the advanced carcinoma, was peculiarly susceptible to infection.

DR. HERMAN S. KRETSCHMER, Chicago: The procedure described by Dr. Sante is a very simple one. However, I can see possibilities of danger in the tendency to resort to this method rather than putting the patient through the present standardized routine. I think there is a group of cases in which pneumoperitoneum is of value, particularly for differentiating retroperitoneal conditions; I believe it will help out there, but I do not believe it should be used in the place of the usual diagnostic procedures—such as roentgen ray, shadowgraph, catheters, pyelograms, etc. The same tendency, I think, will creep into this method as a short cut, that has been observed in the use of cystograms. We find many cases subjected to cystograms first, instead of last, using it instead of the present diagnostic procedures, whereas it should be used supplementary to them. I think the method of pneumoperitoneum should be used as a last resort but not instead of routine examinations.

DR. LE ROY SANTE, St. Louis: I agree with the views expressed by Dr. Kretschmer. This method should not be used until the other established methods have been tried, for its indiscriminate use can only lead to failure and disappointment and bring into discredit this method of examination. The death from pneumoperitoneum referred to was certainly very unfortunate and may have been due to the extreme condition of the patient. However, I have also a death to report, not from pneumoperitoneum but from the injection of the pelvis and ureter with sodium bromid in a case in which a large pelvic stone cause a retention of injected material by a ball valve effect. The patient developed an infection which resulted in death. I do not consider the inflation of the abdomen with air as attendant with as much danger in such a case as the injection of the ureter and pelvis with opaque material. The only other death that has come to my attention was one due to injection of oxygen directly into the spleen. This case was manifestly a technical error. At present it is impossible to say just what the possibilities of this method will be. It is my impression, however, that its greatest usefulness to the urologist will be in the detection of retroperitoneal masses: determining their extent and relationship to the kidney, and in the localization of stones to the kidney area, in those cases in which the ureters cannot be catheterized or when the existing condition renders this procedure inadvisable.

Hyperplasia of Papillary Muscles in Cardiac Syphilis.—A fibroid lesion very frequent in cardiac syphilis but also seen in nonsyphilitic cases is a more or less diffuse interstitial hyperplasia in the papillary muscles, a lesion which results in a restriction of the columnae carnae with, of course, more or less obstruction of normal valve mobility.—Harlow Brooks, *Am. J. Syphilis* 5:225, 1921.

SCLEROSING NONSUPPURATIVE OSTEO-MYELITIS AS DESCRIBED BY GARRÉ

REPORT OF CASE, WITH ROENTGENOGRAPHIC AND PATHOLOGIC FINDINGS AND REVIEW OF THE LITERATURE *

S. FOSDICK JONES, M.D.

DENVER

The rarity of this type of sclerosing nonsuppurative osteomyelitis as described by Garré¹ of Tübingen prompts me to present a review of this interesting bone manifestation, and to record a case which has come under my recent observation.

According to Garré, the sclerosing types of osteomyelitis cases are those in which there is merely an enlargement and a thickening of the bone, without the occurrence of suppuration and fistulous formation.

Garré's first description of this unusual bone condition was published in 1891, and the cases reported were seen in the Tübingen clinic of Professor Bruns.

In the large majority of cases, the onset of the disease is acute, accompanied by a high fever, swelling of the affected limb, pain at the site of the bone lesion, and considerable infiltration of the soft parts; but the skin over the affected bone is not reddened, and there is no formation of pus. With the subsidence of the temperature the swelling of the soft parts disappears, and there remains only the permanent osseous enlargement.

It is interesting to note that, in 1879, Kluppel reported the occurrence of nonsuppurative osteomyelitis occurring in a boy of 12 years, following a traumatism of the right thigh. The acute onset was accompanied by a high temperature, local tenderness at the site of the injury, and swelling of the soft parts. The diagnosis of osteomyelitis was made, and the frequently prescribed method of Kocher, in vogue at that time, of injecting a 2 per cent. solution of phenol (carbolic acid) into the inflamed and swollen periosteum was administered, and in addition sodium benzoate was prescribed. In six days the fever subsided, and an incision of the swelling over the posterior and lower portions of the thigh was contemplated, but it was not performed, owing to the absence of fluctuation. The infiltration and swelling of the thigh gradually diminished, but the lower portion of the right femur above the condyles could be felt, permanently enlarged. Four months after the injury the affected thigh measured 5 cm. more than the normal thigh.

Although Kluppel's report antedates Garré's classic description by twelve years, nevertheless the case undoubtedly was one of sclerosing osteomyelitis of the nonsuppurative type, and it is the first to be recorded in surgical literature.

As illustrative of the unusual occurrence of this condition, in reviewing the bibliography of osteomyelitis, I find that of the 559 cases observed in the Tübingen clinic, there were only twenty cases of the sclerosing nonsuppurative type recorded.

Cheyne,² in 1890, reported a case of central necrosis of the radius without suppuration, occurring in a lad of

* Read before the Section on Orthopedic Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of several illustrations. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Garré, C.: Beitr. z. klin. Chir. (Bruns') 10: 241, 1893.

2. Cheyne, W. W.: Tr. Path. Soc. London 41: 249, 1890.

15 years. This case differs from Garré's, in that a sequestrum had formed, which was removed at the time of operation, but no pus formation was present.

Langer,³ in 1904, referred to those cases of osteomyelitis which are characterized by the absence of suppuration. He speaks of the types of periostitis albuminosa or osteomyelitis serosa, and of the sclerosing nonsuppurative osteomyelitis. He records a case occurring in a lad of 12 years, distinguished by the absence of suppuration, and by marked rarefaction of the bones, suggestive of a lymphosarcoma or a myeloma.

Mauclaire,⁴ refers to the statement of Kocher, who believes that a considerable number of bone sarcomas which have been cured by amputations are merely sclerosing nonsuppurative osteomyelitis of the long bones. Bruns states that in these cases spontaneous fracture may frequently result.

Klemm⁵ speaks of four varieties of chronic sclerosing osteomyelitis, the first occurring without suppuration and without necrosis; the second, with suppuration; the third, with necrosis, and the fourth, with a diffuse cicatricial thickening of the periosteum and the soft parts, with "brain matter-like deposit" in the scar tissue.

Diffuse bone sclerosis is frequently associated with marked acceleration of the bone growth, resulting in lengthening and increased thickening of the bone.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis between bone sarcomas and sclerosing osteomyelitis is frequently very difficult.

In discussing bone sclerosis without necrosis and suppuration, Klemm calls attention to the thesis of Gosselin⁶ in 1868, in which he describes a form of osteomyelitis chiefly characterized by proliferative processes in the bone. The bones involved showed no trace of the medullary canal, and the entire bone was transformed into a homogeneous thickened mass. Microscopically the framework of the bone structure was distinctly more dense and compact, and in certain areas the osseous substance was as hard as ivory. Two typical cases are recorded illustrating this form of osteomyelitis.

In Trendel's⁷ series of 1,299 cases of osteomyelitis, there were found only fifty-four cases of the sclerosing nonsuppurative type, or 4.2 per cent. of the total number observed.

In considering this unusual type of bone involvement, our attention must at once be directed to the differential

diagnosis, and the possibilities of confusing this bone lesion with the syphilitic and sarcomatous types, and also with the rare type of solid osteitis fibrosa encountered in the long bones. The differentiation is extremely difficult in some cases, and this is particularly true when the sclerosing osteomyelitis is to be diagnosed from the syphilitic involvement of the long bones.

The syphilitic osteitis and periostitis infections of bones results in the fusiform enlargement of the shaft and leads to a diffuse hyperostosis closely resembling the chronic stages of nonsuppurative osteomyelitis. The osteal night pains are common to both bone diseases, and, as in the case which came under observation, this symptom was quite misleading when the case was first observed.

The absence of other syphilitic manifestations, the gradual subsidence of the pain, and the finding of a negative blood and spinal fluid Wassermann reaction

should establish the diagnosis. In bone sarcoma the problem is even more difficult, for frequently there is a previous history of trauma over the affected area. The initial rise of temperature, the absence of glandular enlargement, the infiltration of the soft parts, which is present early in the sclerosing type of osteomyelitis, the absence of cachexia and rapid loss of weight are important points in differentiating this type from malignant bone disease. A careful roentgenographic and pathologic examination should be made in every case.

In osteitis fibrosa, with or without the formation of cysts, the predominating clinical symptom is that of a spontaneous fracture, and the swelling and pain are not symptoms of which the patient

complains. The temperature is usually normal in cases of osteitis fibrosa, and the pathologic process is so insidious in its onset that the occurrence of a slight trauma to the affected bone, resulting in a fracture, causes the patient to seek surgical advice.

It is the opinion of most observers that trauma cannot be considered as an etiologic factor, and that the disease is one due probably to an inflammatory process occurring in the long bones.

Here again we must call on the pathologic laboratory and the roentgen-ray examination to aid in differentiating these unusual bone conditions.

REPORT OF CASE

The interest in the case which came under my observation centers in (1) the rarity of the disease; (2) the unusually long period of the acute symptoms, manifested by pain and swelling of the soft parts; (3) the character of the fusiform osseous enlargement, resem-



Fig. 1.—Fusiform enlargement of right tibia.

3. Langer, A.: *Ztschr. f. Heilk.* **25**: 366, 1904.

4. Mauclaire, P.: *Maladies des os: nouveau traité de chirurgie* **5**, 1908.

5. Klemm, P.: *Beitr. z. klin. Chir.* **80**: 56, 1912.

6. Gosselin: *Naud thesis*, 1868.

7. Trendel: *Beitr. z. klin. Chir.* **41**: 607, 1903-1904.

bling a sarcomatous bone, and (+) the pathologic findings from specimens made at the time of operation.

History.—A boy, aged 9 years, born in Colorado, one of four children, whose father and mother were strong and healthy, and in whose family there was no history of tuberculosis, syphilis or cancer, had had no acute exanthems of childhood, with the exception of measles. For the last five years he had suffered from constipation, requiring the almost daily use of laxatives. The father reported that the boy had never been a sturdy, robust child, and that his weight had always been less than that of a normal child of the same age.

In June, 1918, he sustained a slight injury to the right leg by falling into a pit about 2 feet deep, striking the anterior surface of the right tibia against an iron rod. There was no abrasion of the skin at the site of the trauma, and only a slight swelling of the soft parts of the affected leg. The pain in the leg continued for twenty-four hours and then entirely subsided. From June to December, 1918, the lad was apparently well, and with the exception of the slight swelling of the leg over the anterior surface, nothing abnormal was noticed by the parents. In December he again had a trauma over the same area described in his accident of six months previous.

Within two or three hours following the second injury to the right leg, there was swelling of the soft parts, particularly marked over the anterior surface, extending down to the lower third of the leg, but there was no involvement of the angle or knee joint. Accompanying this swelling there was a rise of temperature to 100.8 F., and persistent pain over the site of the injury and radiating down to the foot and ankle, this symptom being much more severe at night, although present at all times. There was no redness over the affected limb, and there was no abrasion of the skin.

Although no careful record was kept of the temperature, the father reports that there was a rise of from 1 to 2 degrees above normal, and that the lad had restless nights and complained bitterly of pain in the right leg and right ankle. His appetite was poor, and he lost in strength and weight.

Examination.—July 28, 1919, when I saw him, the patient was rather poorly nourished, moderately anemic, and weighed 52 pounds. He walked with a slight limp, but without the aid of a crutch or cane. His temperature was 101 F., pulse 90, and respiration 20. There was a fusiform enlargement (Figs. 1 and 2) of the right tibia, situated over the upper and middle third, with moderate infiltration of the soft parts over this area, but no fluctuation. The skin was normal in appearance, and there was no local heat. Pain was elicited on pressure, but there was no evidence of periosteal roughening of the tibial crest, and no egg shell crackle. The inguinal glands were not enlarged.

The length of the lower extremities was the same. The measurement from the anterior-superior spine to the internal malleolus on both sides was 28½ inches. There was a half inch atrophy of the thigh on the affected side, and the calf

measurements over the most prominent part of the right tibial enlargement was three-fourths inch larger than that of the left leg. There was no involvement of the ankles, knees or hip joints, and there was a normal range of motion. The spine and sacro-iliac joints were normal. No masses were to be felt in the abdomen. The heart sounds were clear and no murmurs were heard. The lungs were normal.

The blood examination revealed: hemoglobin, 75 per cent.; red blood cells, 5,000,000; white blood cells, 12,000; differential blood count: polymorphonuclears, 65 per cent.; lymphocytes, 34 per cent., and large mononuclears, 1 per cent.; eosinophils, 0; basophils, 0; transitional forms, 0.

The results of a urinalysis, made at the time of the first examination, were: color, clear, pale amber; specific gravity, 1.010; albumin, a very faint trace; glucose and acetone, none; indican, slightly increased. Microscopic examination revealed no casts, no red blood cells, a few pus cells, and a few epithelial cells.

In studying the roentgenograms⁸ taken before the operation, the fusiform enlargement, at the juncture of the middle and upper thirds of the right tibia, is seen in both the lateral (Fig. 3) and the anteroposterior views (Fig. 4). The cortical thickening of the tibial shaft was marked, and it encroached on the medullary canal. The medullary canal was almost entirely obliterated at the site of the most prominent part of the tibial enlargement. The bone substance was dense, and the periosteum was smooth and was not thickened or roughened. The fibula showed no pathologic change. The articular surfaces of the knee joint were smooth and showed no evidence of disease.

Operation.—August 29, under ether anesthesia, an incision 6 inches long was made over the crest of the right tibia at the junction of the middle and upper thirds. The periosteum was incised, and the tibial shaft exposed. The periosteum was normal in appearance. It was not adherent, and was easily deflected from the bone. The tibial cortex was smooth, and the crest was not roughened or serrated.

In using the bone drill, the cortex was found to be of ivory-like hardness, and it was with difficulty that the medullary canal was exposed.

Confirming the findings of the roentgenographic examination, the medullary canal, which was opened for a distance of 5 inches, was seen to be greatly narrowed, particularly at the site of the most prominent portion of the fusiform tibial enlargement, admitting at one point only the thickness of a small bone-chisel. No pus was found in the medullary canal, and there was no macroscopic evidence of malignant or syphilitic bone disease. A frozen section of the medullary canal curettings was made at the time of the operation, and no evidence of sarcoma was found by microscopic examination. Cultures were also taken from the medullary canal. A section of the tibial cortex was taken for pathologic examination.

The periosteum was then closed, with the exception of a small area through which a gauze drain was inserted. The



Fig. 3.—Lateral view, showing fusiform enlargement of right tibia. The medullary canal is almost entirely obliterated. The normal tibia on the unaffected side has been taken for comparison.

8. The roentgenograms and lantern slides were kindly taken for me by Dr. S. B. Childs of Denver.

skin was left partially open to admit of the drain. This procedure was deemed advisable until the final pathologic and bacteriologic report was ascertained. An immobilizing splint was applied, extending from the foot to the groin.

The cultures taken from the medullary canal, and planted on agar and blood agar, showed no growth at the end of twenty-four and forty-eight hours.

At the end of the third day, the gauze drain was removed from the wound and the skin incision sutured. An immobilizing splint, extending from the foot to the groin, was continued five weeks, and no weight bearing was allowed until the end of the eighth week. Convalescence was uneventful.

Pathologic Report.—Dr. Philip Hillkowitz of Denver reported that the pathologic sections made from the scrapings of the bone and lining the greatly obliterated medullary canal revealed pieces of compact bone, together with some red blood corpuscles and a few white blood cells. No marrow cells could be demonstrated.

The sections of the decalcified bone taken from the tibial cortex at the time of the operation showed masses of compact bone, and also the lamellae and haversian canals. There are no foci of round cell infiltration, but a few areas were seen of hemorrhagic extravasation. The bone trabeculae were wider than those usually seen in this region. There was no evidence of any tumor formation. Malignancy may be safely excluded.

The photomicrographic slide (Fig. 5) taken from the bone section of the tibial cortex has been stained with hematoxylin eosin. The dark areas represent the compact bone, and the light areas the lamellae and haversian canals.

Outcome.—Since the boy's discharge from the hospital in September, 1919, I have had the opportunity of making frequent examinations, and careful records have been taken of the patient's progress. His weight has increased from 52 to 72 pounds. He has no pain in the affected leg, and no referred pain in the foot or ankle. His appetite is good and he sleeps soundly. There is no limp. The temperature has remained normal.

Jan. 29, 1921, the lad weighed 74 pounds, walked without a limp and had no pain. The lower extremities were of the same length, and there was no enlargement of the inguinal or popliteal glands. The infiltration and swelling of the soft parts over the affected tibia had entirely subsided, but the permanent fusiform osseous enlargement of the right tibia remained. The photographs taken at the time of this examination clearly outline the swelling which has been described. The skin over this enlargement was normal in appearance. There was no roughening of the tibial crest and no pain on pressure. The general condition was excellent. The heart, lungs and abdomen were normal. The urinary and blood findings were negative.

The roentgenographic examination taken at this time (Figs. 6 and 7) revealed the same fusiform enlargement, which had not increased in size, and demonstrated the same cortical thickening, with almost total obliteration of the medullary canal, as was noted in the plates made at the first examination.

CONCLUSIONS

1. Sclerosing nonsuppurative osteomyelitis as described by Garré is a distinct clinical entity.

2. The differentiation between sarcoma of bone, bone syphilis, and solid osteitis fibrosa is frequently very difficult, and the symptoms in these bone diseases are frequently misleading.

3. In every case of bone disease there should be made a complete roentgenographic and pathologic examination before operative interference is undertaken.

4. It must be borne in mind that in some instances amputations for supposedly malignant disease of the extremities has been performed in cases which really presented the nonsuppurative sclerosing form of osteomyelitis.

5. In doubtful cases of bone disease, an exploratory incision should be made; and the employment of the frozen pathologic section taken at the time of operation, in order to determine the exact pathologic process, would prevent unnecessary amputations.

516 Majestic Building.

ABSTRACT OF DISCUSSION

DR. EDWIN W. RYERSON, Chicago: Since Garré first published his observations many years ago, no case has presented itself to my observation which can truthfully be classified as Garré's osteomyelitis. I have seen two cases in which there was a question of this diagnosis, but one was a case of atypical syphilis and the other a case of Brodie's abscess which had gone on to recovery, with the bone hardened and fusiform; but in a very careful study of the roentgenogram one could make out the small area in the middle of the shaft which revealed the origin of the trouble. It is creditable of Dr. Jones to have diagnosed and treated so successfully this unusual case. Many limbs have been sacrificed under a mistaken diagnosis of sarcoma. I hope that when one of these cases turns up in my clinic I shall be able to recognize it.

DR. FREDERICK J. GAENSLER, Milwaukee: It might be a good plan for us to go over the cases we have diagnosed as bone syphilis to be sure that none of them are of the type described by Garré. I am of the same opinion as Dr. Ryerson that the differentiation of this condition from sarcoma should not be difficult. The cases of sarcoma I have seen could not be confused readily. It might

be interesting to give these patients a therapeutic test. I should like to ask Dr. Jones what happens to the untreated cases. There are two points which it is well to keep in mind in the diagnosis of bone syphilis: The pain is worse at night and the disease comes on in the form of attacks. Paget's cases are not all of uniform type; in some, the bones are soft, and in others the bone is much eburnated. The opposite tibia, in the case Dr. Jones showed, seems to show some encroachment of the cortex on the medullary canal, as in Paget's disease.

SIR ROBERT JONES, Liverpool: I did not see the original article by Garré, but since 1900 I have observed those fusiform swellings which at first sight one takes to be syphilitic, but the difference is really very obvious. The difference is very marked in the periosteum. The little depressions and corrugations in the bones and the firm attachment of



Fig. 6.—Lateral view of right tibia seventeen months after operation, showing permanent, fusiform osseous enlargement, with obliteration of the medullary canal at the site of the tibial swelling. The left tibia has been taken for comparison.

periosteum to the tibia are characteristic of syphilis, while the periosteum strips off very easily from the smooth bone in Garré's affection. The treatment I have adopted has been of the same character, I think, that Dr. Jones has followed, that is, a good incision and even gutting of the bone. It is interesting to note that the condition once healed may recur. I had a case in which the swelling recurred eighteen months after the first operation and necessitated a second operation, but five years afterward the patient had still experienced no further trouble. It is extraordinary how severe the pain may be in relation to bone tension, and I have been accustomed in various types of bone thickening, especially in Paget's disease, to relieve discomfort by a bold linear osteotomy into the medulla.

DR. S. FOSDICK JONES, Denver: In these cases of sclerosing nonsuppurative osteomyelitis, great relief from the pain can be afforded by a free incision of the periosteum and the opening of the medullary canal. The cortical thickening is invariably present in this type of osteomyelitis, and as the same condition of enlargement and thickening of the cortex is seen in a fairly large percentage of cases of bone sarcoma in the early stages of the disease, the differentiation is often very difficult, particularly when viewed from a roentgenographic examination. In reply to Dr. Gaenslen's question, at the time of operation in this case, a cuneiform section was taken from the cortex of the tibia for pathologic examination and showed no evidence of bone sarcoma.

A NEW ROENTGEN-RAY SIGN OF ULCERATING GASTRIC CANCER*

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ROCHESTER, MINN.

The difficulty of distinguishing roentgenologically between benign and malignant gastric ulcers is a familiar one. Various minor criteria of distinction are

to be found in the literature; but none of these has been advanced as being pathognomonic, and the majority are of small significance.



Fig. 2.—The hand approximating the walls of the stomach around the lesion.

It must be admitted that an attempt at roentgenologic differential diagnosis of those benign and malignant ulcers which cannot be distinguished macroscopically seems futile. This applies to simple benign ulcers and peptic ulcers that have undergone malignant changes. However, there are well defined ulcerating gastric cancers which are probably malignant from the beginning. The pathologist is able to recognize them as carcinomas grossly by their elevated irregular, overhanging margins; their ragged floors covered with a mucilaginous exudate, and their tendency not to perforate although they may involve the serosa. Since this type presents a definite pathologic picture, it offers some possibility of roentgenologic demonstration (Fig. 1).

During the past two or three years I have repeatedly been able to demonstrate a particular type of deformity which at operation has invariably proved to be this type of malignant ulcer. Its roentgenologic appearance is so definite that I consider it to be pathognomonic.

Fluoroscopic examination is essential for the routine demonstration of this lesion because manipulation is nearly always requisite for its exhibition (Fig. 2). If the examination is limited to roentgenograms only, the barium solution may prevent apposition of the walls of the stomach in the neighborhood of the lesion and thus the deformity may be completely overshadowed (Fig. 3). I have frequently noted this obscuration in the plates, even when they were made with the patient in the prone position.



Fig. 1.—Specimen of ulcerating cancer. Note large, deep ulcer with overhanging margins.

* From the Section on Roentgenology, Mayo Clinic.

The details of examination and the appearance of the ulcer vary slightly, depending on the site of the lesion.

When the ulcer is on the vertical portion of the lesser curvature or on the posterior wall near the lesser curvature, approximation of the walls of the stomach by palpation causes a dark, slightly crescentic shadow of the barium-filled crater to appear on the screen. In these situations the convexity of the crescent is toward the gastric wall and the concavity toward the



Fig. 3.—Roentgenogram showing an apparently normal stomach. By palpatory roentgenoscopy a large, deeply ulcerating cancer was demonstrated on the posterior wall near the lesser curvature.

gastric lumen (Fig. 4). The resemblance to a meniscus is so obvious that the word aptly applies to the sign. If the ulcer saddles the lesser curvature distal to the incisura angularis of a fishhook stomach a meniscus is similarly revealed by palpation, but in this

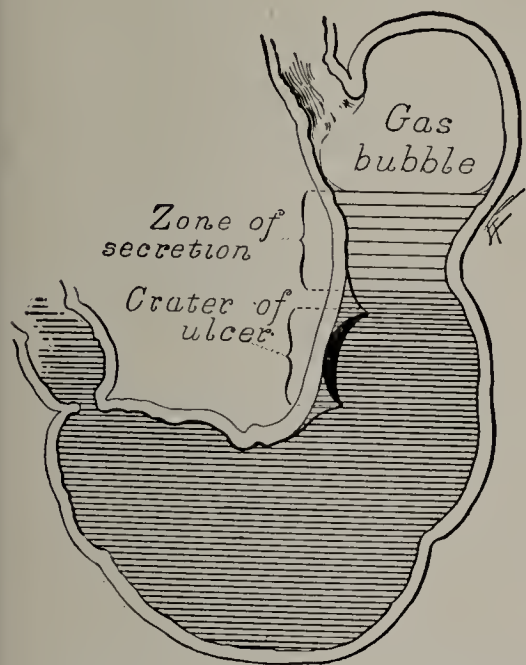


Fig. 4.—Drawing depicting meniscus-like crater on posterior wall near the lesser curvature.

meniscus is apparent because in this situation the examiner does not view the cavity of the ulcer in profile (Fig. 8).

Whether the lesion is situated on the lesser curvature or on the posterior wall, if it is large, a mass may be felt by careful, deep palpation. If the ulcer is high



Fig. 5.—Roentgenogram of malignant saddle ulcer in the pyloric end of the stomach. Irregularity of the greater curvature opposite the ulcer is due to spasm. Note concavity of meniscus toward gastric wall.

in the stomach, palpation is less effective in eliciting all the signs described, although the shadow of the crater may be seen. If the ulcer is on the posterior

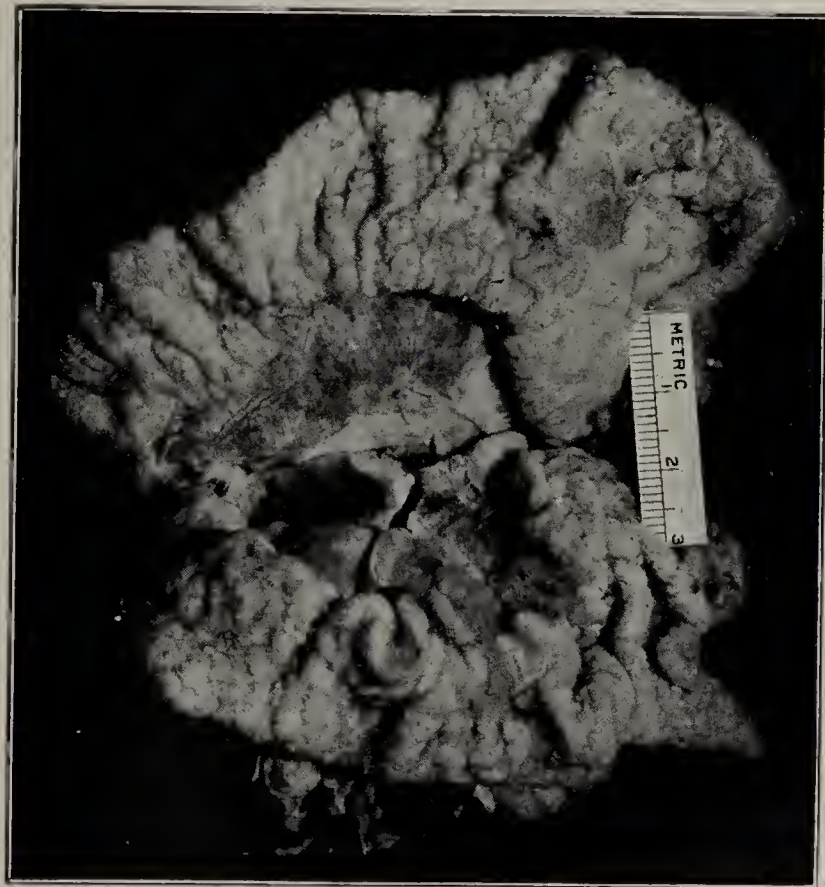


Fig. 6.—Specimen, same case as in Figure 5.

wall and its crater can be demonstrated in the antero-posterior view, but no niche can be seen in the oblique view, we believe that we are dealing with this particular

type of malignant ulcer. In fact, the absence of a classic projecting niche is one of its principal differential characteristics.

Another point in distinguishing this type of malignant ulcer from a simple ulcer is their difference in emptying by manipulation. In the former, the barium is dislodged from the crater with difficulty because of the overhanging margins. In the latter, the niche is easily emptied because it has no such margins.



Fig. 7.—Specimen. Saddle ulcer cut through at the line of lesser curvature. Half the crater is seen in profile. Note the resemblance of the crater to the crater seen in Figure 5.

A study of the specimens removed at operation in these cases affords great aid in the understanding of the underlying pathologic condition. In this type of carcinomatous ulcer the crater is on the mucosal or

inner side of the gastric wall does not necessarily lie within the wall. In this respect it contrasts with the niche described by Reiche and Haudek which is sculptured in or beyond the wall of the stomach and the deformity is by way of a localized addition to the gastric shadow (Fig. 9). In the ulcer deformity I am describing there is no localized addition to the shadow of the stomach, but

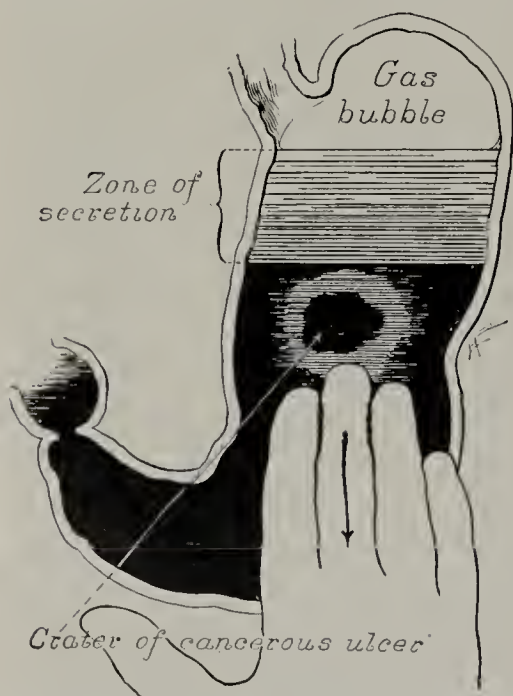


Fig. 8.—Drawing illustrating visualization of ulcer-crater on the posterior wall by stroking pressure of the hand.

the reverse of this or an encroachment on the lumen. In other words, with the neoplastic process there is a hyper-

plastic invasion of the lumen, followed by ulceration. The disintegrating central portion gives rise to a crater surrounded by a ridge of carcinomatous tissue. It is



Fig. 9.—Roentgenogram showing Reiche-Haudek niche of gastric ulcer.

the overhanging margin which enables us to pen up the barium in the crater by approximating the walls of the stomach in front of the ulcer. The findings which I have described are limited to those ulcers ranging from 3 to 8 cm. or more in diameter, with relatively deep craters and elevated or overhanging margins.

The Hemoclastic Crisis.—This is the name given by Widal, Abrami and Brissaud to the sudden and transient changes which occur in the blood preceding the anaphylactic shock, a transient hemolysis which develops without the subject's being aware of it. The blood pressure falls, the number of erythrocytes and of leukocytes declines also, the differential leukocyte count becomes inverted, and coagulation and the chemical-physical properties of the blood are modified. This hemoclastic crisis is brief, and it is followed by modifications in the blood in the inverse direction and to a more pronounced degree, so that at the close of the hemoclastic crisis the defensive properties of the blood on the whole have been materially enhanced. Recent research has demonstrated that the hemoclastic crisis is not restricted to anaphylactic phenomena. It may develop after parenteral injection of sugar, of protein and organ extracts, and from bacterial toxins and metal colloids, and even from inert substances, like talcum. Quénu and Delbet find that absorption of the products of disintegration of crushed tissues after a wound is liable to induce it. Also the penetration of merozoites into the blood in malaria, the transient hemoclastic phase being followed in the latter case with the chill and fever of ague. Paroxysmal hemoglobinuria is merely a sudden and severe hemoclastic crisis brought on, not by parenteral injection of any substance, but by chilling. The hemoclastic crisis is thus more than merely a manifestation of anaphylaxis. It embraces colloidoclasia, that is, all the reactions in the blood from modification of the colloids after injection of an alien substance, namely, agglutination, precipitation, hemolysis and cytotoxicity.

DIAPHRAGMATIC HERNIA

ITS CLINICAL ASPECTS FROM TRAUMA
IN CHILDREN *

P. E. TRUESDALE, M.D.

FALL RIVER, MASS.

Hernia of the diaphragm is one of the concealed deformities which roentgenology has exposed for study and cure, essentially during the past decade. The condition is no longer considered rare. Numerous publications calling attention to all phases of the subject have made their impress. There has resulted an awakening to the vital significance of this defect and the wisdom of keeping hernia of the diaphragm in the category of diseases always to be reckoned with in making physical examinations. A study of the subject reveals the fact that this condition was brought to light preeminently during periods when postmortem examinations were eagerly sought. If necropsies were done more frequently now to determine the true causes of death, hernia of the diaphragm would be discovered many times in the nature of a surprise. Death from shock among individuals, particularly children, who have had the heavy wheel of an automobile pass over the upper abdomen is very likely to be from rupture of the diaphragm.

The first two cases of diaphragmatic hernia in literature were reported in the *Opera Chirurgica* by the father of French Surgery, Ambrose Paré,¹ in 1610. Both cases were from wounds. Another case, due to stab wound, was reported by Fabricius Hildanus² in 1646. In 1698, Riverius³ reported a case of congenital hernia of the diaphragm. Kirschbaum⁴ was the first person to make a serious study of this subject. In 1755, he compiled seventeen cases from his own observations and from the works of others. Somewhat later Morgagni,⁵ the remarkable pupil of the distinguished Italian surgeon Valsalva, presented a monograph on hernia of the diaphragm describing the condition in a most accurate manner. About half a dozen

other cases were reported by different authors until the famous work of Astley Cooper⁶ on hernia in 1824. He gave a very complete and intelligent account of this disease, to which little has been added since.

Again, single cases were reported by numerous authors until 1853, when a monogram by Henry I. Bowditch marked the next epoch in our knowledge of this complaint. He compiled eighty-eight cases from the literature and added a valuable contribution to what had already been written on hernia of the diaphragm. As far as the literature of the past was concerned, he exhausted the subject. In the introduction of his treatise, the author reported a case from his own experience. In September, 1846, a young man of 19 was admitted to the Massachusetts General Hospital with a fractured spine. On physical examination Dr. Bowditch discovered signs of diaphragmatic hernia, which was confirmed later at necropsy. This was a notable and very significant case, when it is realized that before the days of the roentgen ray Lichtenstein reported 250 cases in which a correct diagnosis had been made in but five. Dr. Bowditch examined his patient carefully in order to observe the effects produced on the action of the heart by so severe an injury as fracture of the spine. The signs which he discovered convinced him that the intestines were in the left plural cavity. One infers from the report that many eminent diagnosticians examined this patient and concurred in the diagnosis. The zeal of the author to prove by necropsy the unique condition which he had demonstrated clinically is manifest in this sentence from his manuscript: "The postmortem examination was made very hurriedly, owing to circumstances beyond our control."

In his classification of the subject and description of the anatomic characteristics, Dr.

Bowditch established facts which have withstood the test of time. Many of these are of fundamental value in the application of modern surgery to the treatment of the condition. With the advent of ether, the inhalation of which he proposed during attacks of constriction, he advocated a unique operation for cutting the hernia ring. This consisted of an extraperitoneal approach by an incision beginning at the ensiform cartilage and extending along the margin of the ribs. After cutting through the tendinous attachments of the muscles, he would proceed to the hernial ring by a deflection of the peritoneum. He referred to the rela-

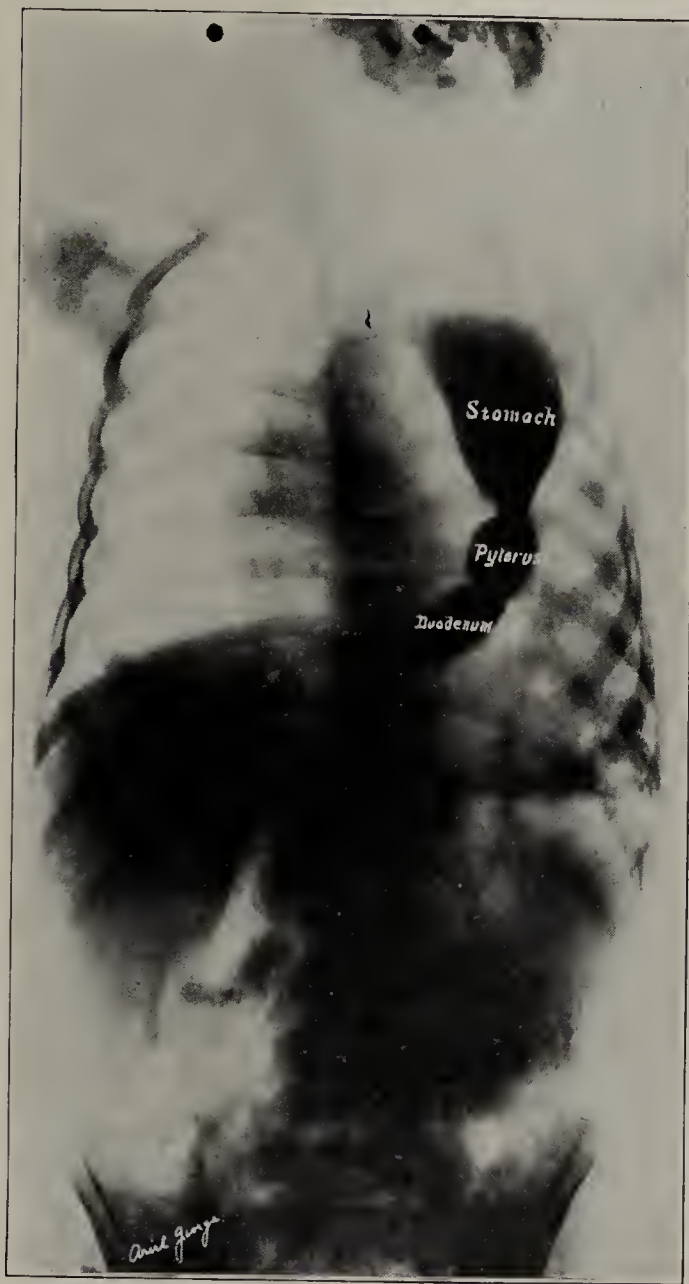


Fig. 1.—Five minutes after an opaque meal: stomach, pylorus and duodenum in the left thoracic cage.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. *Opera Chirurgica* ab Ambrose Pareo, Frankfort, 1610, Ch. 30, p. 230.

2. *Opera Gulielmi Hildani*, Frankfort, 1646, cen. 2 obs. 33, p. 108.

3. *Lazari Riveri Opera Medica Universa*, London, 1698, Obs. Cent. Quart. ob. 67.

4. Kirschbaum: *Dissertation, Chirurgie*, Lausanne, 3: 217, 1755.

5. Morgagni: *Seats and Causes of Diseases* 3, Letter 54.

6. *Treatise on Hernia* by Astley Cooper, etc., London, 1824.

tive frequency of hernia on the left half of the diaphragm, and accounted for this by the pressure of the large lobe of the liver acting as a kind of bulwark on the right side; also to the added length of the right crus of the diaphragm and the two fibrous bands on the right side which do not exist on the left. He found that hernia of the right side almost invariably developed with a complete sac, while that on the left side usually had no sac. He indicated the areas in the diaphragm where, from anatomic peculiarities, hernia commonly occurred, and observed that the tendinous and muscular portions were equally liable to rupture from accident. Dr. Bowditch presented sufficient evidence to set aside the opinion that children born with hernia of the diaphragm, even of the most severe form, invariably die; and recorded a remarkable case by Becker,⁷ that of a double hernia found at necropsy on a child who lived to be 5 years old. The heart and liver lay in the right side of the chest, while the spleen and stomach were found in the left pleura. A case of this type is *sui generis*, for it is the accepted opinion that infants with bilateral hernia of the diaphragm or complete absence of one half of this important septum do not survive after birth.

VARIETIES OF HERNIA

The category in which the hernia belongs is determined according to the causative factors producing the aperture in the diaphragm. In his studies, Graser⁸ found that traumatic hernia of the diaphragm was the more frequent form. This variety occurs from stab wounds, gunshot wounds, shell fragments and injuries caused by external violence. Any part of the diaphragm may be opened, and the resulting hernia exists always without a sac. Small areas deficient in fibrous tissue or muscle fibers yield to external violence, and the rent may extend in any direction. The opening has no tendency to close by healing. Its margin becomes thickened, rounded and covered by fusion of the pleura and peritoneum.

The congenital form is relatively common. It usually appears at one of the unclosed pleuroperitoneal passages. In 433 cases compiled by Grosser in 1899, a congenital origin could be demonstrated in 232. Where the different segments of the diaphragm meet there are apt to be defects, such as at the foramen Morgagni in front and the quadrilateral space behind. These are common sites of congenital hernia. The con-

genital absence of fibrous or muscle tissue in the dome of the diaphragm has been found to produce a remarkable deformity without actual hernia existing. This condition is known as eventration, and constitutes a weakening of the diaphragm where the serous membranes alone form the partition between the cavities of the pleura and peritoneum. Under such circumstances the elevation of the diaphragm to a level of the clavicle has been observed.

While the organs contained in the pelvis have never been drawn through the hernial opening, all those within the abdomen proper have been found above the diaphragm at one time or another. The relative frequency in which the stomach is involved in the hernia has been mentioned by most writers on the subject. Particularly is this true in the congenital type and in that form where rupture within the central area has occurred from external violence. In small apertures, such as from stab wounds and gunshot injuries, the omentum and bowel are the first to pass through the opening in the diaphragm.

MECHANISM IN DIAPHRAGMATIC HERNIA

The mechanism of the transposition of the abdominal viscera necessarily varies according to the position, form and size of the aperture in the diaphragm and the mobility of the abdominal organs. Other things being equal, we would expect the greatest amount of displacement to occur in the very young and in thin adults. Lockwood,⁹ in his luminous chapter on this subject, refers to the mechanism of diaphragmatic hernia as frequently so involved that many of the cases are difficult to understand even at necropsy. In its passage through the hernial ring, the movement of each viscus is such as to produce some degree of torsion. That such a process takes place with early symptoms of a serious character is

unquestioned; but many of these patients with diaphragmatic hernia of considerable proportions, as the one to be reported in this communication, get along for months or years with very little embarrassment until something more passes through the hernial ring to impinge upon the free current of food and blood. This is true particularly of the traumatic hernia in which we find that the organs which pass upward into the thoracic cavity, though free from adhesions, do not revert to the abdomen unless the tear is extensive. Spontaneous reduction is a phenomenon associated with congenital



Fig. 2.—Roentgenogram revealing a dextrocardia together with the colon, small intestine and stomach above the diaphragm.

7. Becker: Acta Erudita, Lipsiae, April, 1706, p. 17.

8. Graser, cited by Bull and von Bugman, p. 626.

9. Lockwood: Diseases of the Stomach, p. 400.

hernia when the stomach alone or accompanied by the bowel slides back and forth with respiration and posture. The position which is taken by the transposed organs is shown in Figures 1, 2 and 3. The stomach after passing through the opening takes a position decidedly posterior. Next in order of escape is the colon and omentum. The colon occupies a central position between the stomach and small intestine. It appears to skirt the outer wall of the thorax and rests upon the outer leaf of the diaphragm. The small intestine, although moderately distended and considerably spread out, was found to be mainly in the anterior part of the chest cavity. The spiral upward movement taken by these abdominal organs necessarily makes strangulation a constantly impending hazard.

SYMPTOMS AND DIAGNOSIS

The symptoms of diaphragmatic hernia present the widest variation, from a mild degree of digestive disturbance to an alarming interference with heart action, respiration and gastro-intestinal function. In the traumatic form the symptoms are those associated with the entrance of a foreign body: hemorrhage, collapse of the lung and pneumothorax. Death may ensue in the first twenty-four hours, not from the tear in the diaphragm but from shock. If the patient survives, dyspnea and a disturbance of the gastro-intestinal function occur at irregular intervals and often without apparent cause. The complaint may be trifling and the patient continue at work or at play. On the other hand, the clinical picture may change suddenly with nausea, vomiting, obstipation, dyspnea and cyanosis presenting a group of symptoms indicating great danger. Unless the oppression and obstruction are relieved by the stomach tube, enema or operation, death is apt to ensue quickly from strangulation.

While the congenital form in which only part of the stomach enters the hernial ring may exist throughout life and cause very little trouble, in some instances this minor deformity produces very annoying symptoms. When the aperture in the diaphragm, whether congenital or traumatic, is large and has admitted the stomach and intestines, an interesting group of symptoms results in which dyspnea and dyspepsia are the most constant. Under ordinary circumstances they exist in a degree scarcely noticed by the patient; but after exertion or overeating there is an oppressed feel-

ing. A sense of suffocation may occur on lying down. Often the attacks of dyspnea are transitory and caused by gaseous distention of the stomach and bowel.

Cyanosis and cough may supervene from cardiac displacement and pressure by the distended hollow viscera above the diaphragm. Disturbances of digestion are frequent, though they may be of a mild character for a long period. Anorexia may persist. Frequently a feeling of fulness comes on after meals, increasing to distress and severe colicky pain when the patient has been unable to tolerate certain foods. For example, we found that eating a banana would make it necessary for our little patient to sit up. He would eructate, try to disgorge his stomach, become cyanosed and perspire freely. There may be a dragging sensa-

tion in the upper abdomen and odd feelings in the left pectoral region from peristalsis. Pain referred to the left upper abdomen is a common symptom on rising, and is caused by engorgement at the hernial ring due to gravitation of the herniated viscera.

In the acquired form the tear in the diaphragm is caused by external violence. Two cases which I have seen were in boys aged 5 years and 3½ years, respectively. In each instance the hernia of the diaphragm was produced by the passage of an automobile wheel over the upper abdomen. If the patient survives the immediate condition of shock, the symptoms may cause considerable apprehension for the first few days, and then subside. After a few weeks, months or years, they reappear in a series of minor attacks of intestinal obstruction and dyspnea. Beckman, McGuire, Balfour, Bevan and others have reported cases of this

nonstrangulated type. A diagnosis is rarely made unless the physician has the condition of diaphragmatic hernia in mind during his examination. Diaphragmatic hernia has been known more in the light of a postmortem discovery, not because the symptoms and physical signs are vague in the least, but owing more to the fact that they are unfamiliar. Roentgenologists seldom make the diagnosis when the thoracic symptoms predominate. Transposition of the abdominal viscera to the pleural cavity must be discovered or at least suspected by the internist, who in turn directs the roentgenologist to administer bismuth solution for his examination. In the case which I report, several roentgen-ray examinations of the thorax were made



Fig. 3.—Stomach above the diaphragm and occupying a position in the extreme posterior section of the chest cavity.

without gaining a suspicion of the diagnosis. On the other hand, whenever the thoracic symptoms are subordinate in degree to those of the gastro-intestinal tract, the routine roentgen-ray examination with the opaque meal will reveal the protrusion of the stomach and intestine into the thoracic cavity. This was shown in the discovery of three cases by MacMillan¹⁰ among approximately 15,000 cases examined in the roentgen-ray laboratory at General Hospital No. 1. Again, in a case from battle wounds reported by Wiart¹¹ in which the symptoms were those of markedly obstructing gastric stenosis, the roentgen-ray examination revealed the stomach and colon in the left pleural cavity.

Occasionally the results of the roentgen-ray examination may be very confusing, as in a case reported by Greig¹² of a soldier who was wounded in October, 1914. The roentgen-ray examination was made in 1916, and resulted in a wide difference of opinion in interpretation. Pirie believed that fluid and air lay above the diaphragm, and the condition was thought to be hydropneumothorax. Thoracotomy revealed hernia of the diaphragm. In other instances the vault of the left half of the diaphragm may be very high, as in a case recorded by Gerber.¹³ The opaque meal in the vertical position showed a stomach the greater part of which appeared to be intrathoracic. There was no hernia of the stomach through the diaphragm, however, but an abnormally high position of the diaphragmatic dome. This case might well be classified as one of eventration.

Thus far about forty-three cases from battle wounds have been added to the literature from the recent war. Some died of intestinal obstruction long after the date of injury. In the museum at Val de Grace is a specimen showing a diaphragmatic hernia of the transverse colon which had been unrecognized and led to death by strangulation of the hernia one year after the wound.

An occasional case was discovered after a complaining soldier had passed through numerous examinations. J. Grant Andrew¹⁴ reports a case of diaphragmatic hernia from gunshot wounds. He states that the soldier passed from "pillar to post" for

two years. He was several times treated for gastritis, and had always been marked up for "duty" and returned to the line. He was operated on by laparotomy, and recovered. The author mentions another case in which a year elapsed before the diagnosis was made.

Since cases of diaphragmatic hernia were overlooked so frequently during the war, when a gunshot wound in the region of the diaphragm might be expected to lead to a suspicion of this accident, it is no great surprise that in civil practice cases of diaphragmatic hernia from external violence should pass the scrutiny of many examiners without being discovered.

PHYSICAL SIGNS

From the standpoint of objective signs, few diseases are known to present a more fantastic picture. While the presence of a small portion of the stomach in the thorax may reveal nothing unusual on examination, the hernia of large proportions presents anatomic variations which are significant and outstanding, though quite variable.

The acute cases, such as develop fever, rapid labored breathing, cyanosis, cough, dulness or a flat percussion note, with a good variety of râles, have been mistaken for pneumonia. Lockwood⁹ states that when actual compression of the lung takes place, the note becomes progressively dull and the breathing approaches the bronchial type. At other times the physical signs may not be the same at any two examinations, since they necessarily vary according to the amount of food, water or air in the stomach and bowel. Not only do the signs on auscultation and percussion vary with the amount and character of gastro-intestinal contents, but they vary with the position of the patient. At one

time the physical signs simulate pneumothorax, at another hydrothorax, and again they appear to indicate hydropneumothorax. However, in spite of many vagaries presented, the herniated viscera show important signs somewhat easy of interpretation if the examiner's mind is receptive. The affected side of the chest is prominent, restricted and motionless. The outward flaring of the margin of the subcostal angle due to loss of pull by the diaphragm against the scalene and intercostal muscles is readily observed. Litten's sign, the diaphragm shadow, is absent. The abdomen is scaphoid to a degree depending on the extent of hollow viscera displaced. Dextrocardia is

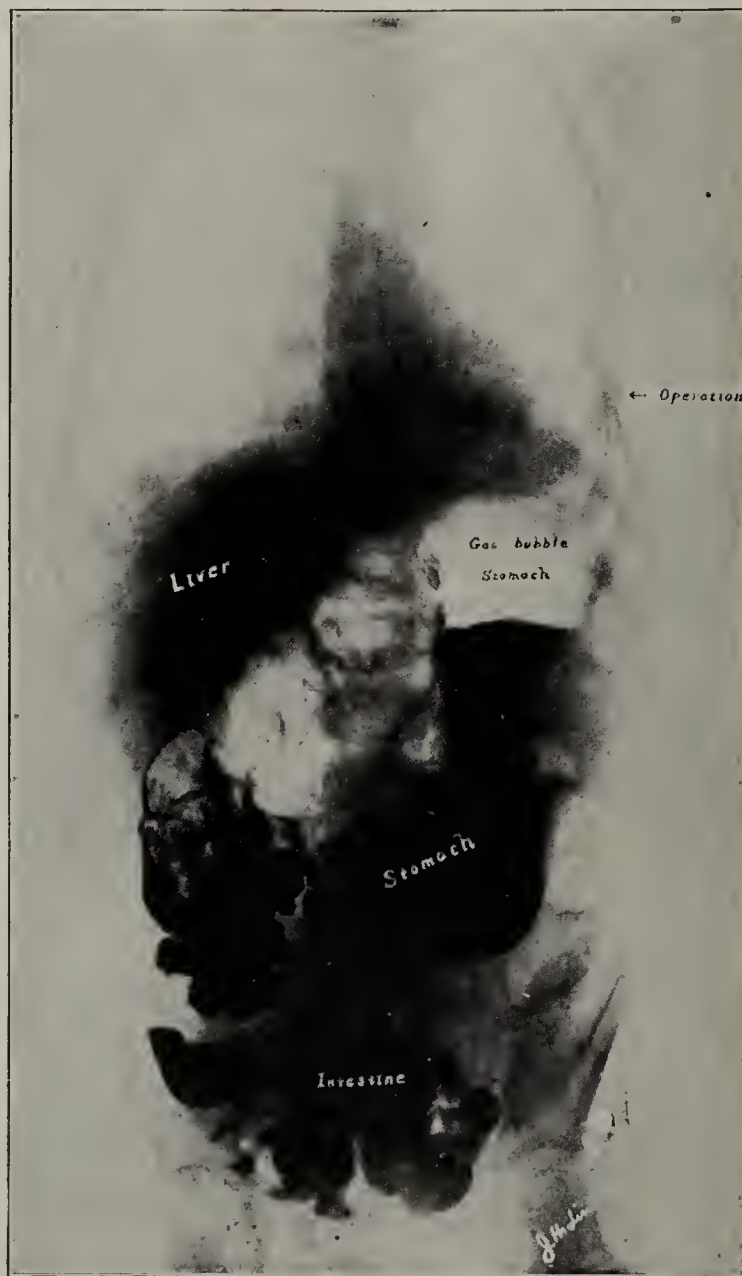


Fig. 4.—Two weeks after operation: The light areas above are the expanded lungs; the abdominal viscera as shown below the diaphragm have retained their normal relations after reduction.

10. MacMillan, A. S.: *Am. J. Roentgenol.* 7: 143 (March) 1920.

11. Wiart: *Bull. Soc. de chir. de Paris*, July, 1917.

12. Greig, D. M.: *Edinburgh. M. J.* 22: 357 (June) 1919.

13. Gerber: *Am. J. Roentgenol.*, August, 1919, p. 383.

14. Andrew, J. G.: *Brit. M. J.* 2: 412 (Sept. 27) 1919.

always present in some degree. The displacement may be slight; but if the stomach is in the left pleural cavity, the heart may be pushed farther to the right side by administering a Seidlitz powder. On percussion the note is necessarily variable: flat over areas of contained fluid, dull in others and tympanitic over distended stomach or bowel. The usual position of the stomach in the posterior part of the thorax gives a tympanitic note if this viscus is distended by gas. When the percussion note is tympanitic over a wide area, it can be made flat by giving the patient considerable water by mouth and by rectum.

On auscultation there is a mixture of sounds. Subcrepitant râles have been noted. To one accustomed to listening over the abdomen, they appear similar to those heard in chronic intestinal obstruction, as gurgling, blowing, metallic sounds synchronous with peristalsis. These sounds may be heard high in the chest cavity, making their transmission from below the diaphragm improbable. Finally, the all important agent of examination, the roentgen ray, is brought into play. A series of roentgenograms after the opaque meal removes nearly, if not all, doubt about the relative position of the stomach and intestines. A barium enema in addition to the bismuth meal should always be given in the examination of children. It is the most satisfactory method of defining the colon clearly. The use of the fluoroscope greatly enhances the study of the transposed organs.

The condition of eventration may be mistaken for hernia, and it may be found extremely difficult or impossible to differentiate the outline of the over-stretched diaphragm because of its thin walls throughout the dome. However, with the aid of the Bucky diaphragm the technic may suffice for differentiation. Giffin¹⁵ makes discrimination as follows: "If two curved shadows be present, a radiographic or fluoroscopic examination after distention of the stomach should indicate which is stomach and which diaphragm; if the lower line be stomach it will move up against the diaphragm line; if the upper line be stomach distention upward into the chest will be almost unlimited."

If the line of the diaphragm can be defined in the roentgenogram, it will be found irregular and severed in hernia while its continuity will be unbroken in all other conditions. Signs of fluid somewhere in the pleural cavity may prompt the examiner to aspirate. So positive were these signs in the case we report that preparations were made to insert a needle. Doubt ruled as the signs had changed when the moment came to act, so it was not done. In another case a needle was inserted and the operator got milk.

REPORT OF CASES

CASE 1.—L. S., a boy, aged 5 years, was run over by an automobile, May 11, 1920. A front wheel of the machine passed over his abdomen. He was taken to a hospital, in a condition of shock; the exact nature of the injury could not be determined. At the expiration of two weeks the patient apparently had recovered, and was discharged. Soon he was about the house and mingled with other children at play. It was noticed on frequent occasions that his breathing was embarrassed and his food caused distress, especially if he ate bananas or overloaded his stomach with any food. At night he required several pillows; otherwise he was restless and his breathing labored. He was said to have been

more subject to "colds." These minor complaints were variable and not of sufficient severity to cause more than passing concern.

In December, 1920, he had a severe attack of pain referred to the left upper abdomen. He was nauseated, and tried unsuccessfully to vomit. The appearance of cyanosis, dyspnea and sweating accompanied the attack, which did not last more than ten minutes. At intervals of two to three weeks these symptoms of strangulation recurred. The duration of the attacks increased and very visibly affected the boy's endurance. He was examined on many occasions, but the cause of his symptoms was not definitely detected until he was referred to Dr. Henry I. Bowditch 2d, who has given me a copy of his notes to include in the record. They are as follows:

"January 24, L. S., 5 years, well developed and nourished, pale, has apparently lost flesh; expression is not happy; cannot laugh much. Outside of chest is negative. Left side, especially the axilla and back, is prominent. Spaces are normal. Left side moves less. Expansion not noticed. Percussion: Dulness over the left chest below the third rib, down to axilla. Posteriorly in the intrascapular and subscapular spaces the note is tympanitic. Tactile fremitus was absent except at top of left chest. Right chest showed resonance except for the right border of the heart, which was 3 cm. outside the right sternal border.

"Auscultation: Breath sounds over the left chest were absent except over the tympanitic space, where they were distant. There were no splash sounds and no coin sounds. There was no dulness in Traube's semilunar space. No triangular dulness in right subscapular region. The areas of dulness and tympany vary by sitting and lying. Dulness seeks dependent parts. Diagnosis: Diaphragmatic hernia." This diagnosis was confirmed on roentgenologic examination by Dr. Ariel George.

A transthoracic operation was performed, Feb. 23, 1921. The little patient made an uninterrupted recovery and left the hospital on the fourteenth day, when roentgen-ray examination revealed the condition shown in Figure 4.

CASE 2.—The second case which I have the privilege of mentioning was seen at the Rhode Island Hospital on the service of Dr. J. C. O'Connell. A boy, aged 3½ years, was run over by an automobile, one wheel of which passed over the upper abdomen. He was admitted to the hospital in a state of shock, and in many details, from what I can learn of the first patient, these two cases were comparable. At the end of three weeks, Dr. O'Connell closed the lacerations in the diaphragm by the abdominal approach. This patient recovered with the apertures in the diaphragm entirely healed.

The latter case adds evidence to the growing liability of the occurrence of this type of severe accident in children, and the great importance of its early recognition.

ABSTRACT OF DISCUSSION

DR. D. F. JONES, Boston: Dr. Truesdale reports two cases of diaphragmatic hernia due to injury. I have seen four cases of acquired diaphragmatic hernia within a year. Two were diagnosed by the roentgen ray, and two were found during the routine examination of the abdomen, in the course of laparotomies for other conditions. But one patient of the four was operated on for repair of the hernia; one not operated on was a man well along in years and a very poor surgical risk; two were without symptoms, and without any evidence that the stomach ever entered the hernial sac; that is, there was no thickening of the peritoneum at the cardiac end of the stomach. In regard to the operation, I would give a word of caution: Those who were in France became convinced of the slight danger of opening the thorax, and a number of those men with whom I have talked have urged the thoracic route as being by far the better route for the repair of these hernias. There can be no doubt that it is an excellent route, and in some cases the preferable route; but I would suggest that in the acquired hernias, at least, the abdominal route be tried first; in some cases it may be necessary to go into the abdomen and chest. The case in which I did not operate was so easily done by the abdominal

15. Giffin, H. Z.: *Ann. Surg.*, 55: 388 (March) 1912.

route that the thoracic route was not considered at all. The patient was thoroughly anesthetized and the lower portion of the chest thrown forward by a sand bag under the back. The edges of the ring were then found with the fingers and a silk suture placed, getting a good bite on both edges of the opening. This suture was tied and pulled on when the next suture posteriorly was placed and the procedure repeated until the opening was closed. The patient has been entirely relieved of symptoms for one year now, and the roentgen ray shows that the stomach no longer enters the hernial sac.

DR. F. W. WHITE, Boston: Congenital cases of diaphragmatic hernia of the stomach usually differ considerably from the traumatic type. Three congenital cases which I saw in the last year had much less stomach and bowel in the chest than Dr. Truesdale's traumatic cases. The diagnosis was impossible by symptoms or physical signs. The symptoms varied much. They were obstructive or vague and absent. The physical signs in the chest amounted to virtually nothing. There was no extensive lung compression, or dulness or tympany on succussion, no limitation to chest movements, no flaring of costal edge or sinking in of abdomen, no dislocation of the heart. The diagnosis was made purely by roentgen-ray examination. Even after the diagnosis was made, repeated physical examinations of the chest by auscultation and percussion were practically negative. Even with roentgen-ray examination some knowledge of previous cases is needed. Two of these three patients had been repeatedly examined by the roentgen ray before coming to me, without a diagnosis. Something wrong with the lower part of the esophagus had been suspected. The diagnosis of diaphragmatic hernia from high sided left diaphragm (so-called eventration) is important, as the first is usually surgical and the second is not. It is usually easy. In high left diaphragm, we have a stomach normal in appearance except for its high position. In hernia, the stomach itself is deformed doubled up or hour glass shaped, partly above, partly below the diaphragm, and there is often great variation in shape and position of the stomach at different times, now above, now below the diaphragm, or half way down, etc. The lung markings may often be seen through a herniated, not through an eventrated, stomach. Many cases of diaphragmatic hernia will be found now that the roentgen ray is freely used. We must watch for hernia where there is apparently something peculiar about the lower left chest or pouching in the lower esophagus region. We must remember that the clinical signs and symptoms are not distinctive in more than 2 or 3 per cent. of the congenital cases—in short, that practically all will be missed unless the roentgen ray is used.

DR. L. T. LE WALD, New York: Eight cases of diaphragmatic hernia have come to my attention. It certainly is a much more common condition than we ever thought from necropsy statistics. Seven of our cases were congenital and only one was traumatic. Hernia of the diaphragm is usually a congenital condition. It is not incompatible with longevity. Operation should be resorted to only to relieve distressing symptoms. In the repair of the hernial opening it is essential that the symptoms be relieved by the operative procedure. Eventration of the diaphragm can always be distinguished from hernia of the diaphragm roentgenologically. Eventration of the diaphragm is a much more common condition than has been recognized in the past. It has been observed in childhood and may be of congenital origin. It should never be confused with spontaneous pneumoperitoneum or subphrenic abscess with the production of gas beneath the diaphragm.

DR. P. E. TRUESDALE, Fall River, Mass.: When the child mentioned in my paper was to be operated on, I made a reasonably thorough search of the literature and found the reports of only two children who had been operated on for diaphragmatic hernia. Mr. Howson Ray of England had operated on one. He completed his operation by a gastrostomy. William A. Downes operated on the other. It seemed to me that the most satisfactory approach for this condition would be the transthoracic, and it undoubtedly was, although it was not all smooth sailing by any means. At one time I believed that I would have to open the abdomen. It was extremely difficult to get the intestines back into the

abdominal cavity because the abdomen was scaphoid. Only by getting the finger in and raising the diaphragm several inches was it possible to reduce the herniated structures. In the case in which Dr. O'Connell operated, we discussed the method of approach. He wisely chose the abdominal route and demonstrated that a surgeon should use the method that is best suited to his particular case. I am not sure that in the next case I would not select the abdominal approach, for the reason that in Dr. O'Connell's case a condition existed that would have been overlooked by the thoracic route. There was an opening in the right half of the diaphragm. I agree with Dr. Jones that there is a place for the abdominal operation, and perhaps it is often the better of the two.

CANCER OF THE RECTUM*

JEROME M. LYNCH, M.D.

NEW YORK

Excepting the stomach, the rectum is the most frequent site of cancer in the alimentary canal. Unlike the stomach, the rectum is the most accessible part of the intestine. Here, by means of the proctoscope and the examining finger, a tumor can be diagnosed at almost any stage of existence. Nevertheless, about 75 per cent. of patients suffering from cancer are not diagnosed until the tumor has made considerable headway. A large number of these patients have been treated for indigestion, hemorrhoids and various complaints, but not for the dreadful disease from which they are suffering.

In many cases, the examination has not been sufficiently thorough. Some do not use the proctoscope; others, while using one, do not understand what they see sufficiently well to interpret it. Fortunately, tumors of the rectum, except when located near the anus, remain stationary for some time. Otherwise, few cases would be operable when at last seen by the surgeon. It is important, therefore, if we wish to make progress, to make a routine examination of all patients; most especially those suffering from constipation, bleeding, explosive movements, the passage of mucus, or any digestive disturbance whatever. Should we be conscientious in this, most cases will be discovered in their incipience, and the surgical results gratifying.

SYMPTOMS

The earliest symptom of cancer of the rectum is the sudden onset of constipation, and this is particularly noticeable in those who have had regular movements previously. Stockard believes that this is due to an irritation of the sympathetic, with a lowering of tone. Whatever may be the explanation, it is certainly significant, as it is in no way associated with the size of the tumor or the extent of the obstruction. We have seen this symptom in patients with a tumor no larger than a marble, and we are all familiar with the difficulty one has in emptying the colon either by cathartics or enema previous to operation. I have never seen a case in which the colon, at the time of operation, was free from feces; and at times this has been a serious embarrassment, both during and after the operation. I know of one instance, in my own practice, in which the colon was so packed with feces that it was with difficulty that the lower bowel was evacuated before the operation could be started. The

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patient later died of obstruction, and I was fortunate in securing a necropsy. The woman's colon was packed with feces beyond the ileocecal sphincter, notwithstanding the fact that she had the usual preparation previous to operation.

Every surgeon knows the part played by peripheral irritation in simulating gastric disease. We are aware that chronic appendicitis, a gallbladder, a long sigmoid, and a nonfused colon are frequently responsible for so-called indigestion; but few seem to take into consideration the fact that a carcinoma may cause these symptoms. We not infrequently see patients who have been treated for some time (and I have in mind two or three now), for gastric disturbance only, when they had a well developed carcinoma of the rectum.

The passage of blood and mucus with an imperative desire to move the bowels followed by an explosive and unsatisfying movement occurs in all cases, except when the tumor is situated close to the anus; and then the only symptom may be the passage of a little blood.

Almost invariably, patients complain of an indefinable feeling in the pelvis, without being able definitely to locate the site of the trouble. But in every instance the frequent and imperative desire to move the bowels dominates all other symptoms. As time goes on, the desire becomes more frequent and more imperative. The patient has to go to the toilet immediately on getting out of bed in the morning; and, as the disease advances, nocturnal movements become part of the picture. Other symptoms frequently emphasized in textbooks, namely, loss of weight, cachexia and pain, are all terminal phases of malignancy, and are of interest only to the pathologist.

I have been impressed by the weight that some physicians attach to age. They seem to imagine that cancer is rare in the young. As a matter of fact, cancer occurs at all ages; and, while less frequent in the young than in those between 45 and 60, still, for all, a goodly percentage will be encountered between 20 and 25. In my own practice, a number of cases have been seen between 20 and 25. The chart compiled by Dr. Palmer gives some idea of the cancer incidence in our series.

The cancerous tumor is so characteristic in its feel and in its appearance that any one who has once seen or felt one should be able to make a diagnosis instantly. It is true that the most experienced may be misled, but this is rare. I have had under my care, within the last year, three cases, all of inflammatory origin, existing from two to ten years, in which, on removal of the rectum, much to my surprise the pathologist made a diagnosis of adenocarcinoma. This brings up a very interesting problem and one that will require careful study in the future as to what percentage of inflammatory tumors is malignant. These inflammatory conditions differ from the ordinary cases we are in the habit of seeing, in that the inflammation seems to have originated in the follicles, giving the examining finger the impression of a nodular, bosselated surface with enormous thickening of the rectal wall. Other conditions that may be mistaken for cancer are hyperplastic tuberculosis, diverticulitis, ulcerative tuberculosis, gummas and nonspecific infections.

DIAGNOSIS

Biopsy, so frequently performed to confirm a diagnosis, I hold to be seldom justifiable; in fact, I believe

it is distinctly harmful. If, as has been shown, the mere handling of a tumor causes dissemination of the cells, why isn't the risk of a biopsy greater? In my opinion, in 98 per cent. of these cases, a simple digital or proctoscopic examination is sufficient. After the diagnosis has been made, there are many factors that must be given due consideration before a definite decision can be reached as to the best means of relief. Many cases, while apparently operable, are not in reality so because of the patient's general condition.

TREATMENT

The diagnosis having been made, the best method of treatment must be considered. This will be decided largely by the type of tumor, its duration and its location. It is our custom at St. Bartholomew's Hospital to cooperate closely with the radiologist, Dr. Levin. This is especially true when for any reason the question of the advisability of surgery is in doubt.

In all cases we consider it desirable, whenever possible, to have the radium applied during or after operation. In inoperable cases, we first establish a stoma, and afterward apply radium. While the type of operation is largely determined by the location of the tumor, there are certain underlying principles by which we must be guided and which, to a large extent, dictate the procedure. We should always be mindful that, no matter how recent the tumor, its spread may have been so rapid as to be inoperable when seen, though it may seem at first to be operable and movable. By this I mean that, even in early tumors, cells escape into the venous circulation and become implanted in the liver. Again, when the tumor is situated close to the anus, the ischiorectal fossa early becomes infected, and on account of the generous lymphatic supply, the radical operation is imperative. But there are certain structures that should always be under suspicion, because it is through these structures that dissemination usually occurs; the lateral ligaments, the ischio-rectal fossa, the levator muscle. The rectum is a self contained organ, and, if removed with its fascia intact, we have less danger of surgical coiling and recurrence. Hartman's critical point in the blood supply must be remembered, as gangrene may result, if overlooked.

I have arrived at the conclusion that only after an exploratory operation can one be positive what procedure one should choose.

Within the last year, two perineal operations were successfully performed, and a few months later I found it necessary to resort to laparotomy. In both instances, the undersurface of the liver was studded with nodules. Both of these patients are yet living; but, if I had performed an exploratory laparotomy in the first instance, I would have left the patients with an artificial anus instead of doing the radical operation.

While the results are apparently good from the perineal method, we must always bear in mind the possible liver involvement. An exploratory incision is not dangerous; it gives a complete picture and allows the surgeon to conclude intelligently the procedure to be followed.

It is now agreed by all that infection and loss of blood lower the patient's immunity to cancer. If this is so, my contention is sustained that an artificial anus should be the resort, the moment we are convinced that a tumor is inoperable.

Of course, this is not the only indication for colostomy. Often it is better to perform a colostomy even when the tumor is operable, and wait for several weeks before going on to the radical operation. I have in mind many instances in my own experience in which the patient's condition was so greatly improved by colostomy that a radical operation was subsequently feasible. An ileostomy is sometimes preferable to colostomy; but I cannot subscribe to the dictum that an ileostomy is always preferable to a colostomy when a radical operation is subsequently anticipated. I have found it best on some occasions to perform a colostomy first, remove the tumor a few weeks later, and then, some six months afterward, reconstruct the rectum.

The patient's dread of a colostomy is unfortunate. I have so frequently performed this operation for other conditions, and the functional results have been so gratifying, that I deplore the fear for this operation engendered in the minds of the patients by the profession. The operation is easily performed, under local anesthesia, in fifteen or twenty minutes, and the abdomen explored at very little inconvenience if the method we follow is adopted:

After the abdomen is opened and explored, the sigmoid is brought out and a glass rod passed through the mesentery; the peritoneum is sutured to the bowel in four places, with interrupted catgut sutures. The fascia is closed in the usual manner, and two silk-worm-gut sutures are passed through the skin and fascia close to the bowel and brought out on the other side. The rest of the skin is closed with silk. Usually, on the second or third day, the bowel is perforated and a catheter passed into the oral end to allow the escape of gas, the catheter being fixed in place by means of a circular silk suture. On the fourth or fifth day, the colostomy is opened. After this, the oral bowel is irrigated once daily, and the aboral end as often as is necessary. The daily irrigation is really the secret of a competent colostomy. Our patients have never found it necessary to wear any mechanical device, and it has been my experience that the dread of a colostomy is based on the irritation and increased peristalsis brought about by the wearing of such contraptions. A simple gauze pad is all that is necessary.

It not infrequently happens that a patient is brought for diagnosis and, after the diagnosis is made, the medical man in attendance declares the case inoperable. Now, it seems to me that if the physician is not competent to make the diagnosis, he is not in a position to make so momentous a decision.

One cannot lay down a hard and fast rule as to the type of operation best suited to all cases. We must be guided by experience, judgment, and the conditions encountered at the time of operation. Generally speaking, however, one might state that the Kraske method, so popular in the past, is seldom resorted to nowadays. The purpose for which it was originally intended, namely, resection of the rectum, does not give a good result. Resection always results in stricture. It is an axiom in pathology that connective tissue is formed in inverse ratio to the blood supply; and this is the true explanation why stricture follows resection. Notwithstanding Barber's experiments, one constantly hears that the absence of peritoneum is the cause of stricture. Barber has shown that in dogs the absence of peritoneum plays no part in the formation of stricture, provided the blood supply is good.

I myself have abandoned all these mutilating operations. There are three procedures which can be modified to suit the case, that are always applicable, namely, the perineal, abdominal-perineal, and abdominal. All these operations have been thoroughly described, so it is unnecessary to go into details. It is held by some surgeons that a colostomy is preferable to an implantation of the bowel at the anus. My own experience does not gibe with this. I have found that if the bowel can be restored to its original position, the patient is better satisfied, and the result excellent, regardless of whether he has a sphincter or not, provided this does not in any way endanger the patient's future, by overlooking any cancerous cells. The patient is better satisfied; the result is good. In fact, some of the most satisfactory results have been those in which I have removed the sphincter. This may seem paradoxical; but results justify the assertion. Nature makes provision, it would seem, for the absence of the sphincter, and the segment above will take on the function of the absent part. This has been demonstrated in our ileostomies. The fecal matter, which is fluid for the first two or three weeks, gradually becomes semisolid, and we have seen patients who have had formed movements from such a stoma. The nervesupply to the bowel is developed segmentally, and this may offer the explanation of the adaptation I have spoken of.

I have, at various times, implanted the ileum in the rectum, and the patients have had formed movements. I have come to the conclusion that, should occasion arise when a large part of the colon had to be removed, I should not hesitate to implant the ileum at the anus, feeling confident of getting a good functional result.

I might mention, in passing, that I always remove the coccyx, as it affords better drainage and permits control of the dead space back of the rectum, during healing. The most painful complication results from a fistula following imperfect healing of the posterior pelvirectal space. Whenever the tumor is situated close to the bladder, I have always had cystoscopy performed previous to operation.

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ABSTRACT OF DISCUSSION

DR. C. F. MARTIN, Philadelphia: Carcinoma is found in the rectum at only two points with any frequency. One is at the rectosigmoidal junction, and the other at the anorectal junction. The rectosigmoidal type is the most frequent because this tissue has no spinal nerve supply, and therefore the patient has no pain. I have seen only three cases of early carcinoma, and these were of the anorectal type, the pain occurring early. There seem to be two possible explanations why carcinoma begins at these two points: One is that at both points there is a transitional form of tissue; and the other is that at both points there is a considerable narrowing of the lumen of the bowel; and, therefore, traumatism, with infection, may be a factor. The question of operability depends very much on the ability of the surgeon to remove the growth. I believe in the widest removal of tissue. Without operation death is inevitable; therefore, operation is indicated wherever possible when the patient will submit. The choice of the one stage or the two stage operation often depends on the individual preference of the operator. I believe that the one stage operation is the best, because it produces less shock to the patient.

DR. A. J. OCHSNER, Chicago: I have been very much interested for many years in cancer of the rectum. Of late we have changed our treatment considerably. First, we never remove a portion of tissue for microscopic examination

because it makes the prognosis much worse for the patient. We might be justified in removing a portion with electric cautery, but the removal of even a small portion of cancer with the knife changes the prognosis entirely. Normally, metastases from cancer of the rectum do not take place until very late. On the other hand, the moment you cut into the cancer you lay the lymph spaces widely open, and the cancer cells doubtless pass into the lymph circulation and form metastases. In my experience, patients who have had portions of cancer removed for microscopic examination have usually died of metastases. Cancers are located at the two points mentioned because it is possible for the microbes contained in the feces to remain in contact with the surface for a considerable period at a time, owing to the stasis resulting from the natural obstruction at these points. You find cancer wherever there is stasis due to obstruction. Dr. Lynch's idea of making a laparotomy is very valuable from two points of view. We are in the habit of making a laparotomy for the purpose of making a colostomy and to determine whether there are many lymph nodes at a distance which are already infected with cancer. In case they are extensively involved, we do not go any farther than to make a colostomy and then treat the cancer itself with radium. We have had several such cases. After a number of months four of the patients, sent home to die, have returned apparently cured. Having killed the cancer infection in the tumor itself with radium, the natural ability of the body cells to kill off those bacteria that have escaped beyond the reach of the radium is probably sufficient to have saved these patients.

DR. P. E. TRUESDALE, Fall River, Mass.: Only an operation of the most radical type should be done for cancer of the rectum. No one knows how far the operation can be extended until an examination of the retroperitoneal glands and liver is made. I would suggest the use of another term instead of exploratory laparotomy, which is always an expression of doubt and one which always impresses the patient with some apprehension and fear. I think we should say that we are going to make a "surgical examination." If nothing is done, the result of the examination has demonstrated that the disease is inoperable.

DR. S. G. GANT, New York: I want to commend Dr. Lynch on the interesting work he has been doing. Two or three symptoms he seems to have overlooked. Pain, hemorrhage or rise of temperature do not occur until late in the disease. Hemorrhage follows ulcerations, and there is no odor if you keep the cancer clean. There is one valuable method of diagnosing cancer of the rectum beyond reach of the finger. I have the patient stand up; put the finger in the rectum and have him strain, which brings the growth in reach of the finger. Regarding the combined operation, there is no doubt, owing to our improved technic, that this procedure is adaptable to more cases than we formerly believed. I have performed many combined operations and obtained good results, but patients die of recurrence following it as after other excisions. There is very little need for the Kraske operation for growths located in the lower rectum. I never employ the perineal or sacral or combined operation in women. By the vaginal route you can take out almost the entire sigmoid flexure and sew the stump to the anus. In many cases you do not have to open the peritoneal cavity, as the peritoneum can be stripped up. The mortality is much higher in the combined operation. In case of cancer in the sigmoid flexure, a colostomy is all right in connection with extirpation. I find that my patients will not stand for colostomy. By dividing the peritoneum and mobilizing the vessels you can bring the sigmoid clear down to the anus. If the growth is within an inch or an inch and a half of the anus, I never attempt to save the sphincter muscle at the expense of the patient's life, but if the growth is an inch or two higher up, I preserve the sphincter. I never attempt to anastomose the intestine below the peritoneal attachment as the wound breaks down. Only 5 per cent. of cancers are anal, the majority being located in the middle rectum.

DR. F. C. YEOMANS, New York: It does not seem to me that taking a small piece of tissue from an ulcerating growth will spread the disease. The idea in mind is to operate very soon after biopsy. About four years ago I devised a biopsy forceps for intestinal tumors, applying them through a sigmoidoscope. My plan is to bite out a section of tissue

$\frac{1}{4}$ by $\frac{1}{2}$ inch from the tumor and then apply to the cut surface pure phenol (carbolic acid). The results have been most satisfactory. Further, in many cases after operation for carcinoma, granulation tissue persists and there is a question of recurrence. In four cases this method has demonstrated that it was only granulation tissue and not a recurrence of the cancer. As to the choice of operation, I believe this depends on the age and general condition of the patient and the type, location and extent of the growth. Take an old patient, flat, flabby and anemic: he will hardly stand a combined operation. If the growth is low down and can be removed by the perineal operation, the chances of recovery are very much increased.

DR. J. W. LYNCH, New York: Dr. Martin spoke of the importance of pain in diagnosis. Pain occurs only in inoperable cases. Dr. Yeomans tells us the advantages of the two stage operation. After the abdominal operation is finished, it is merely a matter of five or six minutes to remove the rectum. I have never seen a patient who stood the secondary operation well. I therefore decidedly prefer the one stage operation. Glandular enlargement is present in all cancers by the time the cancer is discovered, owing to ulceration. Glandular enlargement is not a contraindication to operation. Dr. Truesdale's point is good. Some cells might be carried by the venous circulation, with early liver involvement. Operation must depend, to a great extent, on the patient's condition. One will not do a radical operation, if convinced that the patient is in no condition to stand it. There are certain structures through which the cancer cells travel—the lateral ligaments, the ischiorectal fossae, and the levator ani muscle. If you expect to get a cure, you must remove all of these structures; and this means a very radical operation.

NIGHT BLINDNESS

AND THE MALINGERING OF NIGHT BLINDNESS *

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I had a paper ready for the press in July, 1914, but held it back until the present hour as I was then of the opinion that neither the Germans nor any one else was able to detect the malingering of night blindness with any degree of scientific accuracy, such as would be required for a court martial.

A few years ago I saw in one of the American medical journals that, of the young men who became of age for military training, over 8 per cent. in France, and over 10 per cent. in Germany were night blind, whereas the normal would be one in 12,000. The explanation made by the writer was that the large percentage was due to famine conditions, a thing which certainly did not exist in either country at the time. The cause was plainly malingering. I was of the opinion that if I published this paper then, Germany would be the first country to take advantage of my observation to our own disadvantage. From the figures quoted above, it is evident that the ophthalmologists of the Central Empires were not able to diagnose this form of malingering with the accuracy required by court martials. The malingering of night blindness by British troops, and I presume, by American troops, hardly existed. In the Indian army it prevailed extensively. As ophthalmologic consultant in Mesopotamia, I soon became aware of this fact, and in a very short time cleared it out of the Indian army. I propose in this paper to deal with idiopathic night blindness. The night blindness associated with a few other conditions is so

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late a symptom that the patient is invalided for the principal disease and thus does not come under consideration for malingering. Famine night blindness, I believe, did not exist in any of the armies in the great war. Famine night blindness would be detected of itself in exactly the same way as idiopathic night blindness.

IDIOPATHIC NIGHT BLINDNESS

Idiopathic night blindness is a symptom of bilateral, slowly and uniformly progressive degeneration of the retina. It advances equally in the two eyes. In my observation it appears to be very often, if not always, hereditary, and its earliest symptoms seem to date from an early age. From the first observed symptoms, it seldom takes less than twenty years to mature, more generally from thirty to forty years. When it is mature, the patient is stone blind. The pathologic condition is generally called retinitis pigmentosa, but it is admitted that we have the same symptom and the same condition of retina without pigment. The latter condition without pigment is common in India. The pigmented variety in India is, I think, rarely seen. In the early stage there is very little wasting of the retina. The atrophy slowly and steadily progresses, until at last only the choroid appears, except a faint yellow spot and the optic disk. Every structure of the retina atrophies in harmony with every other. In my observation this disease is incurable; the vaunted remedies are useless.

The quickness of the reaction of the pupil to light becomes progressively sluggish, *pari passu* with the progress of the disease. I have become so familiar with this aspect of the disease that in cataract cases I can diagnose it by this symptom alone. Whether or not I shall operate in such cases of cataract depends on the degree of sluggishness. Any eyes, otherwise healthy, with a completely blind central scotoma, which renders the possessor almost blind, has normal reaction of the pupil to light. This fact, taken in conjunction with the sluggishness of reaction to light, in this form of progressive retinal atrophy, which has only central vision, indicates that the reaction of the pupil to light is through the periphery of the retina, and practically not through its central portion. The periphery of the retina is for night, or inexact vision. The pupil dilates at night to expose this area.

What I want to put before you especially is that the field of vision contracts *pari passu* with the progress of the disease. To the best of my knowledge this issue has not been brought forward up to the present time. Contraction of the field of vision in a vague sense has been noticed, but it has not been emphasized as a uniform fact, and as a consequence it was useless and not used in the examination of malingerers.

AN ILLUSTRATIVE CASE

Many years ago a British sportsman came to me about his night blindness. He was 55 years of age, and had been a military officer. He gave a graphic description of the progress of this symptom, of its slowness and steadiness, until he had to read by the word at the time of his consultation with me, his field being no larger than a word. As is common in such cases, his distant vision was good enough for target shooting. His field for distant vision was so small that the bird came into the field and was out of it before he could pull the trigger. My clinic having plenty of such cases, I proceeded to examine their

fundi, their field of vision, and the reaction of their pupils to light. I found that the sportsman's description was correct in every case, namely, that the contraction of the field of vision progressed *pari passu* with the progress of the disease; the reaction of the pupil I had already observed.

DETECTION OF MALINGERING

From the point of view of diagnosing the case of the malingerer, his is always an early case; hence the condition of the retina does not help. If it is a genuine case, there is no more pooriness of the retina than we see in health in many cases. The malingerer's is so early a case that the reaction of the pupil to light does not help, as it is so little altered. Shades of sluggishness in the reaction of the pupil to light require a highly trained eye to detect them, and for these reasons we may as a rule throw this symptom overboard in the diagnosis of malingering.

The size of the field of vision we can take with scientific accuracy. The malingerer struggles against us, but the cards are all in our hands. For this reason—struggling—we cannot take the field of a malingerer by the indirect method; we should put him at his ease by appearing to believe that he is honest, by telling him that of course his day vision is very good, which he will admit. Having ascertained that our own field of vision is normal, we cover one of his eyes and fix his other eye with our corresponding eye, at a distance, say, of 15 inches, and proceed by the direct method to compare his field with ours. If it is the same in both eyes as that of the observer, he is not night blind, as this disease is equally advanced in each eye.

When on military duty in the war, I issued a confidential circular to medical officers on this subject, and I was later on amused at having two Sepoys who were invalided from field service for night blindness sent to me for an opinion. They had been coached by some Indian medical subordinate into whose hands the circular had fallen. They presented a field so small that the disease should have been of twenty years' standing. Their fundi were normal and the reaction of their pupils to light was also normal. I gave them the option of going on all kinds of duty, or of having a court martial. They promptly saluted and said, "All right, sir. Duty."

Contraction of the field of vision in this condition is constant and progresses uniformly *pari passu* with the progress of the disease.

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ABSTRACT OF DISCUSSION

DR. GEORGE S. DERBY, Boston: During eight months' service at one of the British eye bases in France, I had opportunity to see a great many soldiers who complained of night blindness. At one time it almost seemed as though an epidemic of night blindness was occurring, so that seldom a week passed during which a considerable number of men did not come down complaining of this symptom. During this time we saw, comparatively speaking, a large number of cases of retinitis pigmentosa, but the majority of them were pure cases of simulation. The men without retinal changes sometimes showed diminished vision, but no diminution of the light sense could be elicited by our rather rough tests and no field changes. The regular procedure was to report that these men showed no symptoms or signs characteristic of the disease of which they complained. In a certain number of the cases in which there was some basis for suspecting that there was present a true night blindness, the men were put under observation and watched to see how they acted at night. We

all thought we were night blind when we went to France because previous to this time we had not had the experience of going around so much in the dark. There were so many air raids that the lights were often out, and one had to go about a great deal in the dark. A rather uncommon test on some of these men was to put them in the hospital and give them a strong purgative when they went to bed, and then see how they acted when the purgative worked. We were mostly in tent hospitals, and what with the tent ropes, the drainage ditches and other obstacles, it was hard to steer a proper course in the dark. Of course, there were many cases of true night blindness. One man that I particularly remember was a Y. M. C. A. worker who had passed an eye test before he went to France, but he was absolutely helpless in the dark. He had a marked retinitis pigmentosa, a very small visual field, and was utterly unable to get about in the dusk and darkness.

DR. T. B. HOLLOWAY, Philadelphia: I should like to ask Dr. Smith whether he does not consider that the size of the field is indicative more of the stage of the disease than of the duration? I ask this question because I have not infrequently found at the Overbrook School for the Blind that some of the youngsters so affected had markedly contracted fields.

DR. HENRY SMITH, London, England: The field of vision and the contraction of the pupil are in harmony. Of course, some of these cases occur early, but they usually do not come to this advanced stage in childhood.

DR. ALLEN GREENWOOD, Boston: Dr. Derby said that night blindness might be partially due to being in unaccustomed places in the dark. As a boy I used to be the leader in going around in dark places and finding things, feeling that I could see more than my companions. Owing to my probably smaller pupil, from being older, I found, after reaching France, that I was considerably disturbed by having to go about in the dark. Usually I would have become accustomed to the darkness, but, with the lights all out as they were in France, I was temporarily night blind. I am sure I am not night blind at the present time, and I am equally sure no one would accuse me of malingering; but there was a definite disturbance in my getting around at night in France. Dr. Derby will remember that many times he took me by the arm and helped me down the sidewalks so that I could get along comfortably. We did see a number of cases of retinitis pigmentosa, and Dr. Derby has referred to the Y. M. C. A. worker who was helpless when walking in the streets at night. The observation which I wish to make in regard to what Dr. Derby has said is that many people in strange places at night are more or less night blind, and many of the soldiers who complained that they could not see at night were not malingering, nor were they truly night blind.

DR. GEORGE E. DE SCHWEINITZ, Philadelphia: It might be interesting to refer to an analysis I recently made of 101,127 ocular disorders as they had been listed in reports received from the "eye services" of various base and general hospitals in operation during the past war in this country. In this statistical tabulation there were recorded 132 cases of night blindness. Of these, 102 were associated with pigmentary degeneration of the retina, or other types of pigmented chorioretinitis, and thirty were unassociated with ophthalmoscopically evident fundus changes. During the war, exclusive of retinitis pigmentosa, the well-known determining causes of "night blindness" were operative, namely, exposure to strong light and glare, defective nutrition, autotoxemia, a diet deficient in fat and albumin, disease of the liver, alcoholism, etc.; also great fatigue, loss of blood, and refractive error, especially myopia and astigmatism. Common symptoms were reduced vision in diminished light, and constricted visual fields, especially for blue. A noteworthy group, almost invariably ametropes, was composed of those men who became conscious of their defective sight because for the first time in their lives they were forced to live a nocturnal life, and could contrast their vision with that of other men who were normally sighted. Sometimes the eyegrounds were normal; sometimes they showed defective pigmentation. These patients have been described by Marc Landolt as "nocturnal amblyopes." One ophthalmoscopic appearance, described by

Augstein as the "white-gray fundus," I have not observed, but it has been attributed to decoloration of the pigment epithelium. Naturally, a certain number of nocturnal amblyopes were malingerers.

DR. HENRY SMITH, London: I presume that most of you would ultimately agree with me that you can prove anything with statistics. I presume it would take several dozen locomotives to haul the medical records of the great war of the different nations. From observation of the way these records were made, I feel that if somebody could put a match to the whole lot it would do a great service to our heirs and successors. It is a pile of rubbish, although in saying this I am expressing only my own opinion. If you were to ask a leading ophthalmologist to make out a statement of the progress which ophthalmology has made through the great war, he probably could do it on a sheet of note paper. I have seen a lot of statistics bearing on night blindness, and they would seem to prove anything about this condition. I think a few strips of rattan would cure night blindness better than would a lot of specialized foodstuffs.

SQUINT: WHEN SHALL WE OPERATE?*

A. S. GREEN, M.D.

AND

L. D. GREEN, M.D.

SAN FRANCISCO

One of the most troublesome questions that arise in the practice of ophthalmology is what to do when confronted by a patient with concomitant squint. Shall we advise operation or shall we institute nonoperative measures in the hope of straightening the eyes? Which offers the better prospect for success in conserving vision and removing the deformity?

It is obvious that where success can be attained by nonoperative means, that should be the method of choice. The nonsurgical treatment consists of wearing glasses to correct any error of refraction, fusion training, periodic atropin instillation in the better eye, occlusion of the fixing eye, etc., methods which have been fully covered by other writers. The surgical treatment also has received endless attention, and innumerable methods have been devised for operating on the muscles for the correction of squint. We are not lacking in the number of methods, surgical or nonsurgical, but we are not at all agreed as to when to employ them. How long shall we try nonoperative methods, and when shall we operate? Opinions differ.

It would seem that the condition of squint, in spite of the many variations of the deformity, should have more or less well defined indications for a given procedure. But we have been unable to find in the literature any specific indications for operation such as are given for glaucoma or cataract. The textbooks also are vague on this point.

According to our observations, based on a careful study of 260 private cases, less than 25 per cent. of squinting eyes that come to the ophthalmologist are improved by nonsurgical methods. It thus leaves over 75 per cent. of these patients to be corrected by operation or the alternative of going for the rest of their lives with the deformity. The small proportion of patients amenable to nonoperative means is no doubt due to the fact that less than 50 per cent. of the patients who consulted us were under the age of 8.

In our series only 7 per cent. were entirely straightened by nonoperative means, when carefully measured. And of these patients a large proportion resumed their

* Read before the Section on Ophthalmology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1912.

squint when the glasses were taken off. The latter cases therefore could not all really be considered entirely successful, as the patients were dependent on crutches, so to speak, and were no more cured than is a patient with hernia who has not been operated on and who is dependent on a truss. In this connection we wish to emphasize the point that we consider a result successful only when after careful measurement the eyes are proved to be parallel.

Table 1, compiled from our case records, gives a summary of our findings.

TABLE 1.—FINDINGS IN TWO HUNDRED AND SIXTY CASES

	Number	Per Cent.
Patients over the age of 8.....	140	54
Patients 8 years of age or under.....	120	46
Patients improved	42	16
Patients cured	18	7
Patients unimproved	200	77

We have recorded all cases as cured in which the eyes were straight with or without glasses, irrespective of the visual condition or fusion. None of the eighteen cured patients were over the age of 8, while thirteen of these, or 72 per cent., were 6 years of age or under.

We believe that great harm has resulted from the advice so frequently given by physicians to parents to wait until puberty to see whether the child will outgrow the squint. Parents should be taught that squint must be corrected long before puberty if the sight in the deviating eye is to be saved and the eye straightened. When the nonoperative treatment is to be instituted, it must be begun before the age of 8 or before commencing school if we are to expect any degree of success. After that age the chances are very slight that the fusion faculty can be developed, whereas the danger that the vision in the squinting eye will be lost is greatly increased.

The early correction of squint is also desirable for the mental or psychic effect it has on the patient. This is a phase that has received far less attention than it deserves. We are all familiar with the pathetic picture presented by the squinting child who refuses to play with other children because he is mocked and jeered at. He becomes shy, and sensitive of his deformity to such a degree as to produce an undesirable influence on him during his mental and physical development. Give the child the chance to which it is entitled. In adult life, in which the social and economic rivalry is so keen, the deformity also acts as a great handicap. We believe it to be self evident that early correction of squint is desirable. It is a great mistake to put off correction of our patients in the hope that the eyes will straighten eventually as the child develops. The thing to do is to decide on our course of procedure and then to act accordingly. But here lies the difficulty.

ABSENCE OF WELL DEFINED PROCEDURE

In order to determine the opinion of the medical profession on the subject, we sent out questionnaires to the ophthalmologists of the country. The questions were:

1. Have you a definite method for determining when to operate for comitant squint?
2. What is your method in brief?
3. Do you wait for a certain age before operating?
4. How long do you employ nonoperative methods before operating?

We received 235 replies.

To Question 1, eighty-five answered "no," while 150 answered "yes."

To Question 2, only eight gave a method which would enable them to decide in a given case whether to operate at once or first to try nonoperative means. Two hundred and twenty-seven gave nothing more definite than trying glasses, fusion training, etc.

The answers to Question 3 we divided into three groups

(a) Those who operate before the age of 8 numbered eighty-one, or 34.5 per cent.

(b) Those operating between the ages of 8 and maturity numbered seventy-eight, or 33 per cent.

(c) Those who did not limit themselves to a definite age numbered seventy-six, or 32.5 per cent.

The answers to Question 4 were too generalized to be given in detail, but served to indicate that the majority preferred to try nonoperative methods for periods varying from a few months to as long as twenty years in some cases.

From these replies we are led to conclude that very few ophthalmologists have any well defined procedure for handling a case of squint. These answers also indicate that there is a general tendency to defer operation later than we deem advisable to obtain the best results.

CAUSATION OF SQUINT BY MUSCULAR OR ANATOMIC ANOMALIES

Ample evidence may be brought forth to show that, in the vast majority of cases, squint is a muscular or anatomic anomaly, not primarily a lack or faulty development of the fusion faculty.

Our experience leads us to support the view that the lack of ability to perform fusion in most of these cases is not so much the cause of the squint as the result of it.

If parallelism were dependent entirely on fusion, why is it that in cases of admitted primary lack of fusion, as in alternating squint, the eyes may be straightened and remain straight after operation? The same holds true in those cases with amblyopia in the squinting eye in which there is an absence of fusion. If these eyes crossed because of lack of fusion in spite of normal muscles, then an operation that strengthens one muscle or weakens its opponent should cause the eyes to deviate in the opposite direction instead of maintaining them in a condition of parallelism such as follows a properly performed operation.

We know that pathologic conditions of the media or fundus are frequently associated with squint, but we also know that many eyes with such pathologic conditions are straight, tending to show that faulty muscles or other anatomic anomalies, and not the pathologic condition of the media or fundus, determine the position of the eyes. Furthermore, the degree of squint usually remains fairly definite in amount even under deep anesthesia unless of the accommodative type, thus showing that the eyes are held in their constant relationship by their muscles. Nor is it true that the eyes always lose their parallelism or become divergent under general anesthesia or after death unless there existed prior to this a muscular or accommodative anomaly.

In conjunction with several capable anesthetists, we have for the last year been studying the position of the eyes under general anesthesia. Enough cases have been observed to help us arrive at fairly definite conclusions. In the first place, the anesthesia required for general surgery is not sufficiently deep to produce the complete relaxation which is necessary to enable us to determine the static condition of the ocular muscles. Faulty deductions are likely to be drawn unless the patient is at

least as deeply under as is required in gallbladder work. We have found it to be untrue that all eyes diverge under such deep anesthesia; some converge, while the majority remain straight, apparently depending on the anatomic conditions present.

To help us further in our investigations as to the static condition of the ocular muscles and the influence of fusion on the position of the eyes, we availed ourselves of the opportunity offered by the coroner's office, where we carefully studied the photographs of 200 cases taken for identification purposes, in which the eyes were plainly visible. These pictures were taken at a time varying from immediately after death to twenty-four hours later. The majority were photographed within ten hours following death. The value of such pictures for purposes of study is as great in every way as the study of the dead body itself, and in many respects superior because they can be studied minutely at leisure. We considered only those cases in which the pictures were taken so near the demise of the individual as to give a distinct corneal light reflex. This enabled us to tell with a fair degree of accuracy the relative position of the eyes after death. Table 2 shows the position of the eyes examined.

TABLE 2.—POSITION OF EYES AFTER DEATH

	Number of Cases	Per Cent.
Inward deviation	4	2
Outward deviation	25	12.5
Doubtful	14	7
Parallel	157	78.5

In the doubtful list we included all cases that seemed to deviate slightly but not sufficiently to warrant us in including them under the deviations.

Thus, according to our investigations, the contention that the eyes are held parallel primarily by the fusion faculty does not seem to be entirely correct.

THREE GROUPS

Some cases of squint are probably purely accommodative in the beginning. Others are both accommodative and muscular. In both instances the muscles become increasingly involved if not corrected. In convergent squint the internus becomes cramped and generally hypertrophied, while the externus becomes flaccid and undergoes more or less atrophy. The converse holds true in divergent squint. If we accept the foregoing deductions we shall be in a better position to decide in a given case whether to operate or to try nonoperative methods. This will be more easily done by classifying our squint cases into three groups: Group 1, nonoperative; Group 2, indeterminate or delayed cases, and Group 3, operative.

In Group 1 are included all cases that prove on examination to be amenable to orthoptic treatment, and these comprise about 7 per cent. of all our squint cases. Practically all of these patients are under 8 years of age. In this group we also include those cases of unilateral fixed amblyopia in which the deviation is less than 15 degrees. These need no attention for cosmetic reasons.

Group 2 includes those cases in which the examination shows that a partial correction is possible by orthoptic methods, and that persistent muscle and fusion training with all the means at our command may finally result successfully. But even in these cases, which comprise about 16 per cent., success will rarely follow if the patient is past the age of 8.

It is generally conceded that fusion cannot be developed after the age of 6 or 7. It then follows that the earlier the age at which the eyes can be made parallel, by whatever means, the better the prospects for the development of the fusion faculty.

Group 3 is by far the largest, as it includes about 77 per cent. of all our convergent strabismus cases above the age of 8, and all divergent cases associated with hypermetropia. This percentage could no doubt be greatly reduced and many operations avoided if we would impress parents with the necessity of bringing their children for treatment when the squint is first noticed. These are the cases in which we may operate immediately if we can decide that our case belongs to this group. It is essential, therefore, to have a method by which we can determine whether orthoptic treatment or operation will be necessary to obtain the desired parallelism.

METHOD FOR DETERMINING WHETHER OR NOT OPERATION IS INDICATED

For our own guidance we have worked out a method which is simple and with us has proved very satisfactory. On the patient's first visit we carefully measure the degree of deviation with the Schweigger hand perimeter. This is simple, fairly accurate for practical purposes, and a child can easily hold it. We have drilled a hole about 4 mm. in diameter exactly above the mirror. With the perimeter placed before the deviating eye, the patient is directed to look through the hole at the distant muscle light, meanwhile covering the fixing eye with a card. When the patient says he sees the light with the deviating eye, he is told to hold the perimeter without moving it. The fixing eye is then uncovered, directed to the light, and the degree of deviation of the squinting eye readily noted on the arc of the perimeter and recorded. The parent or attendant is then given a prescription for 1 per cent. atropin ointment and thoroughly instructed how to apply it into the conjunctival sac for five days. At the end of that time cycloplegia should be complete. The deviation is again measured on the perimeter and the eyes refracted. The result of this examination practically decides whether or not an operation will be necessary. If the strabismus is due to an error of refraction or accommodation, the extrinsic muscles being normal, there will be a decrease in the amount of deviation. If the eye becomes straight, the case belongs to Group 1. Glasses correcting the entire refractive error are given and, in addition, exercises, atropin in the fixing eye, fusion training, etc., as indicated to promote binocular fixation.

If the eyes are partially straightened under the atropin, the case belongs to Group 2 and the same treatment is instituted as in Group 1. Six months are allowed for the eyes to straighten. If at the end of this time there has been no further decrease in the deviation, an operation should be performed. On the other hand, if there is an improvement during this time, orthoptic treatment is continued until such improvement ceases. In some cases, even when the glasses or other non-operative measures do straighten the eyes, the remaining heterophoria produces such severe headaches or other symptoms of asthenopia that an operation may ultimately be necessary to obtain relief.

It has been our experience that when thorough cycloplegia does not at least partially straighten the eyes it would tend to prove that the strabismus is not of the accommodative type or due to an error of refrac-

tion, but is caused by an anatomic anomaly. Neither glasses, fusion training nor time will have any appreciable effect on the strabismus, regardless of the age of the patient. These cases belong to Group 3, and on such patients we operate immediately. After operation, orthoptic treatment may be undertaken with a much better chance for the successful development of binocular vision or fusion than before. There need be no fear that the eye will deviate in the opposite direction if the operation is properly planned and performed. Nor do we need feel uneasy that this result will follow later, any more than we would expect squint to develop in later life when the muscles were primarily normal.

CONCLUSIONS

1. Age is the greatest single factor in the nonoperative cure of squint. Treatment must be instituted before the age of 8, preferably when the squint first becomes manifest, even in infancy if necessary.

2. It is of vital importance that the family physician and the public be impressed with the necessity that the child have early attention, and not wait until puberty in the hope that the deformity will be outgrown. Procrastination means probable amblyopia in the deviating eye and operation later, in the vast majority of cases, for cosmetic reasons.

3. Operation should be performed in all cases in which there is no reduction in the squint under complete cycloplegia, irrespective of the age of the patient.

ABSTRACT OF DISCUSSION

DR. ALEXANDER DUANE, New York: One cardinal principle can be laid down with regard to squint, namely, that the earlier the patients are seen and treated, the better. The diagnosis of a congenital squint and of the muscles affected can be made at the age of 6 or 7 months. In congenital squints examined early in life, the accommodative element is wanting. But this is often superadded in the course of the next two or three years; or, without there being a special accommodative element, a secondary acquired deviation may be superadded to the congenital squint—this secondary deviation being apparently the expression of an involuntary attempt to get the double images apart so as to be less disturbing. The point to remember is that in either case the superadded anomaly will be quite unlikely to yield to treatment unless the primary congenital anomaly is relieved by operation. Before operation is undertaken, however, full trial (six months at least) should be given of the glasses, and attempts should be made to cultivate binocular vision with the amblyoscope, the stereoscope, the red glass and bar reading. The amblyoscope and eventually prisms are further used for the still more important object of training the diverging or converging power and so getting the patient to reduce the angle of squint. In case of continuous and constant monocular squint, where we can prove the existence of amblyopia in the squinting eye (without corresponding organic disease of the eye), training of fixation of the squinting eye must be done. Continuous atropinization of the good eye will suffice for this purpose in only a small proportion of cases, since with any but a moderate degree of amblyopia the patient will not fix with the poor eye even when the other is atropinized. The only way, then, is to bandage the good eye for as long a period each day as the patient will stand it and keep the treatment up for weeks and even months, depending on the degree of amblyopia and the age of the patient. It should be noted, however, that this treatment must not be absolutely continuous—otherwise we shall run the risk of depressing the vision of the good eye and increasing the angle of squint. It should, on the contrary, be alternated with treatment by the amblyoscope, etc., for developing binocular vision and binocular fixation. The latter treatment in particular should be kept up as a preliminary to operation and in conjunction with it.

DR. OSCAR WILKINSON, Washington, D. C.: I am preparing a monograph on squint, because I feel that this is the most generally neglected and least efficiently treated branch of ophthalmology. It is pathetic to have a child 12 years of age or older brought to you with eyes crossed since early babyhood, with amblyopia exanopsia and general mental deficiency, due directly to the ill advice that nothing can be done until the child is 12 years of age. I do not entirely agree with the remarks with reference to fusion, as I am inclined to think that a weak or undeveloped fusion center or a deficient nerve stimulus has more to do with the cause of squint than many are willing to accord it. When shall we operate? That depends on one thing only: As soon as you know that the amount of squint is not decreasing under atropin, glasses and exercises, operate. The sooner the better, if you do the right operation. This cannot be determined under 6 months, or a year in many very young children. The amount of deviation must be measured most accurately on several occasions and recorded as minutely in order to determine what progress is being made. In children from 8 to 10 years of age this can be determined much sooner, and when no decrease is observed, operate. In older subjects no more time is required than is necessary to fully atropinize the case, fit the proper glasses, and record the amount of deviation with and without atropin.

DR. A. E. DAVIS, New York: I think that the authors have taken an extreme view when they assert that muscular anomalies are the chief causes of squint. If such were the case, concomitant squint must be considered as a monocular affection and should be so treated, when, as a matter of fact, it is a binocular affection, with few exceptions, brought about by lack of proper coordination of the ocular muscles, due to weak or faulty fusion function, and this faulty fusion is brought about in the mass of cases by dissimilar images in the two eyes, as the result of refractive errors, especially astigmatism, corneal or vitreous opacities, or defects in the perceptive part of the eye, the retina, etc. With the exception of muscular anomalies, which are rare, and in paralytic squint (which cases should not be considered here), concomitant squint is certainly bilateral and not unilateral. In fact, it is for this very reason that we operate on both eyes in comitant squint, which we would not do if the squint were due to a muscular anomaly. As to the time of operation, I do not think we should be too hasty in arriving at a decision to operate. In those cases in which there is a false fixation, I operate at once. In all other cases, I do as the authors and Dr. Duane said: try out thoroughly orthoptic treatment. When the squint ceases to decrease under treatment with atropin, glasses, exercise, etc., I operate at once, no matter what the age of the patient.

DR. DAVID W. WELLS, Boston: How young were your patients? Is there no age limit?

DR. A. S. GREEN, San Francisco: We operate on children as young as 3 years. When we have determined that the squint is not of the accommodative or refractive type we do not postpone operation. We never do a complete tenotomy. By doing a tucking operation, and, if the deviation is very marked, a partial tenotomy with it, we are not afraid to operate at any age. What we have tried to bring out in this paper is the method of determining when to operate. In our opinion it is unnecessary to postpone operation, as some ophthalmologists do, for a period as long as twenty years. We believe we can determine the matter in a few days by first measuring the deviation and then producing complete cycloplegia. At the end of five days deviation being again measured and the eye refracted, we will know whether the squint is due to an accommodative or a refractive error, or is caused by an anatomic anomaly. We do not attribute all forms of squint to muscular anomalies. We recognize that fusion has a great deal to do with holding the eyes parallel, but we do maintain that the theory that faulty fusion is the cause of practically all forms of squint is asserting too much. Some are due to congenital anatomic anomalies of the eyes, muscles or orbit, and many cases of squint are due to faulty location of the macula. As to the method of operating, we purposely left that out. It is not the subject under consideration in this paper. We never do a complete tenotomy in convergent squint. The reason there is such fear of early operation for squint is that heretofore many ophthalmologists

have simply cut and slashed. I have seen operators in this country and abroad who not only do a complete tenotomy, but they cut all the surrounding tissues, going clear to the superior and inferior recti to catch all the strands. When an eye like that eventually deviates outward it is not a bit surprising, and it is because such eyes have deviated outward in the past that many ophthalmologists have become so ultra-conservative that they do not operate at all or operate very late in the patient's life.

MYASTHENIA GRAVIS

REPORT OF THREE CASES *

WILLIAM CAMPBELL POSEY, M.D.

PHILADELPHIA

CASE 1.—History.—E. G. B., aged 67, man, consulted me June 15, 1918, on account of drooping of the left eyelid, which had first appeared ten days previously. The drooping was not noticeable in the morning, but became more and more pronounced as the day wore on. The onset had been sudden and without known cause. There was an associated so-called burning feeling about the eye, with ocular tire, and for a few days before consultation, there had been pains of a mild character at the back of the neck on the same side. He had not seen double. It was ascertained that the patient, who was one of the heads of a large establishment supplying our government and that of the allies with war material, had been, in consequence, under an enormous strain, getting but little rest and at all times working under great pressure. Two days before consultation, he had been on the witness stand all day, and though the affected eye had been fairly wide open in the morning, by afternoon the lid closed completely.

Examination.—There was moderate ptosis of the left lid, the border of the lid reaching to the upper margin of pupil. There was no edema. The conjunctiva was healthy. There were no marks of an inflammatory nature about the orbit. There was no exophthalmus. The right lid was in normal position. Ocular movements of both eyes were free in all directions, except upward motion in the left eye, which was somewhat restricted. The pupils were 4 mm. in size and reacted equally and freely to light and convergence stimuli. There was spontaneous homonymous diplopia at 5 meters, the image of the left eye being higher. Four degree prism base up before the left eye produced fusion of the images. Further study of the diplopia demonstrated paresis of the left superior rectus muscle. The ophthalmoscope revealed moderate sclerosis of the vessels with some pallor of the temporal halves of the optic nerves. A study of the visual fields revealed a slight peripheral contraction of the upper and temporal field for form and some restriction all around for colors. In the left eye, there was contraction for a 5 mm. white object to 30 degrees above, extending laterally on both sides. There was marked contraction of the color fields concentrically. The patient gave marked evidences of exhaustion throughout the test, on account of which it was necessary to make frequent interruptions.

O.D. + S 1. D. \ominus — C. 1.5 D. ax. 90° = 5/5.
O.S. + S 0.62 D. \ominus — C. 1.25 D. ax. 80° = 5/6.

This correction was ordered with a prism $1\frac{1}{2}$ degrees base down in the right eye and a prism of similar strength base up in the left eye, with + S. 2.5 D. as bifocals.

As the patient had had a slight cold some weeks before, he was referred to Dr. Freeman for rhinologic examination and to Dr. Pfahler for roentgenograms of the sinuses. Both of these reports were negative. A neurologic basis for the paresis of the elevator of the lid and superior rectus muscle of the left eye was then sought for and the patient was referred to Dr. Spiller, who reported thus: "The masseters and muscles innervated by the facial nerve contract normally. Touch and pain sensations are normal in the face. Patient has no complaint except in regard to the drooping lid. The

grasp of each hand is powerful, the biceps and triceps reflexes are present, but not very prompt. Sensations of touch, pain, position, vibration, also stereognosis and diadokokinesis are normal in each hand. The patellar reflexes are present but are not prompt. He does not have Romberg's sign.

The ocular condition is omitted as this is given in Dr. Posey's notes. It is important, however, to state that when he is made to look upward at my finger held above his head, the left upper lid gradually falls but not enough to cover the pupil, and he begins to see double as exhaustion begins; but with effort in renewed innervation he can overcome the diplopia.

June 18: The patellar reflexes are very weak; the right may be the weaker. The Achilles reflex is weak on the left side and not obtained on the right. Sensations of pain and position are normal in the feet. At my request he has worn a dark glass over the left eye since he first came to me, but he shows no improvement in the ptosis within so short a time."

Dr. Spiller rather inclined to a diagnosis of myasthenia gravis, though he pointed out that the patient had no rapidly increasing weakness in the muscles of mastication while eating and none in any other muscles on use. A Wassermann reaction was requested, but not consented to. Upon the advice of Dr. Spiller, mixed treatment was prescribed and absolute rest from all business cares for at least two years was insisted upon.

We did not see the patient again until the middle of October. Dr. Spiller's notes tell the story of how the patient passed the interval.

Course.—"He came to me again the middle of October, 1918. He continued working in his business until July 15, then went to Atlantic City and took a complete rest. He became gradually worse before he went to Atlantic City. He became completely tired out; the ptosis of the left upper lid was also more pronounced. He staid in bed at Atlantic City all day except for dinner, and after dinner went immediately to bed again.

"He remained in bed two weeks and improved considerably. The left eye began to show a diminution in the ptosis and the lids to remain open. He had been very weak and had no desire to walk; he tired easily and staggered in walking. He began ocean bathing after two weeks at Atlantic City and felt vigorous. He remained in Atlantic City ten weeks and improved daily. He came home feeling better than he had for two years.

"He resumed hard work on his return home September 17, and after one week, the right upper lid began to droop and soon the left upper lid drooped again. Before he left Atlantic City he began to have difficulty in chewing, this was slight at first, and chewing caused some pain, a dull tired feeling which was at times severe throughout the jaw and throat, and he could not swallow with ease and at times, indeed had difficulty in swallowing at all.

"He has moments when he can not speak from weakness of the muscles. He takes semisolid food, but no meat unless it is ground up. He is weak in all his limbs. Recently in a train, he noticed his eyes became almost completely closed, so that he could not see, then in a short time the condition would improve. This was on Monday, October 14. He had been working hard on an address Saturday night and all day Sunday. On leaving the train, he rode in a taxi and became so tired in the lower part of his face and throat that these parts ached, and he felt as though he would not be able to deliver the address, as he could not fully close his jaws. After he had taken a nap for about fifteen minutes, he was sufficiently recovered to deliver the address. He complains of much sensation of fatigue in the neck and shoulders, so that it is difficult for him to hold the head erect. In eating he begins a meal well but soon tires. He is always more vigorous in the morning.

"When he looks upward at my finger, within a minute, the right upper lid falls so as to cover the pupil, and the left upper lid acts similarly but more slowly. Voluntary closure of the lids for a minute enables him to raise the right upper lid to just above the pupil. He has marked persistent ptosis of the right upper lid and partial ptosis of the left upper lid.

* Read before the Section on Ophthalmology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1912.

Biting on an object causes weakness of the jaws so that contractions of the masseters become weak. The tongue and soft palate are normal. Diadokokinesis is well performed by each hand without increasing weakness. During the time he wore the smoked glasses he was in better condition."

My notes taken at this time substantiate Dr. Spiller's observation of the drooping of the right lid as well as that of the left. The hyperphoria was still corrected by a 4 degree prism and the study of the double images revealed no change from that made in June. The fields of vision were normal for form and colors. Absolute rest was insisted upon and strychnin administered.

Dr. Spiller's notes continue as follows:

"Oct. 23, 1918: He has staid in bed most of each day and the upper lids droop a little. He still has difficulty in eating but has improved considerably during the past week.

"Nov. 6, 1918: He is very weak and cannot lift the upper limbs to do anything and becomes tired very quickly. The effort to dress in the morning is very fatiguing and brushing his hair causes his lids to droop, possibly because he looks in the glass. The pain in the jaws is very annoying and extends into the throat, and he can hardly close the jaws. Sometimes when swallowing he will be unable to continue and the fluid will come out of his nose. The diplopia is worse. Dr. Kolmer reported the Wassermann test of the blood as normal."

An examination of the eyes made Nov. 6, 1918, revealed an increase in the hyperphoria to 7 degrees and more complete ptosis in each eye. The pupils were unaffected. No further change was noted in the eyegrounds. Six degrees of vertical prism strength was incorporated into the correction to relieve eye strain.

I saw the patient upon two subsequent occasions, i. e., on November 18 and December 4 of the same year, in a hotel in Philadelphia, where he was resting in bed under Dr. Spiller's orders. But the ocular condition remained unchanged, with the exception that the ptosis and the paresis of the left superior rectus muscle became much more pronounced after the slightest fatigue from the examination.

Dr. Spiller's final reports are as follows:

"Further notes were taken by me in May, 1919, but they were destroyed by an insane patient who obtained possession of my notebook by deceit. The patient improved by avoiding exertion in every way and gradually his symptoms became very much less and he seemed to be almost well. He wore a chin support for a long time, to avoid tiring the jaws. He talked little and ate with great discretion. Dr. Jonas made a careful study of his excreta but found nothing of importance. Strychnin was given for a considerable time."

About this time (April 14, 1919), the patient saw Dr. de Schweinitz, who has kindly given me the following abstract of his notes:

April 14, 1919 (First Visit): Vision of right eye, 5/6; Vision of left eye, 5/15; with correction which you had given October, 1918, namely:

O.D. + 1 \odot + 1.50 axis 90 \odot 1.50 degree prism base down.
O.S. + .62 \odot — 1.25 c. axis 80 \odot 1.50 degree prism base up.

There was no ptosis; pupils reacted to ordinary stimuli, and there was no failure in the ordinary ocular rotations. With a red glass, diplopia was evident—the images were fused with the eye fixing a point on a level with the ocular globes 6 meters distant by prisms 7 degrees base out and 3 degrees base down over left eye. Both disks were pale. There was distinct retinal vessel sclerosis and a few small hemorrhages below the left disk. Visual fields for white and colors were moderately contracted. About one week later there was esophoria 4 degrees, L. H. 1 degree.

May 2, 1919, or one month after first examination:

O.D. + 1.50 c. axis 180 6/5 = 5/6.
O.S. + 0.75 \odot — 1.25 c. axis 75 6/7.5.

There was orthophoria with Maddox rod at 6 meters.

He was seen from time to time for the next four months, without noting any material change, and on Sept. 7, 1919, this refractive result was obtained:

O.D. — 0.25 \odot + 1.50 c. axis 180, 6/5.
O.S. — 0.25 \odot + 1.25 c. axis 170, 6/6 =

Lateral orthophoria; L. H. 1 degree; there were slight evidences of perinuclear change.

The last examination (Nov. 6, 1919) revealed the following conditions: O. D. V = 6/6; O. S. V = 6/10; many linear and round hemorrhages along the temporal sweep of the upper vessels of the left eye, and a few hemorrhagic striae in the macula. No hemorrhages were noted in the right fundus, but vessel sclerosis was marked; there was no diplopia.

Early in January, 1920, a very thorough examination of the patient was made by Dr. Lewellys F. Barker, of Baltimore, and his associates Dr. H. M. Thomas and Dr. C. Macfie Campbell.

I am indebted to Dr. Barker for the following analysis recently sent me.

"The essential features, in my opinion, as shown by the study were:

"1. Myasthenia with asthenic bulbar symptoms, dysmasesis, dysarthria, dysphagia, ophthalmoplegia, etc.

"2. Oral sepsis. There were two infected teeth.

"3. Achylia gastrica, occult blood in the feces and a positive Wolff-Jungmans test in the gastric contents. There were, however, no roentgen-ray nor other evidences of a neoplasm of the gastro-intestinal tract.

"4. Obesity. He was 70 pounds over his calculated ideal weight.

"5. Atherosclerosis with moderate arterial hypertension, diffuse dilatation of the aorta and slight albuminuria.

"6. We had hoped to make some examinations which were omitted by the patient, namely, that of the cerebrospinal fluid and the histologic examination of a small piece of muscle.

"The therapy advised included:

"1. The extraction of the two teeth and the eradication of the oral sepsis.

"2. Dilute hydrochloric acid after meals.

"3. A dietetic and hygienic regimen directed toward the obesity, the arterial condition and the myasthenia."

The patient died in August, 1920, suddenly, probably from cardiac failure, two and one-half years after the first appearance of the disease. According to his wife's statement, there had been no marked change in his condition after Dr. Barker saw him, though for a month or more before his death, the eyes and jaws seemed better.

COMMENT

The foregoing report is an excellent example of that rather uncommon condition known as myasthenia gravis, which has been cautiously defined by McCarthy in his excellent article in Osler's Modern Medicine as "a disease with fatigue symptoms referable to the muscular system, due to an exhausted condition of nervous enervation, without definite pathology in the nervous system, and with minor changes (lymphocytic infiltration) in the muscles."

First described by Wilks, in 1877, and Erb, in 1878, as a form of bulbar paralysis without anatomic change, as the years have gone by and our knowledge of medicine has increased, the conception of its identity has gradually changed, so that Jelliffe and White, in the last edition of their textbook on Diseases of the Nervous System, 1919, place myasthenia gravis under diseases of the muscles, though they acknowledge that the clinical position of this disorder is still very uncertain. They go on to say that the disease is regarded by some as a contrast picture to tetany and due to vegetative nervous disturbance conditioned in part by a polyglandular endocrinopathy, it having been shown of late that the striped muscular system is provided with vegetative nerve fibers which undoubtedly regulate the muscular metabolism.

Although the origin and nature of myasthenia gravis have still to be definitely determined, its symptomatology and course are now well defined, thanks to a number of careful analyses which have been made of the nearly 300 cases which have been reported during

the last thirty years. Starr¹ found 250 cases in the literature up to April, 1912. The great majority of these reports were made by neurologists, but an increasing number are by ophthalmologists. As revealed by these studies, myasthenia gravis is characterized by an abnormal liability of voluntary movements to tire throughout the whole body, the muscles supplied by the bulb being particularly liable to be affected. It usually assumes a chronic form with periods of remissions and exacerbations, the muscular symptoms being always aggravated by fatigue and frequently disappearing wholly after periods of rest.

The ophthalmologist is often the first to be consulted in myasthenia gravis, by reason of the fact that ptosis or diplopia is the initial symptom in many of the cases. According to Uhthoff, drooping of the lid is the first symptom in nearly one-half of all cases and is absent during the course of myasthenia gravis in but 18 per cent. of the cases. The ptosis is usually bilateral, though it may be present in one eye for some time before appearing in the other. Like all varieties of muscle weakness characteristic of this disease, the ptosis manifests itself usually after fatigue and disappears for a time after rest. It may be provoked by steady fixation, by violently raising the lids, or by lack of sleep. It is usually absent after sleeping and comes on towards evening. The ptosis may disappear for days, even months, only to reappear at the end of these periods. In the case of Karplus cited by Uhthoff, the ptosis appeared but once or twice during the year and disappeared at the expiration of several weeks.

The literature shows that paralysis of the external eye muscles initiate the disease in about one third of the cases, and that these, like the ptosis, can disappear and reappear. Affection of these muscles varies from a slight weakness or paresis to absolute paralysis. The elevator of the lid is usually implicated simultaneously, in which event the affected eye muscles need not necessarily be those supplied by the third nerve, for the external rectus and superior oblique muscles may also be involved. The nystagmus which was noted by some writers was probably not true nystagmic movements, but rather the interruption of the normal rotations of the eyes due to the hesitating and slow efforts of the weakened muscles to follow the fixing object sufficiently rapidly through the field of excursions. Temporary loss of converging power, associated with ptosis, has been reported, never with pupillary involvement. Indeed, the internal muscles of the eye seem to be affected but rarely in myasthenia gravis, though the literature contains occasional references to associated sluggishness of the pupils to light stimulus and weakness of accommodation.

Involvement of the facial, hypoglossal or accessory nerves is the initial symptom in about 25 per cent. of all cases, and weakness of the arms and legs in a still smaller percentage. An interesting exception of the latter is reported by Noica and Enesen in which the first symptoms appeared as a lack of power in the ring and little finger of the left hand. A few days later a similar weakness was observed in the same fingers of the right hand. Little by little the loss in power extended to the entire hand and arm, both arms being finally affected in their entirety. Double vision appeared two months later.

A study of the literature indicates that the disease manifests itself under two types: a severe form which terminates fatally, as in the first case that I reported, and a milder one in which the symptoms are confined to the eyes and complete recovery is the rule.

As instances of the latter type, may be mentioned the following two cases:

REPORT OF CASES

CASE 2.—*History*.—F. H., aged 20, electrician, consulted me, Nov. 30, 1903, with the history that for the last ten days he had experienced considerable difficulty in reading during the latter part of the day, on account of blurring of the letters and general indistinctness of vision. Both lids drooped also, the right especially, so that he had difficulty in keeping the eyes open. A few days before consultation, while walking in the snow, his upper lids drooped and he could barely raise them, until he had turned his back to the light and winked vigorously.

It was elicited that the patient had always been very nervous, anxious and easily worried, and in recent years had been overworked and under great mental strain. The affection of his eyes had come on suddenly; was only manifest when he was very tired, and never present after sleep. He had had some difficulty in the close use of his eyes a year previously, which passed away after a short period. There was a family history of asthenopia.

Examination.—There was moderate ptosis in each eye, most pronounced, however, in the right, the right lid overhanging the cornea and obscuring 1 mm. of the upper part of the pupil. In the left eye, the upper lid reached the upper part of the pupil only. Overaction of the frontalis muscle, as evidenced by deep horizontal grooves in the forehead, accentuated on efforts to raise the lids.

At 5 meters there were right hyperphoria of 1 degree, esophoria of 8 degrees; orthophoria at the reading distance. There were no changes in the eye-grounds. The pupils were 4 mm. in each eye and reacted equally and freely to light and convergence stimuli. The range of accommodation was normal.

O.D. — S. 0.25 D. \subset + C. 0.50 D. ax. $170^\circ = 5/5$.
O.S. + C. 0.25 D. ax. $160^\circ = 5/5$

This correction was prescribed for near use; injunctions were given regarding proper care as to the health, etc., and the patient was referred to Dr. W. G. Spiller for a neurologic examination. Dr. Spiller reported that:

The parents were dead. Little was known of the father, the mother had been very nervous and had died of paralysis, probably embolic hemiplegia. The mother had headache often. The patient had had four sisters, all were dead of causes unknown. Most of them died in infancy. He had had four brothers, only one of whom was living. The brother who is living is a clergyman and is very nervous.

The patient had always been nervous. At school if he had to speak he would be "scared to death" and tremble all over. Even now he trembled greatly if called upon to play the banjo. When a child he would jump in his sleep. He had not had much headache. He became very nervous when examined by a physician. He had always had much responsibility, and when he graduated from college he had had financial difficulties with his mother's estate. He started in business in June, 1898; in November, 1898, he was made chief clerk with eighty men under him, and in January, 1902, he had 280 men under him and was then made assistant to the vice president. In September, 1902, he came to Philadelphia as manager of the local house. Until January, 1902, he had night work four nights weekly on his personal affairs, i. e., attending to repairing houses without money to pay for it. All this caused him much worry, and some nights he went to bed exhausted. He smokes moderately. Occasionally he takes a glass of wine or something stronger, but is not alcoholic. He masturbated when about 15 years of age and occasionally masturbates during sleep, about once in ten days, and usually when he is very tired. He drinks tea and coffee. He went to Dr. Posey because his sight was not so good as it had been. The

1. Starr: Textbook of Nervous Diseases, Ed. 4, p. 768.

masturbation had worried him very much. Memory and power of attention were not affected. He had never had anything to do with women.

He had never had any trouble with speech, which was normal. The movements of the eyelids appeared to be normal. Reaction to light was good in each eye. The pupils were about equal. There was no involvement of the seventh or motor or sensory fifth nerve on either side. Sensation for touch and pain was normal in all parts of the body. There was no distinct tremor of any part, but when he felt that he must keep still his head trembles. Resistance to passive movements was good in all limbs. There was no motor weakness anywhere. He was inclined to be constipated. There were no urinary symptoms. The biceps tendon, triceps tendon and wrist reflexes were normal in the upper limbs. The patellar reflex was exaggerated on each side. The Achilles jerk was about normal on each side. There was no ankle clonus. The Babinski reflex, tested on the right side, was not obtained. He did not lose motor power toward evening. There were no hysterogenic zones. The heart sounds were regular and there were no murmurs. When he was made to look upward steadily for about one minute, his lids began to droop, and within two minutes, the upper lid had almost completely fallen, especially the right, and he was unable to raise them. After resting two or three minutes, the drooping disappeared. Ophthalmic reflex on each side. The tongue protruded straight; it was not atrophied and was without fibrillary tremors.

The patient returned a week after the first consultation saying that the glasses had helped his reading, but that he had recently seen double on the street. A searching test of his ocular movements was made and after a time double images appeared, homonymous in all parts of the field, the greatest separation being noted down and to the right. In testing the double images, there was found to be marked irregularity of movement in both eyes, but more pronounced in the left, this being especially marked when the candle was carried to the extreme right in the horizontal plane. There was diplopia in several positions, which was not noticed at first, but which became evident on continuing to fix the candle during test.

Course.—Strychnin was prescribed and a greater amount of rest was insisted upon. At the end of a month, the patient returned stating that he had been less nervous and the drooping of the lids less pronounced. The diplopia had disappeared. Examination revealed, however, that the ptosis was still present, especially in the right lid. This was also the case three months later, but at the end of a year (May 3, 1905) the ptosis had entirely disappeared. When seen last, Nov. 2, 1906, there was no ptosis, but the patient averred that there was some tendency of the lids to droop in the evening. His health was good and he was working normally.

A note, addressed to the patient a few months ago with a view to obtaining information regarding his ocular and general condition since the last observation, brought a reply from his attorneys that the patient had died in December, 1919, of heart disease. Further inquiry from the physician who attended him in his last illness, Dr. Arthur Melville Shrady, of New York, elicited this report:

"Mr. H. showed no symptoms of myasthenia gravis, as far as I know. He wore glasses, but I do not know anything else about his eye history. Regarding his last illness, he certainly had arterial disease, especially of the coronary arteries, which caused his sudden death when leaving for Atlantic City. He had had an acute illness just prior to this which resembled pneumonia, but was more a congestion of the lungs with a peculiar dyspnea but accompanied by fever and blood-stained expectoration. Still I believe his heart was at the bottom of it and back of that the arteries. There were no murmurs."

CASE 3.—History.—I was consulted on Nov. 8, 1904, by P. T. M., aged 12 years, who had been told by a school teacher, four years previously that his eyes needed attention. He had always been a poor reader, the letters becoming mixed. His health was reported by his family physician, Dr. Hollopeter, of Philadelphia, as having been good; indeed, he seemed physically above the average, though the trouble with his eyes had interfered with his progress in school, and their expression

of sleepiness, about to be described, gave the impression of sleepiness and mental dullness. No history of diplopia could be elicited.

Examination.—There was moderate ptosis in each eye, the lids drooping almost to the pupillary centers of the cornea. The skin of the forehead was thrown into numerous folds, due to the contractions of the frontalis muscle, in the effort to raise the lids. The right eyebrow was the higher, the ptosis in the right eye being the more marked. At 5 meters, right hyperphoria equalled 1 degree, esophoria 3 degrees; at the reading distance, there was no hyperphoria, and exophoria, 3 degrees. The double images were not tested. Under atropin the results were:

O.D. + S. 1. D. = 5/5.

O.S. + S. 1. D. \subset + C. 0.25 D. ax. 170° = 5/5.

There were no changes in the eye-grounds and the ocular movements were good in all directions. Glasses were ordered for constant use.

Course.—The patient was not seen for an interval of three years, when he returned complaining of the same symptoms: drooping of the lids, blurring in reading and headache. The patient said that the lids quivered at times, and his mother thought that he scowled more and more. She stated also that although the glasses originally prescribed had caused the symptoms to disappear for a time after they were first ordered, there had been several recurrences during the three year interval. Examination showed the same degree of ptosis as at the first visit, with overaction of the frontalis muscle. At 5 meters, there was exophoria of 1 degree; no hyperphoria; at the near point, exophoria 5 degrees. There was adduction of 30 degrees; abduction of 8 degrees. The boy appeared in apparent good health and Dr. Hollopeter could find no myasthenic symptoms elsewhere. In 1909, when he returned for a change of glasses, the condition of the lids and forehead was found to be much improved, and in 1911 all the lid symptoms had disappeared. In 1913, he was again seen complaining of squinting after near use, when the following change in his refraction was noted. Under homatropin:

O.D. + S. 0.25 D. \subset + C. 1. D. ax. 30° = 5/5.

O.S. + S. 0.50 D. \subset + C. 0.60 D. ax. 130° = 5/5.

The ptosis and contraction of the frontalis were not present. The patient has reported at intervals of every two or three years and has never shown a return of the eye symptoms and his health has been generally good. He is at the head of a prosperous business concern.

COMMENT

Both of these patients presented initially the rather characteristic *facies* of moderate ptosis, most pronounced in one eye, with strong contraction of the frontalis in the effort to overcome the levator insufficiency. In both, the extra-ocular muscles were affected, parietic in Case 2, asthenic only in Case 3. After several years of persistence, with remissions, the disease disappeared in both. In Case 2, death occurred thirteen years later from disease of the coronary arteries, after a period of fourteen years entirely free from myasthenic symptoms. The third patient (Case 3) is still living and in excellent health after a period of eleven years without having had other attacks of the disease.

In the severer form of the disease, not infrequently paresis of the orbicularis and occipitofrontalis muscles follow that of the levator, so that the eye cannot be kept closed against pressure, nor can the brows be raised to compensate for the drooping of the lids, and the head is tilted back in order to see clearly. Later on, weakness of the muscles of the neck may cause the head to fall forward. If the levator labii superioris is involved, the power of smiling is lost, owing to the failure of the muscles at the corners of the mouth to act properly, and the so-called "nasal smile" of Gowers

is evoked. Paresis or even palsy of the muscles of mastication is a fairly constant symptom in the severe type, with difficulty in keeping the mouth closed. Speech is affected and the handwriting becomes more or less characteristic, the letters being at first well-formed and easily made, but gradually becoming worse in shape and more difficult to produce, till they are finally indecipherable, full power returning after rest and relapsing after further trial. The gait exhibits the same characteristic of excellence and falling off from the normal after exercise. The sphincters of the bladder and rectum do not become involved nor is there muscle atrophy.

The course and termination of myasthenia gravis is variable. As we have seen, the milder type tends to a complete cure, after many remissions in some months or years. Perhaps half of the patients with the severe type die in the same period. McCarthy records one case which terminated fatally after fourteen days of illness. Involvement of the muscles of respiration and deglutition are as a rule responsible for the fatal termination.

Females are slightly more liable to the disease than males, and the age at which they are affected is below that of men; thus, of 180 cases tabulated by him, McCarthy found males more frequently affected during the fifth decade of life, women during the third. Occupation and living conditions appear to exert no influence upon the incidence of the disease, nor does infectious or hereditary nerve disease. McCarthy was of the opinion, however, that pregnancy has a deleterious influence upon its course; others have found a marked improvement during labor, though they assigned to lactation an extremely bad influence.

Overwork and emotional excitement are initial factors in most cases, cooperating with an as yet unknown infection of some kind. As has been stated heretofore, there is evidence of participation of the endocrinous glandular apparatus, particularly the thymus, enlargement of this gland being found in so many cases of myasthenia gravis that its significance cannot be ignored. Note must be made that the disease may occur as a complication of exophthalmic goiter and goiter, also in patients with myxedema. The most constant postmortem finding was the discovery of lymphocytes, or lymphorrhages as their finder Buzzard designated them, clustered among the muscle fibers. These cells did not invade the muscle cells and only rarely caused degenerative changes in the muscles. There are those, however, who believe that myasthenia gravis should still be included under nervous diseases, and Krähenbühl, writing in 1916, insists that the affection is closely associated with true bulbar paralysis, which must be regarded as a part of progressive muscle atrophy. He suggests that it is not at all improbable that myasthenia gravis is the first stage in a combination of bulbar paralysis and progressive muscle atrophy and that the question is still unsolved as to whether the cause is of a myogenic or neurogenic nature.

While the ophthalmologist should have a clearly defined knowledge of myasthenia gravis and should have its symptomatology well in mind when confronted by the diagnosis of all cases of ptosis and extra-ocular muscle insufficiency and palsies, it is scarcely to be expected that he should be able to differentiate it with certainty from other varieties of muscular affections supplied by the bulb or from ophthalmoplegias due to various types of encephalitis, etc.—that is the province of the neurologist. It will be a help, however, to

remember that in poliomyelitis, ophthalmoplegia interna is not uncommon, while it is rare, if not unknown, in myasthenia gravis. Neurologists are greatly aided in their diagnosis by the so-called myasthenic reaction, which was originally discovered by Jolly and defined by E. W. Taylor, as consisting in a rapid diminution in contractability of the muscles when stimulated by a tetanizing faradic current. It is, however, recognized that the myasthenic reaction can be demonstrated in other conditions, i. e., muscular hypertrophy, chronic poliomyelitis, Landry's paralysis, etc., though Strümpel has pointed out that in myasthenia gravis the reaction produced is more abruptly marked and that it may be obtained in groups of muscles which are at the time not obviously paretic. Neurologists have found that reaction degeneration does not occur, and muscle atrophy forms no part of the clinical picture of myasthenia gravis.

By reason of the weakness and nervousness which the prolonged illness of myasthenia gravis sometimes excites, and from the variability of its course, not a few cases of myasthenia gravis have been mistaken for hysteria. In myasthenia gravis, however, changes in the field of vision characteristic of hysteria are wanting, and the drooping of the lid is due to a weakness of the levator and not, as in hysteria, to spasm of the orbicularis. It occurs to me, however, that perhaps some of the intractable cases of asthenopia which I have treated in the past and which were regarded as neurasthenia may have been really instances of true asthenia of the eye muscles, without a ptosis to point assuredly to the true cause. It is possible, too, that slight degrees of ptosis may have been overlooked in some of these cases.

Recurring paralyzes of eye muscles are frequently seen in tabes; but the differentiation from myasthenia gravis can usually be easily made in this class of cases by the associated characteristic pupillary changes of tabes, as well as by the motor and sensory phenomena observed elsewhere. The diagnosis will be made from recurrent oculomotor palsy (or, as it should be termed, recurrent extra-ocular muscle palsy, for the third nerve is not alone affected in this class of cases, associated with migraine and known also as migraine ophthalmoplegic), by the associated head pain and spectral phenomena observed in the field of vision by those suffering from this disorder.

Finally, myasthenia gravis must be differentiated from the ptosis myopathica which is defined by Fuchs as a form of ptosis which develops without known cause in women (very rarely in men) of middle age. It is always bilateral, and sets in so gradually that not till after a series of years is it pronounced enough to cause any considerable interference with vision. In these cases, it is not a paralysis of the nerve, but a primary atrophy of the muscle itself that is present.

All writers insist that the one essential in controlling this disease, which is so evidently aggravated by exertion, is rest, rest absolute and prolonged. Gentle massage may be essayed; severe massage is harmful. Strychnin seems of benefit. Alcohol is to be avoided. Jelliffe and White think psychotherapy should be essayed, and suggest a study of the endocrinous glands with an attempt to restore a balance in function if this is found to be absent. Pemberton having studied a case of myasthenia gravis from a metabolic standpoint and deducing from his studies that the disease is one of disturbed internal muscular metabolism per se, and

having found a loss of calcium by the tissues, suggests that calcium lactate should be administered over long periods.

The occurrence of very pronounced vascular changes in the retina in Case 1 and the death of the patient in Case 2 from disease of the coronary arteries, even though this occurred years after the symptoms of myasthenia gravis had manifested themselves, suggests that arteriosclerosis may play a more important part in myasthenia gravis than is usually suspected, and indicate that careful attention should be paid to this factor in all cases.

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ABSTRACT OF DISCUSSION

DR. E. W. TAYLOR, Boston: The interest which we feel in the subject of myasthenia gravis lies in the fact of the difficulty of its classification. As Dr. Posey has implied, it is very difficult to put this particular form of nervous or ocular tire into any one fixed category. It certainly is not an ophthalmologic disease, a disease symptomatologically confined by any manner of means to the optic apparatus. It seems exceedingly doubtful whether it is a neurologic disease per se. Lesions of the nervous system are so insignificant as to be negligible. The feeling is growing that in some mysterious way it is connected with the muscular system, and possibly is to be associated with various forms of myopathies. My feeling is that probably it does not, like many other conditions in the nervous system, present in any sense a clinical entity, but is simply one of the forms of muscular exhaustion or of a certain condition which we may consider as toxic, for want of a better term. It runs the gamut all the way from slight fatigue to disturbance leading to death. Dr. Posey referred to the fact that in the last thirty years only 300 cases had been described in the literature. We may see hundreds of these cases which we overlook. We see cases of slight ptosis, with slight weakness of certain ocular muscles. The patient quickly recovers and we make no diagnosis, but wait for further signs and symptoms to develop, in the meantime, perhaps, making no careful study of the rest of the muscular system. The obvious cases are perfectly evident, but the slight cases, the cases of weakness which are so familiar to all of us, are very largely overlooked. Differential diagnosis in these cases is important. In the first case reported by Dr. Posey the patient suddenly noticed a ptosis. That presumably was a case of myasthenia gravis. It might, however, have been an encephalitis. Later it became evident that it was a true myasthenia gravis case. Naturally always, with ptosis, and with paralysis of the external muscles, one thinks immediately of syphilis, differential diagnosis being easily enough made by the determination of the Wassermann reaction and the condition of the cerebrospinal fluid. We have recently observed a case of myasthenia gravis apparently cured by roentgen-ray treatment of the thymus. The diagnostic point of importance is the presence of the so-called myasthenic reaction; added to this is lack of muscular atrophy, and a lack of neuropathies or true nerve disturbances. I believe there can be little question that we are dealing with a constitutional disorder in which it is possible that it may finally be found that the endocrine glands play a part.

The Passing of the General Practitioner.—The unfortunate individual who by reason of the obscurity of his symptoms is sent from one specialist to another often looks in vain for the only one who can interpret, weigh the value of, and fit in place the seemingly unrelated parts of the puzzle, the well-equipped, broad-visioned, experienced general practitioner; the humanizer, as someone has fittingly expressed it, of medical practice. With his disappearance, except in some of our rural communities, disappears also that most cherished, often sacred relationship between the doctor and patient, the personal side of practice.—M. Nicoll, Jr., *Health News* 15:305 (Dec.) 1920.

CULTURES, SMEARS AND GUINEA-PIG INOCULATIONS IN DIAGNOSIS OF RENAL TUBERCULOSIS

THEIR VALUE AND RELIABILITY *

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In the study of any disease, it is of considerable value to gather together occasionally all the observations and data one has obtained, subject them to careful scrutiny, and endeavor, if possible, to evaluate the different methods employed as diagnostic procedures. We have attempted to do this in reviewing a series of 126 cases of tuberculosis of the kidney which have been observed and carefully studied during the past eight years. The clinical and cystoscopic manifestations of this disease have been so ably presented and discussed that they will be omitted, special stress being laid on the urinary findings, with a discussion of the comparative value and reliability of cultures, smears and guinea-pig inoculations.

At first sight, the problem before us appears to be a simple one. This is not so, however, for occasionally the diagnosis of renal tuberculosis is a most complicated one, requiring a careful analysis of all the facts before a definite conclusion can be reached.

It is not generally recognized that the finding of tubercle bacilli and pus in the urine does not necessarily establish the diagnosis of renal tuberculosis. Having demonstrated the organism, the next step is to determine its source. This is not always so evident, for one must consider the possibility of contamination by a ureteral reflux from a urinary or genital tuberculosis, by a tuberculosis involving the lower end of the supposedly healthy ureter or the female pelvic organs. Occasionally, an excretory tuberculosis may account for the presence of tubercle bacilli in the catheterized ureter specimens.

The following topics will be discussed in their proper sequence: (a) gross and microscopic findings of the urine in renal tuberculosis; (b) bacteriology of the urine in renal tuberculosis; (c) tubercle bacilluria; (d) comparative value of the smear and inoculation methods; (e) excretory tuberculosis; (f) rôle of genital tuberculosis, as a possible source of error, in the diagnosis of renal tuberculosis, and (g) diagnosis of bilateral renal involvement and its influence on operation.

CHANGES IN THE URINE IN RENAL TUBERCULOSIS

In general, it may be stated that the examination of the urine is probably the most important step in the diagnosis of renal tuberculosis. Pus in amounts sufficient to produce cloudy urine is an early symptom, and an almost constant accompaniment of this condition. The urine may vary from a slight haziness to marked turbidity, depending in part on the local pathologic changes and also on the presence or absence of secondary infection. A macroscopically clear urine, however, does not contraindicate tuberculosis, for the

* From the Surgical Service of Dr. Beer, Mount Sinai Hospital.

* Read before the Section on Urology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

organisms have been found in large numbers in a sparkling clear urine. Such is more likely to be the case in genital tuberculosis. A well advanced process may exist, and the urine present few macroscopic or microscopic changes. This occurs when the ureter is occluded (closed pyonephrosis) or when the focus in the kidney is shut off from the pelvis. Rapid changes in the degree of turbidity of the urine are not uncommon, owing to the rupture or closing off of pus cavities in the kidney. Hematuria is mainly microscopic, although profuse hemorrhages happen occasionally. Terminal hematuria is not uncommon. In a few instances in this series, the bleeding was so profuse as to simulate that occurring in renal tumor. Albuminuria is practically always present, even though the amount of pus is negligible. Wildbolz¹ claims that so constant a find is albumin that its absence almost negates the presence of a tuberculosis. The acid reaction of the urine is especially characteristic of this condition.

BACTERIOLOGY OF THE URINE IN RENAL TUBERCULOSIS

The general impression still prevails that the urine in renal tuberculosis is always sterile, and that if secondary organisms are found, tuberculosis may be excluded. In fact, a sterile pyuria in an acid urine is almost synonymous with tuberculosis. Albarran² was among the first to refute this impression, and called attention to the fact that tuberculous urine was often secondarily infected. Since then, numerous contributions have appeared dealing with this subject, reporting secondary infections in from 10 to 30 per cent. of the cases. Spooner,³ in 1918, found that in catheterized kidney specimens growths were frequently present. The most recent and painstaking investigation is that lately reported by Barney and Welles.⁴ These authors studied sixty-three proved cases of renal tuberculosis. All the specimens were obtained by catheterization of the bladder and kidneys. Instead of cultures, which they claim are readily contaminated and therefore unreliable, dependence was placed almost entirely on smears of the centrifugalized sediment of fresh urine. Their conclusions may be summed up as follows:

Cultures and smears have shown positive results from the bladder urine in 55.3 per cent.; of the kidney urine in 28.6 per cent. Smears of the bladder urine showed secondary infection in twenty-one cases, whereas in smears from the kidney urines, secondary organisms were found in only five instances; three times from the healthy side, and twice from the diseased side. Combining the results of cultures and smears from the separate kidney urines, positive results were obtained on the healthy side eleven times, and on the tuberculous side in seven cases. . . . Our results show conclusively that while a negative smear or culture from the bladder in a case of cystitis or pyuria points strongly to tuberculosis, a positive smear or culture from the bladder, or even from the kidney urine, does not exclude this disease.

The authors, in trying to account for the fact that the urine of the healthy kidneys showed a higher percentage of secondary infections than that obtained from the diseased organ, call attention to the theory of Albarran, who long ago pointed out that infection of one kidney exerts an inhibitory and depressive influ-

ence on its uninfected mate. That this explanation is by no means a satisfactory one is agreed on by the writers. A more natural assumption would be that the high percentage of secondary infections is probably due to one of many sources of contamination.

TUBERCLE BACILLURIA

As previously stated, a presumptive diagnosis of renal tuberculosis can usually be made on the history, physical examination and cystoscopy; the finding of tubercle bacilli in the urine is considered proof positive of its existence. This statement, while holding true for the majority of instances, has its exceptions.

METHODS OF DETERMINING THE PRESENCE OF TUBERCLE BACILLI IN THE URINE

Smears.—The demonstration of tubercle bacilli in the urine is generally regarded as a rather difficult task. Reports of numerous reliable observers, however, show that this is not so. The negative examination of a smear means nothing. Repeated smears must be examined before one can state with any degree of certainty that no bacilli are present. The absence of tubercle bacilli in a given specimen may depend on a number of factors. Leaving aside the personal equation of the examiner, which plays quite a rôle, the technic of collecting, and methods of staining, which lack of time and space do not allow us to discuss, it appears that the bacillus content of the urine varies considerably at different stages of the disease. The bacilli may appear in showers, coincident with the opening up of a tuberculous focus. At such a time, a tyro would have but little difficulty in demonstrating them. Large numbers of bacilli are more likely to be found in the earlier than in the later stages of the disease. In advanced cases, with a thick, purulent urine, it may be impossible to demonstrate them even in smears or cultures obtained from the extirpated organ. The presence of a secondary infection renders the finding of tubercle bacilli more difficult. Negative smears from a catheterized bladder specimen are not at all conclusive, for the diseased focus may not communicate with the pelvis, or the ureter may be closed off by stricture formation, preventing the infected urine from reaching the bladder. The value of repeated examinations is shown by the following observation: In a series of fifty-two cases of renal tuberculosis, Hottinger⁵ found the bacilli forty-two times in the first specimen examined; in the second series of smears, six additional positive results were obtained; in only four cases were they missed. The antiformin method is of value only when there is secondary infection, producing a thick, ropy alkaline urine; otherwise it possesses no advantage over the usual methods employed.

The percentage of positive results varies considerably, some authors finding the bacilli in but 20 per cent. of smears, while Wildbolz,¹ reports 90 per cent. in 155 nephrectomies; Rovsing,⁶ Leedham-Green⁷ and Casper,⁸ from 80 to 90 per cent. positive findings. Kümmell⁹ and Frisch¹⁰ found the bacillus in practically all of their cases. In our series of 102 operative cases,

5. Hottinger: Zentralbl. f. d. krankh. d. Harn u. Sex. Orig. **17**, 1906.

6. Rovsing: Arch. f. klin. Chir. **77**: 1, 1905.

7. Leedham-Green: Brit. M. J., October, 1908.

8. Casper: Deutsch. med. Wchnschr. **3**: 4, 1905.

9. Kümmell: Arch. f. klin. Chir., 1906, p. 81.

10. Frisch: Verhandl. d. deutsch. Gesellsch. f. Urol., III Kong., Vienna, 1911.

1. Wildbolz: Chirurgie der Nierentuberculose, 1913, p. 74.

2. Albarran, quoted by Raffin: J. d'urol. méd et chir. **1**: 777, 1912.

3. Spooner, H.: J. M. Res. **39**: 59 (Sept.) 1918.

4. Barney, J. D., and Welles, E. S.: The Bacteriology of the Urine in Renal Tuberculosis, J. A. M. A. **74**: 1499 (May 29) 1920.

approximately 65 per cent. of the smears were positive, and these figures would no doubt be higher, had repeated search been made. Very often the diagnosis was based on the cystoscopic findings, and operation was undertaken before awaiting the results of further smear examinations. There are a few points of considerable importance in collecting the catheterized ureter specimens. To guard against contamination, it is advisable to irrigate the bladder thoroughly through the sheath of the instrument, before introducing the catheterizing system. Only the later specimens (third and fourth test tubes of urine) are collected for smears, guinea-pig inoculations and cultures.

The danger of confusing the smegma bacillus with the tubercle bacillus has repeatedly been mentioned. Indeed, a number of instances are quoted in which this error was made, and a few kidneys unnecessarily sacrificed. Elaborate and complicated stains have been devised as a differential aid, but if only catheterized specimens are utilized and note taken of the typical beading and grouping of the tubercle bacillus, no difficulty should be experienced. Smegma bacilli have occasionally been found in catheterized bladder urines, but not in urine obtained by ureteral catheterization.

Guinea-Pig Inoculations.—This method of demonstrating the tubercle bacillus has always been considered a more reliable and delicate test, yielding a higher percentage of positive findings than smears. First performed in 1882, as a diagnostic measure, the technic generally practiced has undergone but few modifications, although a number of new methods of inoculation have been suggested.

Methods of Guinea-Pig Inoculations: The great disadvantage of this test is that it is time consuming; from four to six weeks are required before a report may be obtained. In order to shorten the period considerably, and to render the procedure of more practical value a number of modifications have been suggested. Nattan-Larrier¹¹ found that injecting the urinary sediment into the breasts of lactating pigs gave positive results in ten days. The difficulty, however, in obtaining animals in such a condition renders the method rather unpractical for ordinary use. Injections directly into the blood stream have not given results better than those obtained by the usual method of inoculation.

Oppenheimer¹² injected directly into the liver and spleen, and reported positive results in a large number of cases, in from five to sixteen days. In three weeks' time, the lesions were so marked as to render needless microscopic examination. Bloch,¹³ by first traumatizing the inguinal glands before injecting subcutaneously into the thigh, claims to have demonstrated tuberculosis in from nine to eleven days. Both these methods, it seems, have their disadvantages and have been disproved by other observers.

Ebright¹⁴ first sought to diminish the animal's resistance by a preliminary large dose of tuberculin. Asch¹⁵ injected a filtrate of a concentrated tubercle bacillus bouillon culture intraperitoneally, at the same time the urinary sediment was injected in the abdominal wall, and claimed positive results in from four to ten days.

In order to curtail the time necessary for the guinea-pig test, by increasing the susceptibility of the animals, the roentgen ray was first advocated in 1899. The results reported were contradictory and, in the main, unsatisfactory. In recent years, Morton¹⁶ again called attention to this method, and found that one massive roentgen-ray exposure of the pig diminished its resistance to such an extent that positive lesions could be demonstrated within from eight to ten days after inoculation. Elkford¹⁷ advised frequently repeated doses of the roentgen ray, and reported positive findings in two instances. On the other hand, Killert¹⁸ and Corper¹⁹ came to the conclusion that the roentgen-ray method failed to diminish appreciably the time required, and found it of no practical use in diagnosis.

The question arises as to the reliability of guinea-pig inoculations. What is the percentage of error, and what are its disadvantages? Contrary to the claims of some authors, the test is not infallible. Whereas a negative pig test has more value than a negative smear, it is by no means conclusive. Unquestionably, a positive reaction is at times missed, even in frank cases, so that one negative inoculation should not rule out tuberculosis. Occasionally the test is positive when the lesion is in another part of the body, and the organisms are excreted from a nontuberculous kidney. At times the bacilli will be demonstrated in smears, when the pig test is negative. Wildbolz¹ reports two cases in which operation demonstrated a well marked open tuberculosis, with negative pig findings. Raffin,²⁰ Kapsammer,²¹ Watson, Kretschmer²² and others have reported similar cases. Tenney,²³ in 1911, reported three nephrectomies, in which the kidneys removed were tuberculous, but guinea-pig inoculations had been negative. This led Barney and Young²⁴ to investigate the records at the Massachusetts General Hospital, and their results in 197 proved cases of renal tuberculosis showed but a fraction of 1 per cent. of error. Only two cases gave negative results, and in one of these the ureter was found completely obliterated. Excluding this case, the percentage of error was 0.5 per cent. They conclude that "the guinea-pig test for tuberculosis, when carefully done, is by far the most delicate and invariably accurate diagnostic weapon at our disposal, and a negative test is of indisputable value." The authors claim that infection of the urine, by the usual contaminating organisms (colon group or staphylococci), seldom results in injury to the guinea-pig, and death from sepsis has been a rarity. The animals were all injected subcutaneously in the abdominal wall, and killed at the end of five weeks. Occasionally the pig may die from an accidental tuberculosis. Barney reports one such case, and advises careful necropsy examination to avoid misinterpreting findings.

That this method (guinea-pig inoculation), while a very valuable aid, is not free from error is shown by the following results: Of the sixty patients from whom urine was obtained for inoculation, forty-two were subjected to nephrectomy, and the diagnosis veri-

11. Nattan-Larrier: *Monographie chirurgie*, Masson, October, 1905.

12. Oppenheimer: *Ztschr. f. Urol.* **1**: 122-125, 1912.

13. Bloch: *Berl. klin. Wchnschr.*, 1917, p. 17.

14. Ebright: *Zentralbl. f. allg. Path. u. path. Anat.* **21**, 1910.

15. Asch: *Verhandl. Deutsch. Gesellsch. f. Urol.*, III Kongress, 1911.

16. Morton, J. J.: *J. Exper. Med.* **24**: 419 (Oct.) 1916.

17. Elkford: *J. Lab. & Clin. Med.* **3**: 175, 1917.

18. Killert: *J. M. Res.* **39**: 93, 1918.

19. Corper: *Amer. Rev. Tuberc.* **2**: 587 (Dec.) 1918.

20. Raffin Tenth Session, Association française d'urolog., 1906.

21. Kapsammer: *Nieren Chirurgie*, Vienna, 1907.

22. Kretschmer: *Boston M. & S. J.* **164**, 1911.

23. Tenney: *Boston M. & S. J.* **164**, 1911.

24. Barney and Young: *Boston M. & S. J.* **164**, 1911.

fied, so that only these cases will be taken into consideration. There were eleven negative results (36 per cent.), and twenty positive results (64 per cent.). Eleven pigs died at periods of time varying from one to five weeks, after inoculation, four from sepsis; in eight no definite cause could be ascertained. In the positive cases, tuberculosis was demonstrated as early as the twenty-second day. In estimating the number of negative results, only those animals were included that were killed at the expiration of forty-two days, the time allotted by the laboratory. There were no cases in this series in which the guinea-pig test proved negative, after obtaining positive smears. All of the pigs were injected both intraperitoneally and in the groin. The specimens were obtained directly from the kidney or bladder by catheterization.

We realize that this percentage of negative results is rather high. In endeavoring to determine the causes of failure we learned that at least twenty intern pathologists were respectively responsible for the inoculations. Under the present system of hospital organization with rotating services, new interns are periodically transferred to the laboratory. Of course the inexperienced man will not obtain results comparable to those of his better trained colleague. Although not intricate, the method requires a measurable degree of accuracy to insure reliable results. The laboratory, recognizing this condition, purposes conducting these examinations under the immediate direction and control of one responsible head.

The presence of tubercle bacilli in the catheterized bladder or ureteral specimen of urine does not necessarily imply a renal tuberculosis. The difficulties which may be encountered in determining the renal involvement of such cases have been well described by Beer,²⁵ in a recent article on tubercle bacilluria. The author points out that tubercle bacilli may be present in catheterized ureteral specimens under three conditions: (1) when there is a tuberculous focus in some part of the body and the bacilli are excreted from a nontuberculous kidney; (2) when there is a tuberculous focus in the genital or urinary tract by contamination or by ureteral reflux, and (3) when the tuberculosis is in the upper urinary tract or kidney.

EXCRETORY TUBERCLE BACILLURIA

Whereas opinions on this subject are rather contradictory, the weight of evidence appears to favor the fact that in tuberculosis of the lungs and other organs a normal kidney may filter through tubercle bacilli without causing a local tuberculous lesion in the kidney itself. It seems that kidneys the seat of disease other than tuberculosis (stone tumor, nephritis) more readily allow the passage of tubercle bacilli than normal organs.

Repeated instances are cited in the literature. Loumeau²⁶ reports a case in which a patient with a renal tumor excreted tubercle bacilli in the urine. After nephrectomy the bacilli disappeared from the urine, and the extirpated organ showed no evidences of tuberculosis. Wildbolz reports a case of stone kidney in which bacilli were found in the urine by guinea-pig inoculation, none by smear. After removal of the stone (kidney and ureter showed no evidences of tuberculosis) the urine became clear, and guinea-pig

inoculations on two different occasions, one-half and one and one-half years after, were negative. Von Rijssel²⁷ examined four kidneys extirpated because of a diagnosis of tuberculosis, based on guinea-pig inoculations. Microscopic examination failed to detect tuberculosis; neoplasms were present in two cases. As a rule, in excretory bacilluria, the bacilli are present in such small numbers that they can be demonstrated only by inoculation methods, and not in smears. Oppel,²⁸ however, reports two instances in which the bacilli were demonstrated in smears, and still no evidences of urinary tuberculosis were found. Tubercle bacilli have been found in the urine of patients in the early stages of pulmonary tuberculosis, in surgical tuberculosis and occasionally where the primary source has not been determined. The possibility of a genital tuberculosis acting as the focus of the infection has been mentioned by Beer.²⁵ The presence of tubercle bacilli alone in smears or in catheterized ureter specimens does not justify a diagnosis of renal tuberculosis; pus or macroscopic blood must be found associated. A number of reliable observers are opposed to this view, and claim that tubercle bacilli in the catheterized kidney specimens (even though they are free of albumin and pus and blood) invariably mean an early renal tuberculosis. The importance of this statement will be readily realized in discussing the question of operation in so-called bilateral renal tuberculosis.

CONTAMINATION FROM TUBERCULOSIS OF GENITO-URINARY TRACT AND OTHER SOURCES

The incidence of tubercle bacilli in the urine, in genital tuberculosis without renal involvement, is difficult to estimate. Cunningham²⁹ found bacilli in smears in 15 per cent. of cases, from the expressed prostatic secretion. In ten cases of epididymitis in the service with which we are connected, tubercle bacilli were found twice, without evidences of renal involvement. The importance of this finding lies in the fact that specimens of the urine obtained by ureter catheterization may be contaminated by tubercle bacilli which have their origin in the genital tract. A reflux of the bladder fluid up the ureters is not an unusual occurrence, as has been repeatedly proved by roentgenograms and other methods. If tubercle bacilli are present in the bladder, they may be carried up to the kidney, and obtained by ureteral catheterization. Failure to recognize this source of contamination may result in a diagnosis of renal infection. Despite careful irrigations, there is also the possibility of carrying bacilli from the posterior urethra and bladder up into the kidney by means of the ureteral catheters. Another source of contamination may be a secondary tuberculous ureteritis (involving the lower end of the ureters) from an extension of a tuberculous vesiculitis. The possibility of renal infection from tuberculosis of the female pelvic organs must also be considered.

BILATERAL RENAL TUBERCULOSIS

From time to time, the question of operation in bilateral renal tuberculosis has been discussed. A number of surgeons have advocated extirpation of the more badly diseased kidney, claiming excellent results in selected cases. Others have refused to operate, if

27. Von Rijssel, E. C.: *Nederlandsch. Tijdschr. f. Geneesk.* 2: 590, 1920.

28. Oppel: *Folia urolog.* 1: 4, 1908.

29. Cunningham: *Boston M. & S. J.*, 1911, p. 872.

25. Beer, E.: *Am. J. M. Sc.* 154: 251 (Aug.) 1917.

26. Loumeau: *Folia urolog.* 4.

tubercle bacilli are present in the urine from the opposite kidney. This naturally brings up the question as to the criteria on which to base the diagnosis of bilateral renal involvement. In the majority of instances, a diseased kidney makes itself evident by changes around the ureteral orifice; a perfectly normal bladder and meatus, however, do not contraindicate a tuberculosis. Functional tests are often of little value, especially in early cases; the problem is solved when pus and tubercle bacilli are found in catheterized ureter specimens which have been carefully collected. The presence of pus alone in the second kidney does not necessarily signify a tuberculosis; it may be due to a nonspecific pyelitis or to other conditions.

Casper,³⁰ before subjecting a case of unilateral tuberculosis to operation, advises awaiting the result of the guinea-pig inoculation of the opposite kidney. He counsels against operation in the face of a positive pig test, even though the catheterized specimen is clear, free of pus and albumin, and the function of the kidney good. Israel³¹ supports this view, and claims that in the cases developing a tuberculosis of the second kidney soon after nephrectomy the lesions have been so slight at the time of operation as to avoid detection by any means except inoculation. How careful one must be in accepting such conclusions may be gathered from the following observations: In twenty-eight cases of unilateral renal tuberculosis in this series, the urine from the opposite, supposedly healthy kidney was inoculated into pigs. The urinary and cystoscopic findings and smears gave no evidences of disease of these kidneys. Still, in five cases, (18 per cent.) the urine obtained from the opposite kidney by ureteral catheterization gave a positive guinea-pig test. Four of these patients were males, one a female. One patient developed a tuberculous epididymitis five months after nephrectomy. The second patient had a coincident prostatic tuberculosis. The bladder urine, which was clear and brilliant, repeatedly was found swarming with tubercle bacilli, the origin of which was unquestionably prostatic. The urine from both kidneys inoculated into guinea-pig gave positive results on a number of occasions. The third patient had a tuberculous epididymitis and prostatitis. No evidences of genital infection was present in the other two cases. Four of these patients were followed up for some time, two of them for a period of three years, and one for seven years, without developing a tuberculosis of the second kidney. Undoubtedly, in these cases the bacilli were either carried to the kidney from the bladder urine, through an infected catheter, or the contamination was due to a reflux.

TABLE 1.—RESULTS OF THE VARIOUS EXAMINATIONS

	Number	Per Cent.
1. Total number of cases of renal tuberculosis.....	126	..
2. Cases in which operation was performed.....	102	83
3. Cases in which operation was not performed.....	24	17

If, then, one accepts as sufficient evidence of renal tuberculosis the presence of tubercle bacilli in a urine free of pus and albumin, it will readily be seen that, according to the dictum of Casper, Israel and others, patients will be refused nephrectomy who otherwise might stand an excellent chance for a cure. On the

other hand, numerous cures following nephrectomy for bilateral renal tuberculosis will be reported if these criteria are accepted as evidence of such involvement.

Animal inoculation should be resorted to when the smear proves negative, and when there is a question as to involvement of the opposite kidney. Occasionally the pig will pick up an unsuspected case of renal tuberculosis which could not have been detected by other means.

TABLE 2.—RESULTS IN OPERATIVE CASES

	Number	Per Cent.
1. Total number of cases in which guinea-pigs were inoculated	42	..
2. Tests positive	24	64
3. Tests negative	11	36
4. Total number of cases in which smears were examined	87	..
5. Smears positive	57	65
6. Smears negative	30	35
7. Cases in which neither smears nor inoculations were taken, diagnosis being made on cystoscopic findings	8	..
8. Cases diagnosed by pathologist, not suspected before operation	2	..

In three cases, guinea-pig inoculation disclosed tuberculosis, when no suspicion of this disease was previously entertained. In but a few instances did we await the full time required for a report of the inoculation, before proceeding with the operation. In these cases, the clinical and cystoscopic data were so insignificant as to render the diagnosis very uncertain.

In summing up the relative advantages and disadvantages of the smear versus the guinea-pig, it may be stated that the smear is a simple and rapid procedure, gives positive results in at least 65 per cent. of the cases, and for these reasons proved to be, in our experience, of greater value than inoculations. The pig test is so time consuming as to render it impracticable as a routine procedure. The diagnosis in this series was in most instances made on a careful study of clinical symptoms, cystoscopy and smear examinations.

Taking into consideration only those cases in which operation was performed, the results may be tabulated as in Table 2.

ABSTRACT OF DISCUSSION

DR. JAMES D. BARNEY, Boston: This paper brings up a very important method diagnosis in renal tuberculosis. I agree that the smear is of great importance and of great value if the technic is carried out carefully. For some years I have been making these smears, following the method described by Dr. Crabtree, with careful staining of the sediment. Although I have no accurate figures on which to base my remarks, we have had at least 75 per cent. positive results if the tubercle bacillus was there. The difficulties Dr. Hyman has had have also been ours, in that there have been many changes in personnel and so many things have been reported negative that would otherwise be positive. I feel that with care in the technic in the hands of a reliable man it is a very accurate test. The guinea-pig inoculation I have thought to be a very delicate test, but it has been at great disadvantage because of the time consumed. We have recently had a few cases in which the guinea-pig test was not reliable, although every step of the technic was followed carefully. There are numerous causes for failure of the guinea-pig test: The urine is not properly sedimented, the calix or pelvis is shut off, or the ureter is stenosed, thus preventing the urine from coming through. Then some guinea-pigs are of higher susceptibility than others. In other cases, owing to other infections of the urine, the guinea-pig is overwhelmed and dies before a diagnosis can be made.

30. Casper: Verhandl. deutsch. Gesellsch. f. Urol., Vienna, 1911, p. 72.
31. Israel: Verhandl. deutsch. Gesellsch. f. Urol., Vienna, 1911, p. 72.

As regards the diagnosis of bilateral lesions, that is sometimes a very difficult matter, as sometimes tubercle bacilli are found in the urine of a healthy kidney.

DR. EDWARD L. KEYES, JR., New York: Trauma of the kidney will sometimes bring down tubercle bacilli in the urine. This was brought to my attention some years ago when, failing to obtain tubercle bacilli in the urine in a certain case, we made a pyelogram and subsequent to that found many tubercle bacilli in the urine. In another case in which there were no bacilli prior to operation we did a nephrectomy and subsequently there were many tubercle bacilli in the urine, although the patient was much relieved by operation. I think it is worth while if you have not found tubercle bacilli before pyelography to take repeated specimens afterward and smear them, for you are much more likely in some cases to get tubercle bacilli after this procedure than before.

DR. ABRAHAM HYMAN, New York: One of the main points I wished to bring out was the difficulty of determining whether the second kidney is involved or not. I mentioned a few possibilities of error. We may have tubercle bacilli in the bladder urine from various sources, and unless one is very careful with his technic there is a possibility of carrying the organisms to the kidney by means of the ureteral catheter. We know that occasionally the bladder fluid will pass up alongside the catheter to the kidney and return through the ureteral catheter; if the bladder urine contains tubercle bacilli we are liable to get a contamination in this way. Casper, before subjecting a patient to nephrectomy, awaits the result of the guinea-pig inoculation of the opposite kidney. Should tubercle bacilli be demonstrated, even in the absence of pus or albumin, the case is considered one of bilateral renal tuberculosis and operation advised against. In view of the discussion brought out in this paper, concerning the various sources of contamination, the fallacy of such a statement is evident.

THERAPEUTIC VALUE OF CHAULMOOGRA OIL AND ITS DERIVATIVES IN EXPERIMENTAL TUBERCULOSIS *

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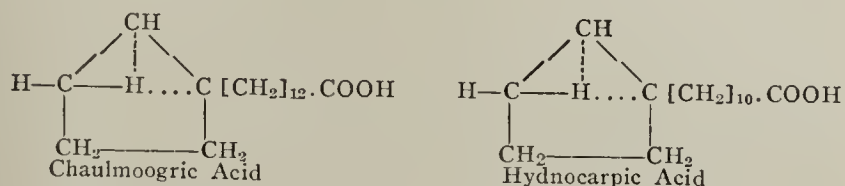
WASHINGTON, D. C.

Numerous attempts have been made in the past to discover chemicals which will cause the death of the tubercle bacillus within the body of infected animals. Soon after the discovery of this bacillus, Robert Koch himself tried to find drugs which might be useful in combating this disease. It is not our purpose in this paper to review the large amount of work done along this line. Suffice it to say that all of these attempts have been complete failures, notwithstanding the positive claims which were made from time to time. As a matter of fact, the specific treatment of diseases of bacterial origin has so far not yielded results comparable to those obtained in the treatment of diseases due to protozoa. The chemotherapy of bacterial diseases is, however, not a hopeless problem, as shown by the promising results obtained by Morgenroth and his colleagues with ethylhydrocuprein in the treatment of pneumococcus infection in mice, and the recent reports on the favorable action of chaulmoogra oil in leprosy.

The success reported in leprosy led us to test out the therapeutic value of chaulmoogra oil and its principal

components in experimental tuberculosis, for the following reasons: (1) The leprosy and tubercle bacillus belong to the group of acid-fast bacteria, and (2) the work of Walker and Sweeney¹ seems to indicate that chaulmoogric acid, the specific acid contained in chaulmoogra oil, exerts a powerful action on all acid-fast bacteria, but is inert toward nonacid-fast organisms. Indeed, these authors present figures which show that chaulmoogric acid is 100 times more bactericidal than phenol for acid-fast bacteria, including the tubercle bacillus.

The chemistry of chaulmoogra oil has been worked out pretty thoroughly by the splendid researches of Power and his collaborators,² the results of which were confirmed and somewhat extended by Dean and Wrenshall³ in a recent paper. According to this work the oil contains a large amount of chaulmoogric acid and hydnocarpic acid, which appear to possess the following constitution:



Both acids are optically active and differ from the ordinary fatty acids in containing a five-atom carbon ring with an unstable hydrogen atom. The acids can be readily converted into the ethyl esters, which seem to possess certain therapeutic advantages over chaulmoogra oil.

The guinea-pig was selected as the experimental animal on account of its great susceptibility to infection with tuberculosis, and the regular course and invariably fatal outcome of the disease when a proper dose of tubercle bacilli is used.

TOXICITY

As a preliminary to the therapeutic experiments, the toxic action of the compounds was studied on normal guinea-pigs. Chaulmoogra oil dissolved in olive oil or given as such intramuscularly is intensely irritating, and leads to local swelling and necrosis of the tissues even in small doses (1 c.c.). On microscopic examination, the site of injection shows atrophy and fatty degeneration of the muscle fibers, this change occurring at times with doses as small as 10 mg. Subcutaneous administration of the oil gives rise to local hemorrhages, thickening and necrosis. The ethyl ester of chaulmoogric acid is somewhat less objectionable in this respect, but even this compound causes some local irritation and microscopic changes. Intraperitoneal injection of the ethyl ester seems to be tolerated in fairly large amounts. After repeated injections, the peritoneal cavity on necropsy is found to contain a large amount of precipitated material covering the spleen and liver which appears to be fibrin. Adhesions are nearly always present, especially in the tuberculous animals treated with this substance. The sodium salt of chaulmoogric acid in 2 per cent. aqueous solution can be injected intravenously at a slow rate without causing any evident symptoms. If the rate is too rapid, however, the animal dies of what appears to be embolism, as under these conditions the free acid seems to be precipitated in the blood stream. Furthermore, the solution of the sodium

1. Walker, E. L., and Sweeney, M. A.: The Chemotherapeutics of the Chaulmoogric Acid Series and Other Fatty Acids in Leprosy and Tuberculosis, *J. Infect. Dis.* **26**: 238 (March) 1920.

2. Power, F. B., and Gornall, F. H.: *J. Chem. Soc.* **85**: 851, 1904. Power, F. B., and Barrowcliff, M.: *Ibid.* **91**: 557, 1907.

3. Dean, A. L., and Wrenshall, Richard: Fractionation of Chaulmoogra Oil, *J. Am. Chem. Soc.* **42**: 2626-2645, 1920.

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

salt is strongly alkaline, and has therefore a destructive effect on the vein used for the injection, so that each vein can be used only once. On account of this difficulty, the use of the sodium salt had to be abandoned. We conclude from our toxicity experiments that chaulmoogra oil and chaulmoogric acid and its derivatives are substances of relatively tow toxicity, but possessing irritating properties which make their therapeutic administration somewhat difficult, a fact which is also borne out by the clinical reports on their use in leprosy.

TREATMENT

Guinea-pigs weighing from 200 to 250 gm. were kept for a preliminary period of observation in well-constructed cages, and were fed on oats, cabbage and carrots. The growth curve of the animals was determined, and individuals showing no proper increase in weight were eliminated. We believe this to be an important measure which should be observed in all

a culture five to six weeks old. The animals were weighed once a week. A careful necropsy was made in nearly all cases, and the findings were confirmed by histologic examinations of the lesions.

TABLE 2.—EXTENT AND CHARACTER OF LESIONS FOUND AT NECROPSY IN SERIES II

	Group 1 (Controls)	Group 2	Group 3
Percentage of animals showing:			
No lesions .....	..	..	2 (21st day)
Localized	4	..	6
Moderate generalization	35	41	37
Generalization with caseous necrosis....	61	59	55

The chaulmoogra oil used was obtained from India and conformed with the requirements of the British Pharmacopeia. The chaulmoogric acid was prepared in chemically pure form. The ethyl ester was obtained

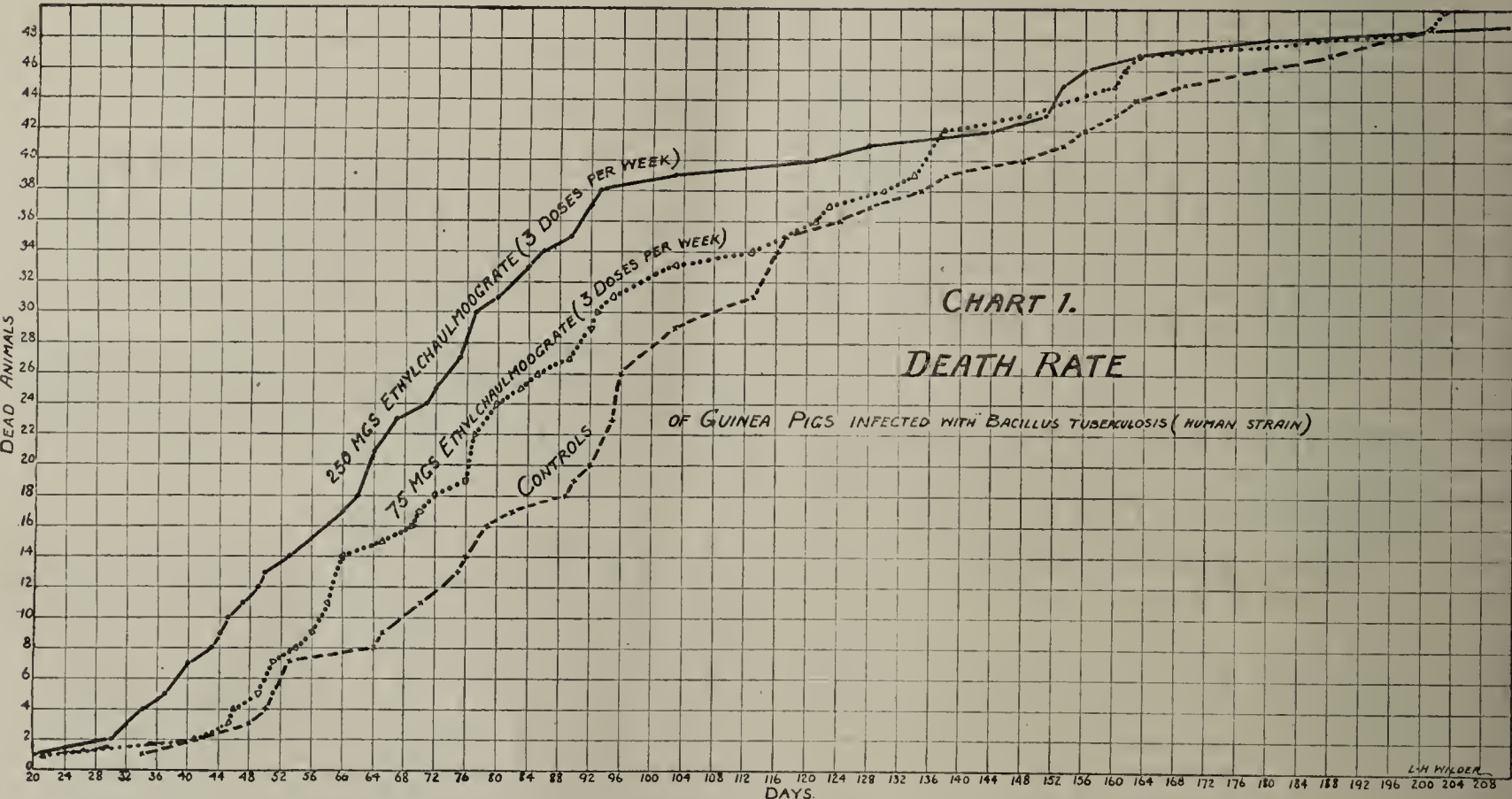


Chart 1.—Death rate of guinea-pigs infected with Bacillus tuberculosis (human strain).

work of this type, as the reliability of the results is dependent on taking this precaution.

The material used for intraperitoneal inoculation consisted of a culture of a fairly virulent human strain of tubercle bacilli (H_{37}) which had been cultivated in this laboratory for several years on glycerin broth. In the three series of experiments here reported, fifteen,

TABLE 1.—WEIGHT CHANGES AND AVERAGE LENGTH OF LIFE IN SERIES II

	Group 1 (Controls)	Group 2	Group 3
Average number of weeks of maintained weight	9.4	7.6	7.0
Average number of weeks of ascending part of growth curve.....	6.8	5.1	5.1
Average of weeks of descending part of growth curve	3.0	3.0	3.1
Average length of life in days.....	105.9	94.2	82.0

forty-nine and thirty controls, respectively, were inoculated with the same emulsion as the animals which were subjected to treatment. In the first series the dose was 0.001 mg., and for the second and third series 1 mg. of

from a mixture of chaulmoogric and hydnocarpic acids and was purified by vacuum distillation. Part of the ester was converted into a saturated compound by adding 5 gm. of the ester to 1.92 gm. of iodine dissolved in 5 gm. of absolute alcohol. This compound is referred to as the iodine saturated ethylchaulmoograte.

SERIES I.—Inoculated with 0.001 mg. of tubercle bacilli emulsion.

Group 1. Fifteen controls.

Group 2. Thirty-six animals. Each received 80 mg. per kilogram of sodium chaulmoograte (2 per cent. solution) intravenously about every ten days. Total dose of chaulmoogric acid: maximum, 240 mg. per kilogram; minimum, 100 mg. per kilogram.

Group 3. Thirty-four animals. Each received 80 mg. per kilogram of sodium chaulmoograte (2 per cent. solution) intravenously about every ten days, and 100 mg. per kilogram of calcium lactate (2 per cent. solution) intravenously as a separate injection every ten days. Total dose of chaulmoogric acid: maximum, 160 mg. per kilogram; minimum, 80 mg. per kilogram. Total dose of calcium lactate: maximum, 200 mg. per kilogram; minimum, 100 mg. per kilogram.

SERIES II (Chart 1).—Inoculated with 1 mg. of tubercle bacillus emulsion.

Group 1. Forty-nine controls.

Group 2. Fifty animals. Each received 75 mg. of ethyl-chaulmoograte in olive oil (25 per cent. solution) intraperitoneally three times a week.

Group 3. Fifty animals. Each received 250 mg. of ethyl-chaulmoograte in olive oil (50 per cent. solution) intraperitoneally three times a week. Total dose of last two groups: maximum, 15 c.c.; minimum, 4.5 c.c. of ester.

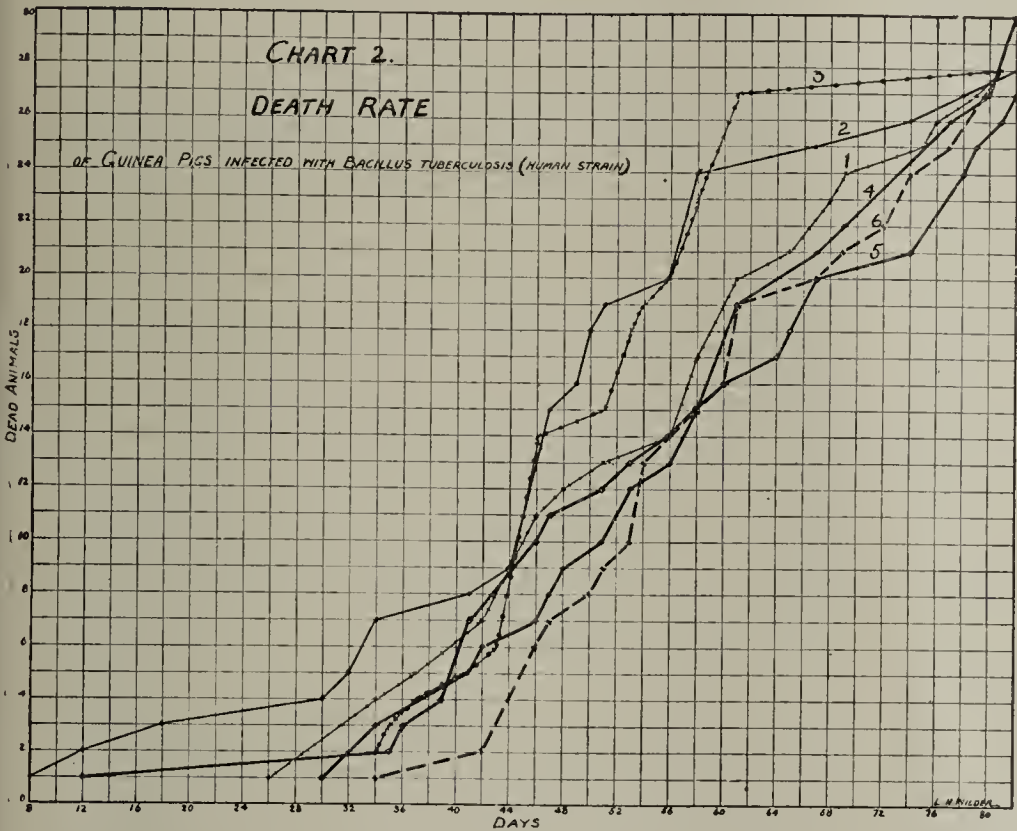


Chart 2.—Death rate of guinea-pigs infected with *Bacillus tuberculosis* (human strain).

SERIES III (Chart 2).—Inoculated with 1 mg. of tubercle bacillus emulsion.

Group 1. Thirty controls.

Group 2. Thirty animals. Each received 10 to 20 mg. chaulmoogra oil⁴ intramuscularly once a week.

Group 3. Thirty animals. Each received 10 mg. of ethyl ester intramuscularly once a week.

Group 4. Thirty animals. Each received 10 mg. of iodine saturated ethylchaulmoograte intramuscularly once a week.

Group 5. Twenty-nine animals. Each received 100 mg. of undiluted ethyl ester plus 10 mg. of sodium iodid intramuscularly once a week.

TABLE 3.—EXTENT OF LESIONS OBSERVED AT NECROPSY IN SERIES III

	Group 1 (Controls)	Group 2	Group 3	Group 4	Group 5	Group 6
Average length of life in days....	54	47	50	58	56	59
Percentage of animals showing:						
No lesions.....	..	..	..	6	..	..
Localized lesions..	..	..	3	7	..	3
Moderate generalization	40	50	43	57	32	43
Generalization with caseous necrosis	60	50	54	30	68	54

Group 6. Thirty animals. Each received from three to forty-six injections of from 10 to 250 mg. each of the ethyl ester intramuscularly or intraperitoneally for several weeks prior to infection, and the same treatment was continued until death.

RESULTS

In the search of remedial agents for the treatment of tuberculosis, it can scarcely be hoped to find a substance which would save all or even a certain number of

infected animals from death, as tuberculosis in the guinea-pig is a more acute disease and the natural resistance is much lower than in man. A full appreciation of this point of view led us to adopt the following criteria as evidence of therapeutic action: (1) the effect of treatment on the mortality curve; (2) the extent and character of the tuberculous process at the end of the experiment, and (3) the influence of treatment on the body weight. The study of the effect of the treatment on the mortality curve obviously necessitates working with a large number of animals. This is rarely done by workers in this field, probably on account of the large amount of work and considerable expense involved. Nevertheless, it appeared to us of great importance to carry out our work on a large scale in order to eliminate differences in individual resistance to the infection and differences in the behavior of the body to the drug, factors which undoubtedly are of great importance in the proper estimation of the value of drugs. The character of the pathologic changes at necropsy is generally recognized as a valuable index of the defensive power of the body against infection. Careful attention was, therefore, paid to the extent and character of the lesions. Changes in the growth curve of young animals as influenced by the disease and the treatment are also of unquestionable importance. A typical growth curve is given in Chart 3, and this shows that almost the normal rate of growth is maintained for a considerable length of time; later on a gradual decline

sets in, which just prior to death becomes precipitous. In some animals the body weight changes very little for several weeks, until the resistance to infection gives way and the animal declines.⁵ The advantage of using growing guinea-pigs is therefore obvious.

In Series I, some of the animals died in the course of some weeks with evidence of tuberculosis. The remainder of the animals were chloroformed sixty-five days after the inoculation. The animals of this series

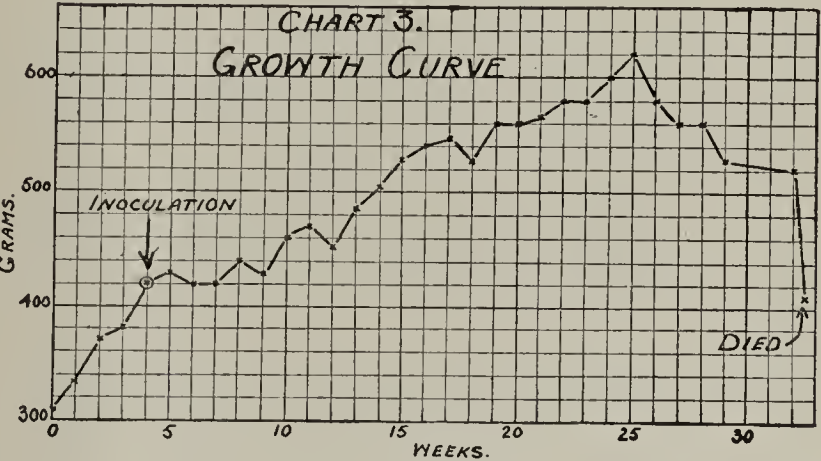


Chart 3.—Growth curve.

had received a very small dose of tubercle bacilli, only 0.001 mg., and the infection was evidently a very mild one, as shown by the fact that only 27 per cent. of the control animals had definite tuberculous lesions. In the group which was treated with sodium chaulmoograte,

4. The chaulmoogra oil, ethyl ester and iodine compound were given in 5 per cent. emulsion in water, containing 20 per cent. alcohol.

5. De Witt, Lydia M.: Weight Curves of Tuberculous Guinea-Pigs, *J. Infect. Dis.* 27: 503-512 (Nov.) 1920.

72 per cent. showed evidence of tuberculosis, and in that with chaulmoograte and calcium lactate, 62 per cent. The calcium lactate was used with the idea that it might favor calcification. The conclusion seems therefore justified that the tuberculous process was not inhibited by the treatment in spite of a very mild type of infection.

In Series II the infection was of a more virulent nature than in Series I. Table 1 summarizes the weight changes and the average length of life of the animals of the three groups. Table 2 contains the data relating to the extent and character of the lesions found at necropsy, and Chart I the mortality curves. It will be seen that the treatment had no favorable action whatsoever. The mortality curves of the treated animals are somewhat more steep, which may possibly indicate that the treatment had a deleterious effect.

In Series III the animals showed a still more acute type of the disease, as is illustrated by Chart 2. The treatment had no effect on the mortality rate, growth curve and extent of the lesions observed at necropsy (Table 3).

The iodine preparation was used on account of the work of Jobling and Petersen,⁶ who showed that iodine has an inhibiting effect on the antiproteolytic ferments of the blood. It was thought that the iodine through indirect action might render the tubercle bacilli within the lesions more accessible to the drug. Emphasis should be placed on the fact that the animals in Group 6 were treated with ethyl esters before and after infection. Even this intensive treatment had no effect on the course of the disease.

The net result of this exhaustive experimental test of the value of chaulmoogra oil and its derivatives is therefore negative. After the completion of this work a paper appeared by Kolmer, Davis and Jager⁷ reporting some experiments with chaulmoogra oil in the treatment of guinea-pigs infected with a bovine strain. Only six animals were treated, and the results were entirely negative.

THE GRAM STAIN IN THE DIAGNOSIS OF CHRONIC GONORRHEA *

VICTOR BURKE, PH.D.

SAN FRANCISCO

It has been repeatedly pointed out that the diagnosis of chronic gonorrhea by present staining methods is very unsatisfactory.¹ Factors which may serve as sources of error and effect the diagnosis are:

1. Choice and collection of the secretions and preparation of the films to be stained. Unless skill is shown in this selection of secretions and preparation of the film, the examination of the stained smear is of little value.

2. Variations in the technic employed in staining the films. There is nothing more discouraging or useless than to attempt to make a diagnosis from a poorly

stained film of pus containing several kinds of organisms.

3. Occasional loss of the character by gram-positive cocci, which appear gram-negative.

4. Unusual resistance to decolorization by some strains of gonococci, which may appear gram-positive.

5. The fact that the gonococci may be few in number, atypical morphologically and extracellular and, when scattered among secondary invaders, difficult to recognize.

6. Possibility that the gonococci may be discharged intermittently, thus requiring daily examination for their detection.

7. Failure of the Gram stain to distinguish the gonococci from other gram-negative diplococci which are occasionally present in the genito-urinary tract.

These factors so affect the result of the examination that neither a positive nor a negative diagnosis can be considered conclusive unless supported by other evidence.

In staining a series of films made from different patients, it was noticed that some of the smears stained exceedingly well, with sharp differentiation between gram-positive and gram-negative organisms, while other smears stained poorly, with very little contrast between gram-positive and gram-negative organisms, regardless of how much care was taken in the staining process. We concluded that the poor results obtained could not, in all cases, be attributed to variation in the technic of staining. It was assumed that the poorer results obtained with some of the films may have been due to: (1) variations in the source of material from which the films were made; (2) variations in the technic employed in making the film; (3) the presence of a more varied flora, and (4) variations in the reaction of the secretions.

The secretions of the genito-urinary tract vary from alkaline to acid. In experimenting with aqueous solutions of dyes, it was noticed that the addition of sodium bicarbonate increased the contrast between the gram-positive and gram-negative organisms. This suggested the possibility that the poor results obtained in staining secretions from the genito-urinary tract might be due, in some cases at least, to the presence of acid. A few simple experiments demonstrated that acid affects the Gram reaction.

EXPERIMENTS

EXPERIMENT 1.—To show the effect of lactic acid when the films are exposed to the acid before the staining process is begun: A slide containing smears of *Neisseria catarrhalis*, *Staphylococcus aureus* and *Bacterium typhosum* was dipped in 10 per cent. lactic acid and stained by the modified Gram method described below, with the exception that the sodium bicarbonate was omitted.² The staphylococci were found to be partially decolorized.

EXPERIMENT 2.—To show the effect of lactic acid when added to the violet dye on the slide: The foregoing experiment was repeated with the exception that instead of exposing the unstained film to the acid the slide was flooded with the methyl violet and a few drops of 10 per cent. lactic acid

6. Jobling, J. W., and Petersen, William: The Therapeutic Action of Iodin, Arch. Int. Med. 15: 286-302 (Feb.) 1915.

7. Kolmer, Davis and Jager: Chaulmoogra Oil in Tuberculosis, J. Infect. Dis. 28: 265 (March) 1921.

* From the Pathological Laboratory, Leland Stanford Junior University School of Medicine, aided by a grant from the United States Interdepartmental Social Hygiene Board for Research in the Prevention and Cure of Venereal Diseases.

1. For a discussion of the uncertainties and sources of error and technic, of making the smears, see Report of the British Medical Research Committee, Special Report Series, Nov. 19, 1918. Norris, C. C., and Mickelberg, H. B.: Diagnosis of Gonorrhea in the Female by Staining Methods, J. A. M. A. 76: 164, 1921.

2. These organisms were grown on peptic digest agar. This medium was made by adding 2 per cent. agar to peptic digest broth (Stickel and Meyer: J. Infect. Dis. 23: 68 [July] 1918) and titrated to a reaction of pH 7.4. With the addition of 33 per cent. hydrocele fluid and a reduced oxygen tension, heavy growths of primary cultures of gonococci were obtained on this medium. Good secondary cultures were obtained without a reduced oxygen tension. This medium is more cheaply and easily made than veal infusion agar, and we recommend it in preference to the medium described by Schwartz and Davis (J. A. M. A. 75: 1124 [Oct. 23] 1920). I am indebted to Mr. Frank Kolos for information and assistance in cultivating the gonococci.

were added and mixed with the dye. The staphylococci were found to be poorly stained with the violet dye.

EXPERIMENT 3.—*To show that lactic acid does not cause a permanent change in the staining reaction of the cell.* The slides used in the foregoing experiment were dipped in xylene to remove the immersion oil, washed with acetone to remove the xylene, dried, and flooded with the violet dye. A few drops of a 4 per cent. sodium bicarbonate solution were added to the dye on the slide and the staining process completed. The staphylococci were found to be heavily stained with the violet dye, in sharp contrast with the gram-negative organisms.

EXPERIMENT 4.—*To show that if the acid on the slide is neutralized with an excess of sodium bicarbonate, the film will stain as though it had never been exposed to the acid:* A slide similar to those used above was covered with the lactic acid, and then an excess of sodium bicarbonate added. On staining the slide, the staphylococci were found to be heavily stained with the violet dye.

EXPERIMENT 5.—*To show the effect of sodium bicarbonate when added to the dye on the slide:* Two slides similar to those used above were stained in the same way, except that to the violet dye on one of the slides were added a few drops of a 4 per cent. solution of sodium bicarbonate. On completing the stain, the staphylococci on the slide receiving the sodium bicarbonate were found to be more heavily stained with the violet dye than the staphylococci on the other slide.

EXPERIMENT 6.—*To show the effect of sodium bicarbonate when the organisms are mounted in the alkaline solution:* The organisms used in the foregoing experiment were mounted in a drop of the sodium bicarbonate solution, fixed and then stained as usual. The staphylococci were found to be more heavily stained with the violet dye than when the sodium bicarbonate was omitted.

EXPERIMENT 7.—*To show that sodium bicarbonate does not cause a permanent change in the cell wall.* Experiment 6 was repeated, with the exception that the dried films were treated with an excess of 10 per cent. lactic acid. The staphylococci were poorly stained, indicating either reduced absorption or retention of the violet dye.

COMMENT

These experiments suggest that the reaction of the secretions of the genito-urinary tract may affect the staining of the organisms present. It remains to be determined whether there is ever enough acid present to account for the extreme difference in results obtained in staining smears from different patients. No attempt has been made to check up the reaction of the secretions with the staining of the smears.

It is evident from these experiments that the acid and alkali do not cause any permanent change in the cell wall. It is here assumed that the gram reaction is dependent on the cell wall. The sodium bicarbonate possibly operates by increasing the penetration or concentration of the violet dye in the cell. An examination of the films before decolorization has taken place shows that the gram-negative organisms are also heavily stained. This may be due to a heavier precipitate on the surface rather than to a greater concentration of the dye within the cell. The sodium bicarbonate does not appear to affect the rate of decolorization of the gram-negative organisms. The lactic acid does not cause a precipitate when added to the violet dye as the sodium bicarbonate does, and apparently has the effect of lessening the penetration or concentration of the dye in the cells.

Other possible explanations that must be considered are: (1) the effect of the alkali and acid on the cell wall, and (2) the effect on the size of the molecules of the dye-iodin precipitate.

Since some of the variations in staining may be associated with the age of the organisms present in

the secretions, an experiment was made to determine the effect of sodium bicarbonate in the staining of old cultures:

EXPERIMENT 8.—Two slides were prepared, each with a smear from a 3 weeks old culture of *Staphylococcus aureus* and a 2 year old culture of *Clostridium botulinum*. The two slides were stained in the same way with the exception that to the violet dye on one slide were added a few drops of an 8 per cent. sodium bicarbonate solution.

On examination, the smears on both slides were found to contain gram-positive and gram-negative organisms. But the slide receiving the sodium bicarbonate solution had, in the films of both organisms, a larger percentage of gram-positive organisms and these were more heavily stained with the violet dye. Apparently some of the older organisms which had practically lost the power of resisting decolorization had become gram-positive on the addition of the sodium bicarbonate. This suggests that the sodium bicarbonate and lactic acid may have some other effect than merely influencing the concentration of the dye within the cell.

As already stated, some of the uncertainty in making a diagnosis of a gonococcal infection is due to the fact that gram-positive organisms may become gram-negative. Whether this change is due to acid, age, autolysis or leukocytic digestion has not been determined; perhaps all these factors play a part. The results obtained in Experiment 8 indicate that sodium bicarbonate, when added to the violet dye, will reduce the number of gram-positive organisms which, in pus or secretion, fail to retain the violet dye.

These experiments suggest the possibility of improving dye therapy by the addition of sodium bicarbonate. The sodium bicarbonate apparently causes a greater penetration and concentration of the dye in the cells. Therefore it should increase the antiseptic power of the dye. It is known that gentian violet inhibits the growth of gram-positive organisms in greater dilution than it does gram-negative organisms. This fact is made use of in selective mediums. If sufficient concentration of the dye is used it inhibits the gram-negative organisms. It will probably be found that the addition of sodium bicarbonate or other alkali will increase the toxic action of the dye on both gram-positive and gram-negative organisms. Experiments should be made to determine the value of alkali in dye therapy and the optimum concentration to be used.³

The following modified Gram stain will be found to give very satisfactory results in staining smears to determine the presence of gonococci. A more detailed account of the method, with explanations and precautions to be observed, is being published elsewhere.

TECHNIC FOR THE STAINING OF SMEARS FROM THE GENITO-URINARY TRACT

1. Make thin films, air dry, stain unfixed or use very little heat in fixing.
2. Flood slide with anilin gentian violet or a 1 per cent. aqueous solution of methyl violet. Thoroughly mix with the dye on the slide a few drops, 3 to 8, depending on the amount of dye, of a 5 per cent. solution of sodium bicarbonate. Allow to stand for two or three minutes.
3. Flush off the excess stain with the iodine⁴ solution and cover with fresh iodine solution and allow to stand one minute or longer.

3. The experiments of Browning and of Davis have a bearing on this problem (Davis, E. G.: Urinary Antisepsis: A Study of the Antiseptic Properties and the Renal Excretion of Two Hundred and Four Anilin Dyes, *Am. J. M. Sc.* **161**: 251 [Feb.] 1921). Browning, C. H., and Gulbransen, R.: Hydrogen-Ion Concentration and Antiseptic Potency, with Special Reference to the Acridine Compounds, (*J. Path. & Bacteriol.* **23**: 106 [Oct.] 1919).

4. Iodine solution: 1 gm. of iodine, 2 gm. of potassium iodide and 100 c.c. of distilled water.

4. Wash in water as long as desired and blot off all free water until the surface of the film is practically free of water, but do not allow the film to become dry. The success of the stain depends largely on the proper control of this step.

5. Decolorize with acetone or acetone and ether (1 part of ether to from 1 to 3 parts of acetone) until the acetone flows from the slide practically uncolored. This usually requires less than ten seconds. The acetone should be placed on the slide; the slide should not be dipped in the decolorizer.

6. Blot dry. The slide quickly dries without blotting.

7. Counter stain for five or ten seconds with a 2 per cent. aqueous solution of safranin O. Exposure to the counter stain can be increased, depending on the excellence of the violet dye used.

8. Wash off excess stain by short exposure to water, blot and dry.

9. Immerse in xylene or turpentine for several minutes or until clear. Examine.

CONCLUSIONS

1. The addition of sodium bicarbonate increases the value of the Gram stain as an aid in the diagnosis of chronic gonococcal infection. It does this in two ways: (a) It results in a heavier concentration of the violet dye remaining in the gram-positive organisms. (b) It causes some of the gram-positive organisms which would otherwise appear gram-negative to retain the violet dye.

2. The addition of lactic acid interferes with the Gram reaction. Gram-positive organisms, in the presence of lactic acid, fail to absorb or to retain the violet dye as well as they do under neutral or alkaline conditions.

3. The alkali and acid do not affect the Gram reaction by producing a permanent change in the cell wall.

4. The addition of sodium bicarbonate will increase the number of organisms which retain the violet dye in old cultures of gram-positive organisms. The loss of gram-positiveness in old cultures may be due in part to the production of acid.

5. Sodium bicarbonate does not cause the gram-negative organisms to retain the violet dye.

6. The sodium bicarbonate probably affects the Gram reaction by increasing the penetration and concentration of the dye within the cell rather than by any action on the cell wall or the molecules of the dye-iodin precipitate.

7. The effect of sodium bicarbonate and lactic acid on the Gram stain suggests that some of the difficulty experienced in making a satisfactory Gram stain on smears from the genito-urinary tract is due to the presence of acid in the secretion.

8. The use of sodium bicarbonate in dye therapy is suggested by its action in the Gram stain.

9. The modified Gram stain presented is especially adapted to the staining of smears from the genito-urinary tract for the examination of gonococcal infections.

2321 Sacramento Street.

Pain in Syphilis of Heart.—Pain is by no means limited to the truly anginal cases, but it is one of the most common symptoms of the disease, sometimes it is limited to the precordium, but very frequently it is complained of as reflected into the back, into the shoulder, on either side—most frequently to the left—and, in the anginal types, as going down the arms. Precordial tenderness best elicited by firm deep pressure over the precordium is present in many cases. At times it is so acute as to cause marked discomfort when the outlines of the heart are being percussed out.—Harlow Brooks, *Am. J. Syphilis* 5:233, 1921.

Clinical Notes, Suggestions, and New Instruments

A SIMPLE METHOD OF DETERMINING THE FRAGILITY OF THE RED CORPUSCLES

BRYCE W. FONTAINE, M.D., MEMPHIS, TENN.

While the literature abounds with references to the importance of determining the fragility of the erythrocytes in the diagnosis and differentiation of pernicious anemia, and the anemias of the hemolytic type, we are given no accurate technic that can be carried out in the average laboratory.

Realizing the need of some simple method for making this test, I have devised for use in my own laboratory a technic which seems to give satisfactory results. In its simplicity there is little chance for error.

The only materials necessary are nine tubes, 4 inches long and one-fourth inch in diameter, a 0.9 per cent. salt solution, and some freshly distilled water.

The corpuscular emulsion is made from whole blood, as I have found no advantage in washing the cells. The blood is thus measured in a pipet used for enumerating leukocytes: It is drawn up in the pipet only to the point marked "1," and this quantity is put into a tube containing 1 c.c. of the 0.9 per cent. salt solution; a second quantity of blood is drawn up into the pipet, and also added to the tube containing the salt solution. Thus two measures of blood are used in the case of normal blood; variations of this amount are explained later.

In each of the nine tubes is placed 0.1 c.c. of the corpuscular emulsion. To the first tube is added 0.1 c.c. of distilled water, and 0.8 c.c. of 0.9 per cent. salt solution; to the second tube is added 0.2 c.c. of distilled water, and 0.7 c.c. of 0.9 per cent. salt solution; to the third tube is added 0.3 c.c. of distilled water, and 0.6 c.c. of 0.9 per cent. salt solution; to the fourth tube is added 0.4 c.c. of distilled water, and 0.5 c.c. of 0.9 per cent. salt solution; to the fifth tube is added 0.5 c.c. of distilled water, and 0.4 c.c. of 0.9 per cent. salt solution; to the sixth tube is added 0.6 c.c. of distilled water, and 0.3 c.c. of 0.9 per cent. salt solution; to the seventh tube is added 0.7 c.c. of distilled water, and 0.2 c.c. of 0.9 per cent. salt solution; to the eighth tube is added 0.8 c.c. of distilled water, and 0.1 c.c. of 0.9 per cent. salt solution; to the ninth tube is added 0.9 c.c. of distilled water, and 0.0 c.c. of salt solution.

The plan in the accompanying tabulation shows how the tubes are charged, and the resulting dilutions.

HOW TUBES ARE CHARGED, AND RESULTING DILUTIONS

	1	2	3	4	5	6	7	8	9
Corpuscular emulsion, c.c.	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Distilled water, c.c.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.9% salt solution, c.c.	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0
% salt solution	0.81	0.72	0.63	0.54	0.45	0.36	0.27	0.18	0.09

This gives us decreasing strengths of the salt solution, reading, from left to right: 0.81, 0.72, 0.63, 0.54, 0.45, 0.36, 0.27, 0.18 and 0.9 per cent.

The tubes are now incubated for one hour at 37 C., when the readings can be made; but the lines of demarcation are much more clearly defined if the tubes are placed in the ice-box for twenty-four hours. If this step is followed there will not be the slightest difficulty in determining the dilutions at which hemolysis begins and ends.

In making the readings, note should be made of the dilution at which hemolysis begins, as indicated by a very slight coloring of the supernatant fluid, with a moderate deposit of cells; the dilution at which hemolysis is marked, as indicated by a decided coloring of the supernatant fluid, and a barely perceptible deposit of cells; and the dilution at which hemolysis is complete, as indicated by a deep coloring of the supernatant fluid, with an absence of any deposit of cells.

This test is especially useful in the diagnosis of all hemolytic anemias, of either the acquired or the congenital type, as in these anemias the fragility of the erythrocytes is always

increased, whereas in pernicious anemia, the anemia of syphilis, and other severe secondary anemias their fragility is not increased.

In developing this technic I have used a number of normal bloods, and have found that hemolysis begins at a dilution of about 0.45 per cent., and is usually complete at 0.27 per cent.

The technic as outlined above is, of course, for normal blood, taking as a basis $4\frac{1}{2}$ or 5 million erythrocytes. In anemias, in which the total count is always decreased, the quantity of whole blood taken for the test must be increased in proportion to the decrease in the total count; e. g., if the total number of erythrocytes is only $2\frac{1}{2}$ million, double the quantity of whole blood should be used. This variation in the quantity of blood used can be readily understood, for the same amount of blood as used in the test on normals would contain too few cells, and the emulsion would be so weak in corpuscular content that the readings would be difficult.

In making this test on bloods from patients suffering from anemia, there should always be one or two controls of normal blood.

1109 Central Bank Building.

THE PHOTOGRAPHIC RECORD OF PHYSICAL SIGNS

ALBERT ROBIN, M.D., WILMINGTON, DEL.

The drawbacks to a diagrammatic record of the physical examination of the chest led me to experiment with the employment of photography for this purpose. To make the method available under ordinary conditions of office practice, I used a cheap plate camera and photographed the patients in my office, which receives daylight through a bay window. The average exposure was five seconds, with full opening, at a distance of 5 feet from the subject. These factors being fixed, it was not necessary to focus every exposure, and no time was lost in making adjustments of subject or camera.

For marking on the skin, tincture of iodine was found to serve the purpose admirably. A wooden applicator tipped with cotton or a fine camel hair brush may be used.

This kind of record is much superior to one made on a standard diagram.

1011 Washington Avenue.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

CALCIUM CASEINATE.—*Calcii Caseinas.*—Casein from cow's milk rendered partially soluble by combination with calcium, and containing not less than 1 per cent. of calcium.

Actions and Uses.—The diarrheal diseases of infancy are now generally treated by dietetic measures. A useful food may be made from the curd of milk and diluted buttermilk, the resultant mixture containing a moderate amount of fat, a small amount of sugar and a large amount of protein (casein) and salts, particularly salts of calcium. A mixture of calcium caseinate and milk is used.

Dosage.—For infants and children, calcium caseinate is administered in a mixture of milk and water or milk and gruel, as the physician directs, approximately 10 Gm. ($\frac{1}{3}$ oz.) being used in 500 c.c. (1 pint) of solution, and the mixture boiled. For adults, it may be mixed with milk, skimmed milk or buttermilk in the proportions of 20 Gm. ($\frac{2}{3}$ oz.) to 1,000 c.c. (1 quart) of diluent.

Calcium caseinate is a yellowish white, fluffy powder; free from "sour" or rancid odor, and having a characteristic, slightly saline taste; permanent in the air.

On agitation with warm water, calcium caseinate partially dissolves, forming a pseudo-solution or turbid suspension; insoluble in alcohol, ether or chloroform. The aqueous solution of calcium caseinate has

a neutral or faintly alkaline reaction to phenolphthalein. The solution gives the biuret reaction and is precipitated by acids and by concentrated solutions of many salts.

If incinerated, calcium caseinate emits an odor characteristic of burning protein and leaves a residue consisting chiefly of calcium pyrophosphate.

Weigh accurately from 1 to 2 Gm. of calcium caseinate, heat in a silica dish until the material is charred and most of the carbon is consumed. Digest the residue with dilute hydrochloric acid; filter, dry the filter, ignite it and repeat the extraction with hydrochloric acid. Unite the acid extracts and make up the solution to 100 c.c. To 50 c.c. of the solution, add 1 c.c. of concentrated sulphuric acid and heat to boiling. Add 100 c.c. of alcohol, stir well and allow to stand over night. Collect the precipitate in a weighed Gooch crucible, wash it with alcohol until free from acid, dry it at 120 C. and weigh as anhydrous calcium sulphate, CaSO_4 . The weight should correspond to not less than 1 per cent. of calcium, equivalent to not less than 1.4 per cent. of calcium oxide. To 25 c.c. of the solution of the ash add sufficient ammonium hydroxide to render neutral, add 2 c.c. of concentrated nitric acid and 2 Gm. of ammonium nitrate, heat nearly to boiling and add an excess of ammonium molybdate solution. Allow to stand over night, collect the precipitate on a filter, dissolve it in a small quantity of ammonia water, add an excess of magnesia mixture, allow to stand over night, collect in a weighed Gooch crucible, dry and heat to magnesium pyrophosphate in the usual way and weigh. The weight corresponds to not less than 0.6 per cent. of phosphorus, equivalent to not less than 1.35 per cent. of phosphorus pentoxide (P_2O_5).

Weigh accurately from 1 to 2 Gm. of calcium caseinate and dry it to constant weight at 100 C. The loss does not exceed 10 per cent. (limit of moisture).

Add 10 c.c. of water to about 1 Gm. of calcium caseinate, accurately weighed. Mix thoroughly with a glass rod and allow to stand for 15 minutes. Transfer to a Rohrig tube or a separator with 10 c.c. of ammonia-alcohol (1 volume of stronger ammonia water and 4 volumes of alcohol). Mix thoroughly, add 25 c.c. of ether, shake thoroughly for half a minute, add 25 c.c. of petroleum ether and shake again for half a minute. Allow to stand for about 20 minutes or until the liquids have separated. Draw off the ether solution as completely as possible, filtering through a pledget of cotton into a weighed flask. Repeat the extraction with ether and petroleum ether, using 15 c.c. of each solvent. Evaporate the combined extracts and dry the residue at 100 C. to constant weight. The residue corresponds to not more than 2.5 per cent. of the weight taken (limit of fats).

Determine the nitrogen in a weighed quantity of calcium caseinate by the Kjeldahl method. The nitrogen corresponds to not less than 14 per cent. of the moisture-free material.

Casec.—A brand of calcium caseinate N. N. R.

Manufactured by Mead Johnson and Company, Evansville, Ind. No U. S. patent or trade mark.

BENZYL SUCCINATE.—*Benzylis Succinas.*—Dibenzyl Succinate. — $\text{C}_6\text{H}_5\text{CH}_2.\text{OOC}.\text{CH}_2.\text{CH}_2.\text{COO}.\text{CH}_2.\text{C}_6\text{H}_5 = \text{C}_{18}\text{H}_{18}\text{O}_4$. —The dibenzyl ester of succinic acid. It contains not less than 99 per cent. of benzyl succinate.

Actions and Uses.—Benzyl Succinate lowers the tone of unstriated muscle. In this respect its action is similar to that of benzyl benzoate. It is superior to benzyl benzoate in being less irritating, less nauseating and in containing a greater proportion of benzyl radicle. It has been suggested as a remedy against renal, biliary, uterine and intestinal colic, excessive intestinal peristalsis, dysmenorrhea, hiccup, and other spasms of unstriated muscle. Its clinical use is still in the experimental state.

Dosage.—0.3 to 1 Gm. (5 to 15 grains).

Benzyl succinate is a white, or faintly yellowish-white, crystalline powder; odorless; almost tasteless; permanent in the air.

Benzyl Succinate is almost insoluble in water, soluble in alcohol, ether and chloroform; also soluble in the fixed and volatile oils.

Benzyl Succinate melts at 45 C.

Boil about 1 Gm. of benzyl succinate with 25 c.c. of half-normal alcoholic sodium hydroxide in a reflux apparatus for 1 hour. Cool, filter, wash the precipitate with alcohol, dissolve the precipitate in the minimum quantity of warm water, and acidify with concentrated hydrochloric acid. Recrystallize the residue once from a few c.c. of hot water. The crystals of succinic acid melt at 182 C. To the alcoholic filtrate from the sodium succinate add 25 c.c. of water and boil until the alcohol is removed. Shake the alkaline solution twice each with 10 c.c. of ether and evaporate the solvent. The residue has the odor of benzyl alcohol.

Add about 1 c.c. of diluted sulphuric acid to 10 c.c. of tenth-normal potassium permanganate, add 0.1 Gm. of benzyl succinate and warm the mixture. The odor of benzaldehyde becomes perceptible.

The solution of Benzyl succinate in alcohol (1-25 should be clear and colorless).

Shake 1 Gm. of finely powdered benzyl succinate with 100 c.c. of water and filter. The filtrate should not be more than faintly acid to litmus paper (*succinic acid*) and separate portions should not yield precipitates with barium chloride test solution (*sulphate*), silver nitrate test solution (*chloride*) or be colored violet by ferric chloride test solution (*salicylate*).

Incinerate about 1 Gm. of benzyl succinate, accurately weighed. Not more than 0.1 per cent. of ash remains.

Boil about 1 Gm. of benzyl succinate, accurately weighed, for 1 hour in a reflux apparatus with 20 c.c. of half normal alcoholic potassium hydroxide, cool the solution, add a few drops of phenolphthalein test solution, and titrate with half normal hydrochloric acid until the disappearance of the pink color. The amount of half-normal alcoholic potassium hydroxide consumed corresponds to not less than 99 per cent. of benzyl succinate.

Tablets of Benzyl Succinate-H. W. and D.: Each contains benzyl succinate N. N. R., 5 grains.

Prepared by Hynson, Westcott and Dunning, Baltimore.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 24, 1921

A COMPARISON OF GREEK AND MODERN SCIENTIFIC METHODS

The contrast between the scientific contribution of today with that of the ancient Greeks is a striking one. The Greek writers, as Singer¹ has recently pointed out in a scholarly essay, set down only their conclusions. Their methods of work, and even their verificatory observations, are not published. But consider the contributions to modern scientific literature. "The author begins," says Singer, "by pointing out a gap in knowledge . . . Having stated his problem, he reviews the efforts made by others to illumine this dark place in knowledge. He points out some of their errors or decides to accept their work and base his own upon it. Perhaps he distrusts their experiments or would like to reinterpret their results. Having summarized their labors, he details his own experiments and observations. But he is not able to tell us all of these. . . . Space will not permit him to tell us how he embarked on many different lines of work and abandoned them as unprofitable or too difficult, nor anything of the months or years spent in merely repeating the experience of others. He says no word of how he acquired and improved his experimental skill and technical experience. He tells merely of those developments of his work that have yielded him results. . . . When by gradual steps he had at last reached, or perhaps with the instinct of genius had more quickly discerned, a profitable direction for his investigations, he reached after a time those conclusions which his final line of work has verified and rendered more exact. It is this final process of verification that he mainly describes in his article, and it is the details of this that occupy the bulk, perhaps nineteen twentieths or more, of all that he has to say. Then, having described these verificatory experiments, he summarizes his conclusions in a short paragraph of a few lines."

Those acquainted with the history of biology will admit that more rapid strides have been made within the past century than in the previous thousands of

years of which record is available. Where lies the reason? The Greek mind was brilliant; the Roman mind was logical; the Arabian and Semitic minds were searching and keen. "It is the constant solicitude for the exact mode of investigation," says Singer, "a solicitude characteristic of our own science, that we so often seek in vain among the Greeks." The method of modern scientific research is before all things and above all things a process of verification, a process slow, tedious, often difficult and dull. "Credulity," he continues, "is the Pandora of Science, promising everything, yielding nothing . . . It is true that the great Greek minds were singularly free from that baser credulity that we call superstition—from that they were preserved by their conviction that order reigned in Nature—but few indeed were the Greeks who showed an adequate scientific skepticism. The Greek often accepted data without scrutiny, induction without proof. His very brilliance was a source of weakness, and he was often led to believe that the order of phenomena must perforce correspond to his own admirably clear conceptions."

The striking contrast which Dr. Singer so brilliantly elucidates is a much needed emphasis on factors to which the attention of the medical profession cannot be called too frequently. The gradually changing qualifications for entrance into medical schools and for a diploma in medical science have continued to lay more and more stress on training in the biologic and fundamental sciences. The value of such training admittedly lies not so much in the knowledge itself but in the teaching and elucidation of the scientific method. More than one leader in medical science has urged the cultivation of a strong and vigorous skepticism as the most valuable attribute of a scientist. Never was there a time when such skepticism was needed more than at present. Unfortunately, as the student departs from the laboratories of his alma mater and proceeds farther and farther into a world populated by a credulous public, his habits of mind change and he drifts with the current of loose thought and easy going credulity. "If you trust before you try, you may repent before you die, is as good a maxim in scientific as in human relationships," says Dr. Singer. The lesson is an excellent one, founded on keen observation and a magnificent historical perspective.

But let us not stop with this. Dr. Singer, we fear, too greatly flatters our modern contributors to scientific literature. The article which he has so ably outlined, with its introduction, its analysis of previous efforts, its statement of a problem, its presentation of useful methods employed, its statements of results and finally its succinct conclusions, appears, it is true, fairly frequently in our literature. But far more frequently appears the prolix report of trial and error, of non-essentials and of useless statistics, of repetition of

1. Singer, Charles: Greek Biology and Its Relation to the Rise of Modern Biology, in *Studies in the History and Methods of Science*, Oxford University Press, 1921.

much published "cases in the literature," and finally, no results and no conclusions, because, after all, there are none.

DIPHTHERIA PREVENTIVE MEASURES

Modern civilization, with its present-day methods of living and migration, and particularly the large influx of urban populations resulting in crowded conditions in many localities, is making the prevention of exposure to infection in large cities practically, if not absolutely, impossible. In many cases, for instance, the carriers of danger are not detected and therefore cannot be avoided. They represent an unrecognized and often an unsuspected menace, in spite of vigorous efforts to avert harm to mankind. It seems likely, therefore, that, until some better plan shall have been evolved in this connection, preventive medicine and public health activities must be directed toward the securing of effective immunity to certain diseases throughout the susceptible groups in the population.

It is on such a basis that smallpox has been so well controlled in most civilized communities. Preventive vaccination is instituted in early childhood wherever sane principles of public hygiene are enforced. The dangers which may ensue from a neglect of this artificial mode of inducing immunity are now being manifested in certain districts of Great Britain where the antivaccination cult has gained some hold on the misguided populace. It now seems likely that the securing of widespread acquired immunity is to be an important aim in the prevention of diphtheria, a disease in which the carrier problem has by no means been solved. In this work the Schick test, whereby the existence of immunity or susceptibility to diphtheria can be determined with ease and precision, seems destined to play an important part.

Few, if any, organizations have had larger experience than the department of health in New York City with the application of the Schick reaction. Thousands of tests have been applied to the schoolchildren of the great metropolis. The studies of Zingher,¹ recently reported in detail in *THE JOURNAL*, indicate how life in congested districts may effect immunity. The children of the more well-to-do classes of our population show a much higher proportion of positive Schick reactions than do the children of the poorer classes. Relative segregation of the first, crowding and close contact of the second, probably account for these results. Zingher believes, in fact, that the so-called "natural immunity" depends to a large extent on contact immunity developing after repeated exposures and mild infections with the diphtheria bacillus. Zingher's studies of the reaction of racial types suggest, if they do not actually demonstrate, that the factors of race and hereditary family tendency also seem

to influence considerably the development of natural immunity to diphtheria.

In the recent tests of more than 52,000 schoolchildren in New York, those who gave a positive test were injected with toxin-antitoxin mixture to secure active immunization. In view of the fact that the problems of most effective dosage and combinations as well as the rapidity of the development of immunity and its permanence are still under discussion, the outcome of the large scale experiment in New York will be awaited eagerly by all interested in this important field of preventive medicine. The results of Zingher's Schick retests made after from two to five months indicate that it is better to wait at least six months before testing for the development of an active immunity after toxin-antitoxin injections. Two injections of toxin-antitoxin, even of a larger amount, do not give as good results as three injections of a smaller amount. The mixture should be underneutralized and yet perfectly safe for the human being. Children under 6 months of age should not be injected with toxin-antitoxin. They are generally immune (from 85 to 90 per cent.) and do not respond to these injections, as is shown when the Schick test is reapplied later. All children from 6 months to 5 years of age should be injected with toxin-antitoxin.

For the present, attention must still be directed to securing standard, dependable and easily adopted procedures of testing and immunization. If the medical profession accepts the contention that the Schick test is a reliable indication of the susceptibility to diphtheria and, further, that the currently proposed methods of toxin-antitoxin injections are effective in developing a lasting immunity, a great step in progress will have been made. Are we not prepared already to say that diphtheria preventive efforts have become directed to a promising task with hope of success?

PARATYPHOID CARRIED IN HEAD CHEESE

Contaminated water and milk are now recognized as frequent transmitters of disease, especially typhoid fever. When there is an outbreak of any infectious intestinal disorder, it has become the customary thing for the health officer to seek its source in these two common articles of human consumption. It is more rare to find a food substance responsible, as was discovered to be the case in a recent epidemic in Montana.¹

The first cases to develop in this epidemic, thirty in number, were diagnosed as influenza. In view of the fact that there had been no outbreak of influenza in the county since early in the year, and that there was a total absence of pulmonary symptoms in all of the patients, this diagnosis was doubted. Laboratory assistance was sought, and it was found that cultures

1. Zingher, Abraham: Diphtheria Prevention Work in the Public Schools of New York City, *J. A. M. A.* 77: 825 (Sept. 10) 1921.

1. Foard, F. T., and Walker, T. F.: Paratyphoid Fever: Report of an Outbreak in Cascade, Mont., Caused by Head Cheese, *Pub. Health Rep.* 36: 2095 (Sept. 2) 1921.

of the feces, blood cultures and Widal tests revealed the presence of general infection with *Bacillus paratyphosus* B. In the ordinary routine of investigation, the first possible source studied was the water supply and the sewage disposal. As this failed to reveal any definite results, a questionnaire was submitted to each of the patients, and the information thus obtained was carefully analyzed. It was discovered that eighteen of the patients whose answers were received during the first day of the investigation had eaten head cheese purchased from a single meat market within a period of three days. This was the only article of diet of a common source eaten by all of the patients. It was eventually found that, of the thirty-four patients who had become ill, twenty-eight had eaten of this cheese, and that the remaining six were members of families wherein the cheese had been served and in which other cases existed. On questioning the proprietor of the meat market who prepared and sold the suspected food, it was learned that his wife had been ill for a period of approximately four days, three weeks before the outbreak, and that she had assisted in preparing the suspected food two days before it was placed on sale.

The carefully worked out and scientific investigation of this epidemic is an excellent example of the character of modern research in determining the causes of epidemics. All of the resources of medical science are utilized, and the accumulation of evidence almost inevitably points to the guilty factor. Such research is comparable to the most intricate problems of criminal detection. The public may rest assured that the detection of criminal attacks on the public health is at least as efficiently performed by the sanitary police as is the detection of human criminals by the department of public safety.

Current Comment

HEALTH EDUCATION BY THE FEDERAL GOVERNMENT

As announced last week,¹ the United States Public Health Service is arranging to hold twenty-five health institutes in the larger cities throughout the country. These institutes are to be conducted on a plan similar to the farmers' institutes under the direction of the Department of Agriculture, which have been so instrumental in improving rural conditions. Each institute is to cover a week, including lectures and demonstrations by health officials and social welfare workers on child hygiene, nutrition, communicable diseases, industrial hygiene, mental hygiene, sanitary engineering, public health administration and similar topics. Each subject is to be discussed by a recognized authority. Special evening meetings for the public will also be held at which popular health talks will be given. The inauguration of this plan will, it is hoped, mark the

beginning of a new era of governmental health work. It is being more and more recognized that better instruction and wider knowledge of health subjects are fundamental to better conditions. The solution of our health problems can never be secured by indiscriminate appropriations of federal funds or by the multiplication of federal office holders. As Mr. H. G. Wells points out in his "Outline of History," public understanding and harmonious action, whether national or international, can come only through increased knowledge. A large portion of our health problems are essentially personal in character. The appropriation of money and the multiplication of administrative machinery can never solve them. Health standards will be elevated only as the public acquires more knowledge. The U. S. Public Health Service is to be congratulated on inaugurating this plan, which is deserving of all possible success.

THE INCREASE IN SUICIDE

From time to time, THE JOURNAL has commented on the factors underlying attempts at suicide, and has emphasized that this is a problem which involves in its analysis the application of all the biologic sciences and a thorough study of anthropology and psychology, as well as economics. The cause is fundamentally temperamental or psychologic, but minor factors may play a significant part in the final determination. From 1915 until the present year there was a continuous downward trend in the suicide death rate. However, there has now been a marked increase in the number of suicides, and the figures just compiled by the Metropolitan Life Insurance Company reveal an increase of 26 per cent. in the rate for 1921 over that for 1920 among its policy holders. In connection with these figures, a graph is presented for the last ten years. For the years 1911 to 1915, preceding the intense industrial activity incident to the war and below the average in economic prosperity, the suicide death rate remained stationary. In the second period, beginning with 1915, years of great economic expansion and prosperity, the suicide rate markedly declined. Now with changing times, beginning with the end of 1920, the suicide rate mounts month by month so that the rate for the whole year will be much higher than for the preceding one. The suicide rate appears to reflect not only the thought of the time but also the economic situation.

NEW OPIUM LAWS IN GREAT BRITAIN

In compliance with the agreement at the Hague International Opium Convention in 1912, Great Britain in 1920 adopted a law for the regulation of traffic in narcotic drugs. This bill would doubtless have been adopted long before, had it not been for the war. The regulations under the act went into effect, September 1.¹ "As originally drafted by the Home Office," says the *British Medical Journal* editorially, "they were open to much legitimate criticism; but after emendations by a departmental committee, in accordance with the recommendations of the British Medical Association, these are now in a form better calculated to achieve

1. Public Health Service Institutes, J. A. M. A. 77: 950 (Sept. 17) 1921.

1. For summary of these regulations, see p. 1043, this issue.

the end desired without impeding the legitimate use of the drugs in question." In addition to the international agreement under the Hague Convention, the Versailles treaty, creating a league of nations, contained a paragraph pledging all of the powers that were signatories to the treaty to enact effective laws for the regulation of dangerous drugs within twelve months from the time that these treaties went into effect. The advisory committee appointed by the Council of the League of Nations will present a report at the assembly of the league in Geneva this month, summarizing the action already taken by the various nations. The advisory committee, on the initiative of Dr. Wellington Koo, Chinese minister to Great Britain, proposes to undertake investigations to ascertain approximately what amount of opium, morphin and cocain is required for legitimate medical purposes with a view to inaugurating international methods for restricting the manufacture of these drugs to the amount necessary for medical and scientific requirements. It has been generally recognized by those interested in the regulation of narcotic drugs that this problem could never be satisfactorily solved except through general international agreement and cooperation. Restriction of the growth and manufacture of these drugs to the amount necessary for legitimate needs, and international cooperation for the prevention of smuggling across boundary lines, are the most essential features in any plan for the control of this traffic. The problem is world wide, and the cooperation of all civilized nations is essential for its solution.

GERMAN CHEMICAL PROPAGANDA

As was recently pointed out in these columns, the World War made it both necessary and possible for the United States to develop its chemical industry. This industry, while in its infancy, has resulted in giving to the American people an ample supply of useful drugs, reasonably low in price, while certain pharmaceutical products on which German concerns formerly had a monopoly are today sold at prices below the prewar level. This development has been possible because of the practical absence of foreign competition of any considerable extent. But Germany is getting on her feet again and will unquestionably make every effort to regain the American markets so largely controlled by her before the great war. In this connection the following news item, taken from the *Münchener medizinische Wochenschrift*, Aug. 26, 1921, is of interest:

"The firm of E. Merck (Darmstadt) has had a unique film prepared which gives a survey of its various forms of activity. It is to be used in advertising in foreign countries the German chemical and pharmaceutical industry. Excellent pictures are produced not only of the buildings of the extensive plant but also of scenes in the various factories and machine shops. Beginning with the raw material and leading up to the finished product ready for shipment, the manufacture of the most important drugs is shown; also the methods of producing therapeutic serums, with a glimpse at the enclosure in which the animals needed are kept. The onlooker gets also an insight into the work of the mercantile departments. Before the film should start on its world journey, it was shown in Darmstadt, August 14, to a circle of invited guests. The very interesting production, which consists of five parts, required an hour and a half for its exhibition, without oral demonstration."

Here is food for thought.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

GEORGIA

Offer Funds to Medical School.—A report states that the General Education Board and Carnegie Corporation have jointly promised \$100,000 to the Medical College of the University of Georgia, Augusta, to be paid at the rate of \$20,000 a year for the next five years, on condition that a like amount each year is raised by the college authorities from other sources. A campaign to obtain the additional funds has been started by the medical school.

ILLINOIS

Personal.—The governor has appointed as state alienist, Dr. Charles F. Reid, superintendent of the State Hospital at Dunning.

Chicago

Commission Appointed to Advise on Diphtheria Control.—Owing to the increasing of diphtheria and the comparatively high death rate from this disease, Health Commissioner John D. Robertson has appointed a commission of pediatricians and civic workers to investigate the possibilities for securing adequate control.

MARYLAND

Personal.—Dr. Allen Fiske Voshell, former assistant in orthopedics at the Johns Hopkins Medical School, has resigned, and with the opening of the University of Virginia Medical School at Charlottesville, September 19, will take charge of the department of orthopedic surgery in that institution.—Dr. Brice W. Goldsborough, Cambridge, who underwent a serious operation at Parry Sound, while on a vacation in Ontario, is recuperating at his brother's home at Guilford, Baltimore, and is expected to return soon to Cambridge to resume his practice.—Dr. Paul W. Clough, former associate full-time professor of medicine, Johns Hopkins University Medical Department, has been appointed professor of medicine at the medical school, University of Maryland. Dr. Clough's acceptance of the position was confirmed through Dr. Maurice C. Pincoffs, professor of medicine, University of Maryland, who is responsible for the organization of the faculty of that department.

MASSACHUSETTS

Boston

Personal.—The mayor has appointed Dr. Moses Victor Safford as acting deputy health commissioner of Boston, to succeed the late Dr. David D. Brough. Dr. Safford has had more than twenty years' experience with the immigration service.—Dr. William P. Supple has been promoted to the position of resident surgeon at the City Hospital. Dr. George H. Hooper succeeds Dr. Supple as resident anesthesiologist.

MICHIGAN

State Commissioner to Supervise All Health Work.—The state administration board, having decided that there was considerable conflict between the various commissions administering to state institutions and the state department of health, August 31, gave the state health department complete authority over the health divisions of all state institutions. Dr. Richard M. Olin, health commissioner, will act in a supervisory capacity over the institutional physicians, and, according to the orders of the board, all appointments, salary raises and schedules of duty will be approved by Dr. Olin.

Study of Active Immunization Against Diphtheria.—The bureau of laboratories, Michigan Department of Health, under the direction of Dr. Richard M. Olin; commissioner of health and the superintendent of the Michigan Home and Training School, recently completed a study of the active immunization against diphtheria of the Michigan Home and

Training School. In October, 1920, 1,500 were Schick tested. The 229 showing positive reactions were given three inoculations of toxin-antitoxin mixture, and the Schick test was reapplied in July, 1921. Approximately 91 per cent. have been made immune. Prior to the time that active immunization was started in the Michigan Home and Training School, diphtheria had been ever present, and the institution expended several thousand dollars a year for temporary immunization of contacts, maintaining quarantine, and salaries incident to the closing of the school. There has been only one case of diphtheria in the institution since the first of November, and that was in a person who developed diphtheria the third day after arrival at the institution. There is still a high percentage of carriers of virulent bacilli among the children. The chronological grouping of the patients covers all ages from infancy to 76. The study seems to indicate a constitutional tissue immunity of some individuals against diphtheria.

NEW YORK

Personal.—Dr. Frederick W. McSorley, Raybrook, has been appointed director of the division of tuberculosis of the New York State Health Department, to succeed Dr. Malcolm F. Lent, who resigned recently. Dr. Elsie Blanchard, formerly supervisor of child welfare centers of the division of child hygiene, is acting as director of that division.

Funds Received for Medical School.—It is reported that the Albany Medical College has succeeded in raising \$120,000—\$40,000 a year for the three years—which was necessary to secure a gift of \$60,000—\$20,000 a year for three years—from the Rockefeller Foundation. This assures the college an additional income of \$60,000 per year for the next three years.

Poliomyelitis Meeting.—Because of the interest of the community due to local cases of poliomyelitis, the state department of health, in cooperation with the local health department, invited Dr. Simon Flexner, director of the Rockefeller Institute, to speak on that subject at the Utica State Hospital, September 8. The meeting was held under the auspices of the Oneida County Medical Society, and was open to all members of the medical profession of Oneida County and adjoining counties, and also to health officers.

New Health Films Available.—Three new motion picture films have been purchased by the state department of health and are now available to public health workers. These films are on "Mouth Hygiene," "Saving the Eyes of Youth" and "Swat the Fly." Each of these films is in one reel and takes about twenty minutes. They are nontechnical in character. They are lent without charge within the state of New York. The health department is now cooperating in the production of a film on water supply in the farm home. Two reels are devoted to showing the rural resident how he may install a complete plumbing system in his house. The difficult parts of the plumber's trade are shown in detail.

New York City

Fined for Violation of Harrison Narcotic Law.—Dr. Harry W. Fisher was recently fined \$500 in the United States district court when he pleaded guilty to furnishing drug addicts with prescriptions and drugs in violation of the Harrison Narcotic Law.

New Jewish Hospital.—The United Israel-Zion Hospital, located on Tenth Avenue, between Forty-Eighth and Forty-Ninth streets, in the Bay Ridge Section of Brooklyn, is seeking \$100,000 for the completion of its new building, which is being erected at a cost of \$1,000,000. Plans have also been laid for the raising of funds for the erection of a nurses' home in connection with the hospital.

East Side Tenement District Healthiest.—Statistics recently made public by the health department show, contrary to the general belief, that the healthiest section of the city is not that in which wealth dwells. The lowest mortality in the city has been placed in Sanitary District 26, which consists of ten square blocks, running from Avenue A to Avenue B, and extending from Third to Ninth streets. In this section the mortality rate, compared with that of the city as a whole, has been cut in two. The population of the district is 33,373, and many of the residents are foreign born. There are more than 3,000 persons in each block, yet the mortality rate is 6.44 for each thousand. The infant mortality rate for the district is 52 per thousand, while the infant mortality rate for the city as a whole is 85 per thousand.

Polyclinic Demands Return of Hospital.—The trustees of the Polyclinic Hospital have drawn up a petition demanding that the U. S. Public Health Service return this institution to the city of New York inasmuch as it should be serving a section of the city with a population of nearly 1,000,000 people. Five hundred graduate and student nurses of the hospital are circulating the petition which characterizes the occupancy of this hospital by the government as "unjust, un-American and akin to confiscation." Commenting on the situation, Surg.-Gen. Hugh S. Cumming is reported to have said that the U. S. Public Health Service has been seeking an institution in this city more suited to the care of ex-service men for over a year. Such an institution he expects to have in the near future, and then the government will vacate both the Polyclinic and the Fox Hill hospitals.

OHIO

Sentenced for Illegal Operation.—It is reported that Dr. Graham W. Scott, who is awaiting an appellate court ruling on a sentence of from one to seven years given him for performing another illegal operation, has pleaded guilty to performing an illegal operation on Elizabeth Schulte, which contributed to her death, has been sentenced to seven years in the Ohio state penitentiary.

Establishment of a Bureau of Tuberculosis.—The governor has announced the establishment of a bureau of tuberculosis in the state health department, in operation, September 13. The last legislature set aside \$10,000 for antituberculosis activities, and the first work of the new bureau will be the establishment, in cooperation with local health authorities, of tuberculosis clinics for the rural districts. Dr. Jackson A. Frank, former chief of the bureau of venereal diseases, has been made head of the new tuberculosis bureau. Dr. Pearl M. Wright, Columbus, will succeed him in the bureau of venereal diseases.

Cincinnati Health Exposition.—The Cincinnati Academy of Medicine is taking an active part in preparations for the health exposition, to be held October 15-22. Dr. Carey P. McCord, professor of preventive medicine, University of Cincinnati College of Medicine, is chairman of the educational exhibits committee. Drs. Otto P. Geier and Jacob V. Greenebaum are on the program committee. Col. Peter E. Traub, commandant of the military post at Fort Thomas, Ky., is chairman of the executive committee in charge of the exposition, and Dr. Julian E. Benjamin is vice chairman of the executive committee. As mentioned in THE JOURNAL, August 27, Dr. Charles Bolduan, chief of the section of public health education, has arranged to send to Cincinnati the exhibit shown by the U. S. Public Health Service at the Chicago pageant, and it is expected that his assistant, Crittenden Marriott, the Kentucky novelist, will be in personal charge. The exhibition being arranged by the Academy of Medicine, under the direction of Dr. Kennon Dunham, chairman, will be fitted up as a completely equipped doctor's office and consultation room. A free consultation service where visitors to the exhibition may obtain advice on health matters will be conducted by well known specialists. The Cincinnati branch of the National Association of Industrial Physicians will have a fully equipped first aid station. Modern methods in factory construction showing that the health of factory workers may be safeguarded will be demonstrated. Children coming to the exposition will be examined free of charge at the model clinic, which will be conducted by the Babies' Milk Fund Association. The board of park commissioners will show a model playground and model community center. A series of contests, all having a definite relation to health and health measures, will figure prominently on the program, and practically all the health activities of the public schools will be shown by the board of health. While a limited quantity of commercial space is being sold to defray the expense of the exposition, it is specified that these exhibits must have a definite relation to health.

PENNSYLVANIA

Personal.—Dr. Mary Riggs Noble succeeds Dr. Ellen C. Potter as chief of the division of child health in the state department of health.—Dr. Ellen C. Potter has been appointed head of the bureau of child welfare in the department of welfare. Dr. Potter is a graduate of the University of Pennsylvania and formerly a member of the staff of the Women's Medical College.

Typhoid Epidemic in Reading.—A typhoid fever epidemic has broken out in a factory in West Reading. Twenty-nine cases have been discovered among the employees of the Penn Pants Company. Sixty-five other employees are reported ill, but their cases have not been diagnosed as yet. Two health engineers and three nurses of the state board of health arrived to investigate.

Philadelphia

State Physicians to Meet.—The seventy-first annual meeting of the Medical Society of the State of Pennsylvania will be held in Philadelphia from October 3 to 6, inclusive. The treatment of disabled soldiers will be one of the subjects that will be discussed.

WISCONSIN

State Medical Meeting.—The seventy-fifth annual meeting of the State Medical Society of Wisconsin, was held in Milwaukee, September 7-9, under the presidency of Dr. Mathias A. McGarty, La Crosse. Among the principal speakers were: Drs. Frederick J. Gaenslen, Milwaukee; Robert E. Farr, Minneapolis; John W. Powers, Milwaukee; Edwin Henes, Milwaukee; August F. Jonas, Omaha, and William H. Washburn, Milwaukee. The following officers were elected for the ensuing year: Dr. Sidney S. Hall, Ripon, president; Dr. Louis M. Warfield, Milwaukee, first vice president; Dr. Spencer Beebe, Sparta, second vice president; Dr. Rolla Cairns, River Falls, third vice president.

WYOMING

State Medical Meeting.—At the nineteenth annual meeting of the Wyoming State Medical Society, held at Casper, September 6-8, the following officers were elected for the coming year: president, Dr. Elmer Kell, Rawlins; vice president, Dr. Isaac N. Frost, Casper; second vice president, Dr. Galen E. Fox, Cheyenne; third vice president, Dr. Edward M. Turner, Laramie; secretary, Dr. Carl Whedon, Sheridan, and treasurer, Dr. Chester Harris, Basin. Sheridan was selected for the 1922 convention.

CANADA

Personal.—Dr. T. M. Sieniewicz of Halifax, N. S., formerly connected with the tuberculosis sanatorium at Kentville, N. S., has been appointed examiner of tuberculosis on the Massachusetts-Halifax Health Commission. He succeeds Dr. Delmar A. Craig, the first appointee to this position.

Public Health News.—Dr. Charles J. C. Hastings, M. O. H., Toronto, has recently issued a statement to the effect that the rumor that an epidemic of typhoid fever is prevalent in the city is without foundation, also stating that there are thirteen fewer cases now than there were in the same period in 1920. One of the embellishments attached to the rumor is that all hospital nurses are being inoculated especially against this disease. Mr. E. A. Gray, superintendent of the General Hospital, denies this, stating that hospital nurses are inoculated regularly every year.

Hospital News.—In addressing a meeting held under the auspices of the Academy of Medicine at Toronto recently, Lieut.-Col. Henry Smith, C. I. E., I. M. S., India, told of his experiences running a hospital there on \$4,000 a year, in which 600 surgical beds were filled for four months in the year. He explained the difficulties of running such an institution on this small allowance, which did not allow the purchase of modern equipment, etc.—At a meeting of the Ontario Neuropsychiatric Association held recently at the Ontario Hospital at Mimico, the question of the guarding of insane persons appearing in the courts was discussed by prominent Canadian physicians. Hon. W. E. Raney, the attorney-general, who was present, was greatly impressed by a paper read by Dr. Edward Ryan of Kingston, the president of the association, who suggested that a commission of professional psychiatrists be appointed by the crown to advise on the questions on insanity at trials. The attorney-general pledged his support to this, and stated that if a commission was appointed he would supply a legal adviser and undertake the expenses of the commission. Dr. Ryan contended that the time had arrived when a radical change should be made in medicolegal procedure and advocated legislation in this connection. Dr. Nelson H. Beemer, Mimico, medical superintendent of the hospital, read a paper in which he suggested that inmates should be given remuneration for work done. He declared that such a system would be educative and would increase production and diminish destruction.

GENERAL

Scientific American to Become Monthly Periodical.—The *Scientific American*, which has been issued since 1845 as a weekly periodical devoted to advances in industry, invention and science, will hereafter, it is reported, be published as a monthly periodical in combination with the *American Scientific Monthly*.

Licensure Certificate Lost or Stolen.—Information has been received that the reciprocity certificate issued by the California Board of Medical Examiners to Dr. Claude C. Chick has disappeared. State licensing boards are warned to be on the lookout for this certificate, since an impostor may present it in an effort to secure authority to practice medicine.

The Truth About Vivisection.—We quote the following from *Science*, September 16:

In the *Woman's Home Companion* for July, 1921, is the best paper on this subject I have ever seen, called "The Truth About Vivisection," by Mr. Ernest Harold Baynes. Mr. Baynes first read the literature on both sides and then visited practically all the laboratories from the Mayos' at Rochester, Minn., to the eastern seaboard. He visited especially the Rockefeller Institute several times, also a number of European laboratories. He became thoroughly convinced (1) that the experiments were not cruel; (2) that the statements in the literature of the antivivisectionists were often garbled and utterly misleading, and (3) that the results to animals themselves as well as to human beings were of enormous benefit. Then he wrote the article, and Miss Lane, the editor of the *Companion*, bravely printed it.

The especial significance of his writing such an article lies in his nation-wide reputation as a lover of animals and their protector. He is the father of all the bird-refuges in the United States. His lectures on animals have been heard everywhere, and when he approves of experiments on animals every one knows that he has good reasons for so doing.

The fury of the antivivisectionists at once rose to fever heat. The New York Antivivisection Society through its president, Mrs. Belais, sent out an extraordinary appeal calling him "one Ernest Harold Baynes"—almost as if one should write "one Herbert Hoover!" In a paragraph all in capitals Mrs. Belais called on all lovers of animals to help crush Miss Lane financially not only by cancelling their own subscriptions but by urging all their friends to do the same—a nationwide boycott. This extraordinary method will ensure a reaction in favor of Miss Lane because of its vindictive unfairness. It is not argument, it is persecution and is also illegal.

It behooves the friends of scientific research and real lovers of animals to support Miss Lane by expressing to her by mail their admiration of her courage, and by adding their own names to the list of her subscribers. Her address is 381 Fourth Ave., New York, and the cost of a year's subscription is only two dollars. She has received hundreds of letters from the A-V's—many abusive. The November and succeeding issues will contain some interesting reading.

Mr. Baynes has also been attacked by mail and by cancellation of engagements. It is up to us to sustain so doughty a champion. He has given the antivivisectionists the hardest blow I have known in forty years.

W. W. KEEN.

Annual Meeting of the American Hospital Association.—The American Hospital Association held its annual meeting at the West Baden (Ind.) Springs Hotel, September 12-16. The outstanding features of the meeting included an illustrated talk by Dr. Haven Emerson in which he set forth some interesting data regarding the Bureau of War Risk Insurance, as well as referring to some faulty methods of procedure; a round table conducted by Dr. Malcolm T. MacEachern, superintendent of the Vancouver General Hospital, Vancouver, B. C., on "What Constitutes Good Service to the Patient"; a paper by Dr. Charles S. Woods, superintendent of the Methodist Episcopal Hospital, Indianapolis, on "The Development of Good Professional Work in the Hospital"; an address by Dr. Franklin Martin on the work with hospitals by the American College of Surgeons, and a paper by Dr. Franklin R. Nuzum, medical director of the Santa Barbara (Calif.) College Hospital, on "A Method for Increasing Medical Efficiency Within the Hospital." There were also section programs on dispensaries, hospital construction, administration of hospitals, social service, nursing and dietetics. A special committee on blanks used in hospitals presented a valuable report showing forms of 160 suggestive and helpful blanks. The president for the next year is Dr. George O'Hanlon, superintendent, Bellevue Hospital, New York; the president elect, Mr. Asa S. Bacon, superintendent, Presbyterian Hospital, Chicago; first vice president, Dr. A. C. Bachmeyer, superintendent, Cincinnati General Hospital; second vice president, Dr. Harold W. Hersey, superintendent, New Haven Hospital, and third vice president, Miss Harriet Hartry, superintendent, St. Barnabas Hospital, Minneapolis. Trustees elected were Mr. Richard P. Borden of the Union Hospital, Fall River, Mass., and Mr. Daniel D. Test, superintendent, Pennsylvania Hospital, Philadelphia. Approximately a thousand delegates were in attendance.

American Conference on Hospital Service.—A meeting of the American Conference on Hospital Service was held, Thursday, Sept. 15, 1921, at West Baden, Ind., in connection with the annual meeting of the American Hospital Association. At a joint session of the conference with the hospital

association, held in the forenoon, an address was given by Dr. Franklin Martin relative to the standardization of hospitals by the American College of Surgeons. This was followed by a paper by Franklin R. Nuzum, medical director of the Santa Barbara (Calif.) Cottage Hospital, on "A Method for Increasing Medical Efficiency Within the Hospital." At the business session of the conference in the afternoon, reports were given as follows: The Committee on Nursing, during 1920, carried on a special field study made possible by the gift of \$1,000 from the National Organization of Public Health Nursing. Information was obtained showing that the number of training schools during various decades increased from fourteen organized between 1872 and 1880 to 446 organized between 1901 and 1910. Since then there has been a decrease, as only 286 were organized between 1911 and 1920. Information collected shows, also, that the number of nurses graduating each year increased from 9,573 in 1916 to 11,972 in 1920. Incomplete returns for 1921 indicate a sharp decline in the numbers. A report of the Hospital Library and Service Bureau indicates not only a greatly increased quantity of books and pamphlets containing information relating to hospitals but also a rapidly increasing demand for such information. More than 700 books and 1,200 pamphlets on subjects relating to various hospital problems have been collected as well as architects' drawings and plans of 300 hospitals, nurses' homes, and allied institutions. The information collected at the library has to do with, first, the hospital field, which deals with determining the needs of hospitals or dispensaries; community surveys; finances; types of hospitals, etc. The second group of data deals with the construction of hospitals, while a third group deals with problems relating to the operation of hospitals. Other groups included in the hospital field are such as general hospital associations, professional associations, public health and governmental activities. Other groups deal with vital statistics, insurance reports, training of hospital personnel and hospital literature. A series of folders has been prepared containing information collected on a variety of subjects. These folders are lent to any one needing the information for three weeks' time. For example, one folder deals with community hospitals and includes articles clipped from hospital journals relating to the organization and planning of such hospitals, as well as descriptive articles, a copy of a constitution and by-laws for a community hospital, record forms, and other printed material required in the operation of such institutions. The folder also contains a reference list of additional material published in magazine or book form, which cannot be sent out of the library. This library has been organized under the auspices of fifteen national organizations which are working for the betterment of hospitals and hospital service, and is also financed by these organizations in addition to a generous gift received from the Rockefeller Foundation. The Hospital Library and Service Bureau is located at 22 East Ontario Street, Chicago.

LATIN AMERICA

Cuban Medical Congress.—The Fifth National Medical Congress of Cuba is to convene, Dec. 11-17, 1921, and elaborate preparations are being made for it. Prof. J. A. Presno, founder and director of the *Revista de Medicina y Cirugía*, is to preside, and Dr. Díaz Albertini and Dr. F. M. Fernández, Calle del Prado 105, are vice president and secretary. These national medical congresses are held every five years, and this one had been appointed for December, 1920, but was postponed to this year.

Personal.—Dr. R. Ascanio, director of the Hospital Civil of Havana, has returned to Cuba after spending several weeks in Chicago where he visited hospitals and clinics.—Drs. M. J. Luque of Tunja and N. Torres of Sogamoso, Colombia, have left for Paris where they intend to take post-graduate courses.—Dr. J. M. Penichet of Havana and Dr. P. Sotorrios of Cienfuegos have returned to their home towns after spending some time in New York City.—Drs. F. J. Marulanda and J. Cajiao of Bogota, Colombia, have arrived in New York.

New Public Health Officers in Cuba.—Dr. J. Guiteras, secretary of public health, has just appointed Drs. E. Martínez and C. E. Finlay directors of public health and public assistance, respectively. Dr. Finlay is the son of the discoverer of the mosquito transmission theory of yellow fever. Dr. Martínez will occupy the position held by Dr. Guiteras previous to his appointment as secretary of public health. Drs. A. Galarreta and Sáez will remain as chief clerks of the above mentioned bureaus. Dr. A. Cueto, who for a long time has been secretary of the commission on

infectious diseases, has been appointed chief clerk of the public health department.

Anniversary Number of the "Revista de Medicina y Cirugía" of Havana.—The twenty-fifth anniversary of the founding of this Havana exchange is a volume of 248 pages, profusely illustrated. The history of the *Revista* is the history of medicine and progress in Cuba, and an oversight of medical institutions in the island, and of the various medical congresses held in Cuba, the four national congresses since the first in 1888, the Third Pan-American Medical in 1901, the International Sanitary Conference in 1902, and the 1905 meeting of the American Public Health Association. The quarantine, public health service, charitable institutions, etc., of Cuba are described with illustrations, the whole forming a memorial worthy of this high grade journal, and valuable as a work of reference.

FOREIGN

Personal.—Prof. S. Kato, Keio University Medical College, Japan, will start on an inspection tour, September 30. After visiting colleges and laboratories in Germany, Austria, Denmark, Belgium, France and England, he expects to return to Japan by way of America.

International Otology Congress.—At the Ninth International Otologic Congress held at Boston in 1912 it was decided to hold the next meeting in Germany. The committee of organization, however, has selected Paris as the place for the next congress, and July, 1922, as the date.

Plague Prevention in Manchuria.—According to official bulletins, the plague epidemic, which has prevailed in South Manchuria for nine months, with nearly 8,000 deaths, has almost disappeared. The effective campaign was due to the scientific measures employed, in the carrying out of which the Japanese and Chinese authorities cooperated.

Memorial to Dr. Sato.—In memory of the late Dr. Susumu Sato, who devoted his life to the progress of medical science in Japan, a laboratory will be constructed at a cost of 300,000 yen, for the Yuntendo Hospital, the largest private hospital in Japan. Courses in every branch of medical science will be offered under the presidency of Dr. Susumu Nukada, and clinics will also be held in the institution.

Foundation of Society for Study of Heredity.—The *Münchener medizinische Wochenschrift* mentions the recent foundation at Berlin of the German Society for Vererbungs-wissenschaft with quite a large membership. The dues for foreign members are 5 Swiss francs. The secretary is Dr. H. Nachtsheim, Invalidenstrasse 42, Berlin, N. The next meeting is to be held at Vienna in the later half of September, 1922. Dr. von Wettstein of Vienna was elected president.

Three Medical Days at Brussels.—A series of nine lectures has been organized for Nov. 13-15, 1921, at Brussels. Each lecturer is to present the principal recent innovations in his specialty. The list includes Bordet, Henrijean, Sand and Stiénon in addition to J. L. Faure of Paris and others. Medical and surgical moving pictures and demonstrations of patients are also planned. Dr. Beckers, 30 rue Archimède, Brussels, is the secretary of the organization planning the course.

International Congress for Comparative Pathology.—It has been finally decided to hold this congress, at Rome, Sept. 20, 1922, with Professor Perroncito presiding. The *Riforma Medica* of Aug. 13, 1921, gives the list of twenty subjects appointed for discussion, and communications on other subjects are invited by Professor Perroncito. His address is R. Università di Torino. Regeneration of nerves and the present status of cancer, diseases with a filtrable virus and deficiency diseases in man and animals are the leading themes.

The German Urologic Congress.—The Fifth Congress of the German Urologic Society is to meet at Vienna, September 29, and over 100 communications have been registered. Posner of Berlin is to speak on the recent progress in examination of the urine and its import; Albrecht on hydronephrosis which is to be the main topic, the various aspects of it presented by different speakers. Other topics are extensive resection of bladder and ureter, and the roentgen rays in urology.

International Congress for Protection of Maternity.—The *Progrès médical* brings the program of the international conference to be held at Paris, July 6 to 8, 1922, under the auspices of the Ligue contre la Mortalité Infantile, to discuss the various aspects of puericulture. It is to be open to all interested in welfare work for prospective and nursing mothers and for infants and children in general. Dr.

Armand-Delille, director of the Oeuvre Grancher, rue de Tilsitt 20, Paris, is a leading member of the committee in charge.

Financial Straits of Hospitals in Germany.—The *Deutsche medizinische Wochenschrift* quotes the general secretary of the Roman Catholic hospital system in Germany to the effect that the introduction of the eight hour working day has made it necessary to employ so many more attendants that they actually outnumber the sick in some hospitals while the expenses have increased in proportion. The expense per capita is now in some institutions over twenty times what it was before the war. The Hamburg Harbor Hospital has 187 attendants for 184 sick inmates. There are at present 2,039 hospitals and sanatoriums in Germany in charge of religious orders, and only 877 of them are public institutions.

International Antialcohol Congress.—The Sixteenth International Antialcohol Congress was announced for Aug. 22-27, 1921, to convene at Lausanne, Switzerland, the president of the Swiss Republic to preside. The effect of prohibition in the United States, in Finland, and in Iceland was the main topic for discussion, but reports were also to be presented among others on the nationalization of the sale of liquor in Carlisle; the effect on consumption of alcohol of the internal revenue taxes; effect of the restrictions adopted in Great Britain and in Germany during the war; organization of scientific research on the effects of alcohol; nonalcoholic utilization of fruits, and training officials and others for the campaign against alcohol.

Hygiene Expositions.—The *hygienemesse* recently held at Leipzig arranged for talks every hour by some physician, with personally conducted tours through the exhibits provided by the Dresden Hygiene Museum, the National Board for Testing Artificial Limbs, and the Kaiser Wilhelms Academy at Berlin, and others. Kölliker described the recent progress in prostheses. Rosenthal's address was on what those disabled by war or industrial accident should know of the prospects of improvement offered by surgery. Thiele spoke on care of the health in different occupations, in addition to speakers on prevention of tuberculosis, etc. Amsterdam is repeating this year the successful hygiene exposition held at the Hague in 1920. It is to continue through October and have eighteen sections, including one on sports, on adulteration of foods, and on the combating of quackery.

Deaths in Other Countries

H. E. Cuff, O.B.E., principal medical officer to the Metropolitan Asylums Board, London, was drowned while attempting to save his two daughters, when bathing in a rough sea at Burnham Overy, Norfolk, aged 57.—**Col. W. H. Bull**, honorary surgeon to King George V of England.—**J. N. Nicoll**, former surgeon to the Royal Hospital for Sick Children, Glasgow, N. B., one of the first in the country to describe and operate on congenital hypertrophic stenosis of the pylorus, and author of many valuable articles in the *British Medical Journal*, aged 57.—**S. Sato**, graduate of the University of Berlin and the first Japanese scholar to receive a degree from a foreign university; chief of Tokyo Military Hospital; professor of surgery, Imperial University of Tokyo, and surgeon-general in the army, died, July 26, aged 77.—**Dr. Alvaro Ramos**, a leading surgeon of Rio de Janeiro and member of the editorial staff of the *Brazil Medico*. Resolutions of condolence were adopted in the chamber of deputies and in the municipal council.—**Dr. C. Krafft** of Lausanne, Switzerland, president of the Société Médicale de la Suisse Romande.—**Dr. M. Armona**, surgeon and chief of the public health service at Zulueta, Cuba.—**Dr. J. Martínez Osuna**, commander of the medical corps of the Cuban army.—**Dr. A. Avendaño y Silva** of Pinar del Rio, Cuba.—**Dr. Pantaleon Venero**, bacteriologist of the national public health service of Cuba.

CORRECTION

Increase in Typhoid Fever.—Dr. C. Hampson Jones, commissioner of health, Baltimore, writes that the item in THE JOURNAL, September 10, page 869, relative to typhoid fever in Maryland is in error. The statement should have been that in August there were forty cases of typhoid fever as compared with forty-four in the same month in 1920.

Treatment of Syphilis.—On page 968 of THE JOURNAL, September 17, in the abstract of an article by W. H. Guy, entitled "Valuable Method in the Treatment of Syphilis," published in the *American Journal of Syphilis*, the dose of arsphenamin is given as "1 gm. for each 30 pounds of body weight on each of three successive days." This is an error. It should read 0.1 gm.

Government Services

Assignment of Army Officers

Changes in the assignment of officers of the Medical Corps of the Army have been announced as follows: Major Thaddeus S. Troy, from Camp Jackson, S. C., to Walter Reed General Hospital; Capt. Alexander Berkowitz, from Camp Meade to Walter Reed General Hospital; Col. Powell C. Fauntleroy, from Fort McPherson, Ga., to Walter Reed General Hospital; Major Robert C. McDonald, from Fort McPherson, Ga., to duty in the Office of the Surgeon General of the Army; Major Arthur N. Tasker, from Walter Reed General Hospital to the Army Medical School; Lieut.-Col. David S. Fairchild, from Washington, D. C., to Panama Canal Zone on the staff of the Panama Canal Division; Col. Deane C. Howard, from special duty at the War Department to Manila for duty as Philippine departmental surgeon.

Surgeon-General Cumming Visits Public Health Service Hospital

A tour of inspection of government hospitals in the West is being made by Surgeon-General Cumming of the U. S. Public Health Service. During the next two weeks he will visit the Speedway Hospital at Chicago and the U. S. Public Health hospitals at Waukesha, Wis.; Walla Walla, Wash.; Boise, Ida.; Portland, Ore.; Seattle; San Francisco; San Diego, Calif.; Whipple Barracks, Ariz., and Fort Stanton and Fort Bayard, N. M.

Conference on Child Hygiene

A conference of state directors of child hygiene, now cooperating with the U. S. Public Health Service, is to be held, September 27, at the headquarters of the Surgeon-General in Washington, D. C. The purpose of the meeting is to devise plans for more effective cooperation between the states and the Public Health Service in the field of child hygiene. Among other matters to be presented at this meeting will be a report by Surg. Talliaferro Clark, who has returned from the International Child Health Conference, recently held in London, England.

Report on Medical Reserve Officers Training Camp

A report on the Reserve Officers Training Corps camp for the Medical Department, held at Carlisle Barracks, Pa., from June 6 to July 18, made public by Surgeon-General Ireland, indicates that the camp was successful. The attendance consisted of representations from each of the active units of the Medical Reserve Corps, namely, Rush, Johns Hopkins, Jefferson, University of Minnesota and Washington University medical colleges. The camp was carried on in connection with the summer course of the Medical Field Service School, in attendance on which were more than eighty student medical officers, recently graduated from the Army Medical School at Washington, D. C. The features of the instruction were intensive courses in military art and history, sanitary tactics, hygiene, administration, and training of enlisted men. In addition to the routine teaching by a specially selected staff of teachers, a number of prominent educators from the Regular and Reserve Corps as extramural lecturers on selected subjects assisted in the instruction. Among such officers were Brig.-Gen. R. E. Noble, Surgeon-General's Library; Col. Alexander Stark, Surgeon, Third Corps Area; Lieut.-Col. Fielding H. Garrison, Army Medical Museum; Prof. W. B. Cannon, Harvard Medical College; Lieut.-Col. M. A. W. Shockley, General Service Schools; Major A. G. Love, Statistician, Surgeon-General's Office, and Major A. P. Clark, Surgeon-General's Office. Col. P. M. Ashburn, commandant of the Medical Field Service School, was camp commander, and Lieut.-Col. J. L. Bevans, senior instructor of the Medical Field Service School, was senior instructor of the camp.

Reassignment of Medical Officers

A general redistribution of the organizations of the Army and reduction in its strength according to the law recently passed by Congress will result in a reassignment of officers of the Medical Corps. The Secretary of War has announced also reductions in all branches of the service. The number of enlisted personnel to be included in the Medical Corps of the Army has been fixed at 8,591.

Foreign Letters

LONDON

(From Our Regular Correspondent)
Aug. 22, 1921.

Outbreak of Smallpox

As pointed out in previous letters to THE JOURNAL, the relaxation of the vaccination act, which allows exemption simply on the declaration of the parent that he has a conscientious objection to vaccination, has led to an enormous increase in the number of unvaccinated persons and greatly magnified the risk of an epidemic of smallpox. Twenty years ago, 71 per cent. of the infants born in England and Wales were vaccinated; in 1919 the ratio had fallen to a little over 40 per cent. Health authorities are consequently apprehensive of an outbreak of smallpox. So far, none of any magnitude has occurred. Scattered cases are constantly occurring. In the present year they amount to about 100 throughout England. At last an outbreak of smallpox has occurred, but not of any magnitude. At Nottingham, fifty-six persons have been attacked since the beginning of June. Of these, forty-four were unvaccinated. So far there have been no deaths. A point of some importance is that a large number of men who joined the army and also of women workers in connection with it have been revaccinated. The local health authorities are taking every precaution, including extensive vaccination.

Tuberculosis Notification

The provision of treatment for tuberculosis as a benefit under national health insurance acts has been brought to an end. Insured persons continue to receive domiciliary treatment from their insurance physicians, but provision of residential treatment for insured, as well as for noninsured, persons now rests with the local authorities. During the year, capital grants of \$1,378,000 were paid, and loans of \$1,891,600 were sanctioned in aid of the provision of sanatoriums and other institutions for the treatment of tuberculosis; approval was given to institutions containing 1,571 additional beds, 1,009 provided by local authorities and 562 by voluntary bodies; over \$4,500,000 was paid as grants in aid of the cost of maintaining institutions; the number of cases of tuberculosis notified for the first time was 73,372, made up of 57,844 pulmonary cases and 15,488 nonpulmonary cases. The deaths from this disease, which in 1918 reached the figure 58,073, were (in the calendar year 1920) 42,545, pulmonary tuberculosis accounting for 33,469 of these deaths. Writing of the treatment of tuberculous ex-service men, the report says: "The special arrangements administered by insurance committees for the preferential provision of residential treatment for tuberculous ex-service men have continued, pending the institution of revised arrangements, when the work will pass to the county and county borough councils. The number of such men receiving residential treatment was 3,559, as against 3,780 in the previous year. The total number of cases of tuberculous ex-service men was 49,990, of whom 35,513 had received treatment in residential institutions. Certain changes affecting tuberculous ex-service men in other respects took place during the year. In June, 1920, special conditions of pension were introduced for men suffering from tuberculosis attributable to or aggravated by service who completed a course of extended treatment combined with training in a training colony, following on a period of treatment in a sanatorium, or who completed a course of treatment in a sanatorium, and were not then recommended for a course of extended treatment combined with training in a training colony. Pension is awarded in such cases at the rate of 100 per cent. for the first six months from the date of

the completion of the period of training or of sanatorium treatment, and at a rate of not less than 50 per cent. during the following two years. The awards carry the condition that the pensioner, when called on, presents himself to the tuberculosis officer for examination, in order that the ministry of pensions may be informed as to his condition from time to time, and as to the necessity for any further treatment." The compulsory notification of cases of pulmonary tuberculosis has been in operation in England and Wales since Jan. 1, 1912, and of all cases of tuberculosis since Feb. 1, 1913. The following table shows the total number of primary notifications of tuberculosis during each of the last six years:

Year	Primary Notifications	
	Pulmonary	Nonpulmonary
1915.....	68,309	22,283
1916.....	68,109	22,799
1917.....	68,801	20,884
1918.....	71,631	18,942
1919.....	61,154	16,357
1920.....	57,844	15,488

A considerable decrease in the number of deaths from tuberculosis in England and Wales occurred in the year 1919, as compared with previous years, and a further decrease in the year 1920. The following table shows the number of deaths recorded from tuberculosis during each of the last six years:

Year	Deaths from Tuberculosis	
	Pulmonary	Nonpulmonary
1915.....	41,676	12,619
1916.....	41,545	12,313
1917.....	43,113	12,821
1918.....	46,077	11,996
1919.....	36,662	9,650
1920.....	33,469	9,076

PARIS

(From Our Regular Correspondent)
Aug. 26, 1921.

Twenty-Fifth Congress of Alienists and Neurologists

The twenty-fifth congress of alienists and neurologists of France and French-speaking nations was held in Luxemburg, August 1-6, under the presidency of Dr. Buffet of Ettelbruck and Dr. Meige of Paris. Among the questions that were discussed, two are of general interest: (1) traumatic epilepsy, and (2) simulation of mental diseases.

TRAUMATIC EPILEPSY

According to the paper by Dr. Béhague of Paris, epilepsy may be caused by penetrating skull wounds (projectiles, shell fragments, fracture of base of skull), or by nonpenetrating traumatisms (concussion, cutaneous scalp wounds, fracture of outer table of skull). Penetrating traumatisms entail encephalic or meningeal cicatrices—localized, gross and macroscopically visible. Nonperforating traumatisms, wherever they may be, exert an effect and occasion disseminated encephalic cicatrices—small, microscopically visible. Following a penetrating or nonpenetrating traumatism of the skull, the development of epilepsy is induced by several causes. The physiologic and pathologic condition of the wounded is of great importance. Alcoholism and syphilis favor the development of epilepsy, whereas age, intensity of subjective affections and duration of loss of consciousness after the accident exert no particular influence. Inactive types of epilepsy existing before a traumatism are always much aggravated by the injury. Certain areas of the brain are more epileptogenic after injury than others. Thus injuries to parietal, frontal, occipital and temporal lobes are responsible, respectively, for half, a quarter, an eighth and a sixteenth of the cases of traumatic epilepsy. Lesions of the cerebellum do not seem to be epileptogenic, while injuries of the temporal, occipital and orbital lobes are almost sure to be. The danger of epilepsy is in direct relation to the extent of the cerebral injury and of the resulting cicatrix.

Large, slow, septic and deeply penetrating projectiles are, in this respect, more dangerous than others. Intracerebral projectiles induce epilepsy more often when they are deeply seated and especially when surgical extraction has been attempted, thus creating more severe encephalic injury. These remarks concern only "lasting epilepsy" (*épilepsie durable*), comparable in its evolution to genuine epilepsy and due to a chronic cicatricial lesion. It differs from acute epilepsy, which develops sometimes early and sometimes late and is referable to an intracranial lesion in evolution. A little more than 12 per cent. of skull wounds give rise to this type of lasting epilepsy; it takes on a jacksonian form only in a third of the cases, while two thirds of the attacks are generalized. As regards treatment, if it is acute epilepsy, the cause, when superficial and localized, can be removed surgically; if it is diffuse epilepsy, treatment is symptomatic. If epilepsy is due to a nonpenetrating lesion of the skull, treatment by medication with boric acid compound or with ureids; for example, phenobarbital (luminal), is indicated. The prognosis of surgical treatment is very unfavorable. If epilepsy is caused by a penetrating lesion of the skull, ureid or bromid medication should be used; surgical treatment, as it cannot remove meningeal or encephalic cicatrices, is always contraindicated. However, if there has been no opening in the dura mater and roentgenography discloses a foreign body, a fracture of the inner table of the skull or a plastic defect, surgical removal of these causes may effect a cure of the disease.

SIMULATION OF MENTAL DISEASES

Dr. Parot of Algiers stated in his paper that simulation of mental diseases can be divided into three groups: 1. True simulation. This group must be recognized notwithstanding the contrary opinion of those who believe that only abnormal subjects feign mental troubles. The subject, fully conscious of his actions, deliberately begins to feign mental disturbances, a rôle which is certainly hard to keep up but is not beyond the resources of certain keen and enterprising individuals who may have a great interest in protecting themselves and accomplishing their purpose. Studied action and premeditation are in evidence in certain cases, and flagrant guilt or confessions often confirm the fact that they are acting in bad faith. 2. Exaggeration or so-called sur-simulation. This is the most frequent type of case. The subjects exaggerate more or less consciously real mental anomalies and pathologic tendencies which give a certain direction to their simulations. It is simply that the outward expression of these tendencies exaggerates the real condition. There are numerous varieties of *sursimulateurs*. There are the feeble-minded who simulate idiocy; the depressed who affect complete apathy and make feigned attempts at suicide, and the excitable and impulsive who tire every one around them by their complaints and indulge in attacks of motor excitement whenever it suits their convenience. 3. Perseveration or after-simulation consists in simulating a condition or trouble after it has disappeared; for example, stupor, surdimutism, cataleptoid attitudes and rhythmic gestures. The task of the expert becomes often very arduous when confronted by such cases of simulation. He will naturally make a careful inquiry into the personal and family history of the subject; will look for significant hereditary and personal antecedents; will analyze the origin of the troubles and ferret out the motives back of simulation. The direct examination will sometimes be carried on for some time before the simulator is made to contradict himself. Contradictory statements, incongruities and exaggerations will lead up to a correct diagnosis. A study of the gaze will be of great help, as the eye often rebels at the hypocrisy of simulation. Does simulation presuppose lessened accountability of the subject? Those who hold that

simulation constitutes in itself an extenuating circumstance seem to be going too far. Professor Dupré of Paris believes that simulators are far from being abnormal, and that real simulation is very frequent. For example, it would also be well to study simulation of health by psychopaths who want to conceal their true mental condition in order to effect their release from the hospital. Dr. Anglade of Bordeaux believes that we should be somewhat skeptical as regards the affirmations of subjects who pretend to have simulated insanity. He reported having observed several soldiers who boasted of having been sent back home for feigned mental troubles, whereas they really were insane. Dr. Chavigny of Strasbourg emphasized that for the study of simulation a trained and permanent personnel is needed, and regretted that in military formations nurses are constantly changed and often replaced by incompetents. It is desirable that these services be permanently organized. Finally, Dr. Courbon of Stephansfeld reported an interesting communication on the simulation of diseases, with the view to securing pensions for disability, by subjects in Alsace, where nearly all simulators come from the same region and present a peculiar physical appearance—different complexion and different costumes, habits and distinctive qualities of mind from people of other regions. These characteristics may be due to the fact that these people are descendants of some immigrated Celtic tribe or of the mercenaries of Deux-Ponts. Might not their disability claims be an ancestral survival of the mentality of the mercenaries?

Use of Motion Pictures in Demonstrating Neurologic Cases

Dr. Long of Geneva, in exhibiting certain films pertaining to neurologic cases (athetosis, Thomsen's disease, Charcot-Marie atrophy, syphilis, achondroplasia, etc.) from the Comandon collection at Paris, demonstrated the services that cinematography may render in medical instruction, either for comparison of various types of clinical diseases or for the exemplification of rare cases.

BELGIUM

(From Our Regular Correspondent)

LIÈGE, Aug. 17, 1921.

Nontuberculous Chronic Vesiculitis

The Belgian Society of Urology, at its regular annual meeting, to which many prominent French urologists were invited, listened to a report by Dr. François, who has made a special study of chronic vesiculitis. After a review of the anatomic, clinical and symptomatic aspects of vesiculitis, the writer stated that the diagnosis of nontuberculous, chronic vesiculitis is made chiefly by rectal palpation and the evacuation of the vesicles and analysis of the fluid contents. Cystoscopy is somewhat useful in vesical reactions secondary to vesiculitis. Urethroscopy, examination of the permeability of the ejaculatory ducts and vesiculography may also furnish interesting information. Conservative treatment consists of massage, rectal irrigations and catheterization of the ejaculatory ducts. If operative treatment is indicated, vasotomy, vesiculotomy and vesiculectomy may be considered. From the standpoint of results, we may study the value of these various operations in cases of vesiculitis with predominant urinary, genitomental and articular symptoms. Urinary group: It appears that vesiculotomy or partial vesiculectomy may frequently cure irritability of the bladder and recurrent cystitis. Genital group: Results that have been announced do not seem to justify operative intervention. Nervous and neurasthenic group: Fuller and Cunningham state that nervous troubles accompanying chronic vesiculitis rarely justify vesiculectomy. Rheumatic group: Intervention seems to give good results in cases of postgonorrheal, chronic vesiculitis.

In other forms of chronic rheumatism excellent and prompt results can be obtained, but recurrence seems to be frequent.

Following this communication, Dr. Marin of Paris decried the abuse of operative intervention as often carried out in certain countries for the cure of cases of vesiculitis. During his consultation hours in the outpatient department of the Hôpital Lariboisière, about 90,000 patients present themselves each year, 60,000 of whom are suffering from urethritis. For the last three years he has reviewed all cases of vesiculitis and has been obliged to perform surgical operations in only six cases.

A Universities Bureau for the Advancement of Learning

The purpose of the Fondation universitaire, which was established by law, July 6, 1920, is the advancement of science and learning: (1) by granting to young Belgians who are gifted but are without financial resources loans that will allow them to take up university studies; (2) by granting financial aid to scientists and to young men who are planning to teach higher subjects or to undertake scientific researches, and (3) by encouraging scientific relations between Belgium and other countries. With the last mentioned aim in view, the foundation will aid physicians engaged in medical instruction in foreign countries. It will keep in close touch with the Association pour le développement des relations médicales de la faculté de médecine de Paris, the Office national des universités françaises, the Universities Bureau of the British Empire, the American University Union and the Junta para ampliación de estudios de Madrid.

A New Procedure for the Plastic Reconstruction of the Urethra

At a recent session of the Royal Academy of Medicine of Belgium, Professor Willems referred to the various means (cutaneous grafts, segments of veins, strips of vaginal mucosa, the appendix, segments of animal arteries) that have been successively used to reconstruct a damaged urethral canal. He has of late resorted to a simple graft of fascia lata taken from the subject. Willems has waited more than two years before publishing this observation. At the present time, the stream of urine in the subject so operated on is normal in size and force, the perineum is supple and the urethra has not undergone any secondary narrowing. The result may thus be considered as final. As in every urethral graft, the diversion of the urine by a suprapubic incision seems to have been an excellent aid. It also appears extremely important to give to the transplantation a well vascularized bed by removing all the cicatricial tissue from the operative area.

BERLIN

(From Our Regular Correspondent)

Aug. 24, 1921.

The Decadence of Civilized Nations in the Light of Biologic Research

In Germany, and possibly also in America and in other countries as well, a book by Spengler, professor of the history of civilization, at the University of Munich, entitled: "Der Untergang des Abendlandes" (The Decadence of the Occident), has created a great sensation. By means of many profound learned deductions, and more particularly by the use of mathematical findings, he has endeavored to demonstrate that the civilized and cultured peoples of the occident have entered on a period of decadence similar to that which overtook the Assyrians, the Egyptians, the Greeks and the Romans, and fixes the year 2000 as the approximate date that will witness their downfall. He argues that, just as every human being is doomed to die, so also every people has but a limited existence. In refutation of Spengler's views, a large number of works by the historians and philosophers of

Germany have been published. A discussion of their contents by an expert biologist presented, therefore, special interest, for which reason a recent lecture by Professor Baur, the director of the Institute for Hereditary Science at the agricultural college in Berlin, entitled: "The Decadence of Civilized Nations in the Light of Biologic Research," has attracted considerable attention. In order to answer, with any degree of authority, the question whether the downfall of all cultured peoples is an unconditional law of nature, we must first solve the question as to what are the inherent causes of decadence per se. Without doubt, in former epochs of history, when civilized peoples reached a certain stage of culture, changes in racial characteristics, which denoted deterioration, became manifest. There are two main causes for degeneration. In the first place, there are the so-called mutations. Certain inferior qualities reappear. In the case of wild animals, such degenerative qualities are soon eradicated; for in the struggle for existence these types are unable to maintain themselves. With such animals as have been domesticated the case is quite different. Here we find a very great differentiation of types (to mention only the numerous breeds of dogs and cattle), whereas among the corresponding wild animals comparatively few and more uniform types are found. It is doubtless true that mutation occurs just as frequently among wild animals as among domesticated, but as the result of natural selection inferiors are soon eliminated. Also among less civilized peoples—hunting and pastoral tribes—individuals that present a lessened resistance are soon eradicated. No doubt during the stone age such a sifting and purging process was going on by means of natural selection. In the present stage of civilization such a process of selection has ceased to operate. The most wretched creatures, many of whom, in fact, are scarcely capable of living, are preserved by means of medical science and skill until they reach the age at which they can propagate. Professor Baur pointed out that, owing to the aid of physicians, the ability of women to bear and to nurse children had decreased; namely, because natural selection is no longer operative. Among primitive peoples, women who bore children with great difficulty usually perished and thus could not transmit their defective qualities to future generations. Among civilized peoples the freaks and malformations are preserved and perpetuate themselves. Often a certain hereditary malformation is covered over and becomes "latent."

Aside from mutation, another factor that exerts a degenerative effect on racial qualities is that no civilized people is of uniform origin, being a composite of various racial types. Even negro blood is not lacking among some of the civilized peoples of Europe. Mixed races retain the qualities of the primitive peoples of which they are composed, which leads to a wide differentiation. Professor Baur explained in a few words the mendelian law of inheritance. He showed how by crossing two breeds of rabbits with three different characteristics eight different combinations were possible. The more distinguishing characteristics there are in the progenitors, the more polymorphan will be the progeny resulting from such unions. If there are only ten distinguishing qualities in the progenitors, 1,024 different combinations are possible in two breeds otherwise alike. Among the different types of men there are hundreds of differences, which explains the fact that there are not two human beings entirely alike. It may, however, easily happen that certain embodiments are perpetuated less readily than the average, for which reason they may gradually disappear. An artificial depression of the number of births will hasten this process. It may be noted, however, not only that the upper classes restrict the number of births but that the tendency is observable also among the ranks of the skilled workmen

and even among unskilled laborers. Even in ancient Rome attempts were made to combat artificial infertility, but premiums for large families did not accomplish any more than they do today in France. The ancient Roman people had, at the time of the emperors, almost disappeared. It was only by the influx of slaves and the rise of the freedman class that Rome was able to maintain itself. With no slight degree of scorn the true Roman designated these as *proletarii* (those who produce proles or offspring). Through the immigration of inferior types from eastern Europe and northern Africa, Roman culture and civilization were preserved outwardly for a few generations longer. Similar phenomena may be noted today in the United States, to which there has been a strong immigration for many years. If those classes that are distinguished by mental and other qualities limit the number of children born to them, the number of persons who by virtue of their superior mentality are able to become leaders will naturally gradually be diminished. But these are not the only two causes that bring about a degeneration of civilized peoples. Another contributing cause is the depopulation of the rural districts. Persons who are above the average in ability naturally gravitate toward the big cities with their frightful housing conditions. Alcoholism also plays a part. But are these harmful selective processes unavoidable? Is it not possible to devise a type of civilization that would eliminate these harmful manifestations? Professor Baur holds the view that we can attain to a higher inner culture in which these harmful secondary manifestations are suppressed. To be sure, it is much easier to make definite demands and proposals than it is to carry them out. But a great deal can be accomplished if we adopt such measures as will prevent standards of living from being lowered by natural increases in the family. Tax revision has hitherto taken too little account of the number of children in the family. Race suicide among the leading classes seems sometimes to be actually abetted by tax legislation. In fixing the salaries of public officials, the number of children in the family should be given much more consideration than is the case. We are inclined to forget that children themselves constitute the most important tax contribution. The speaker in conclusion emphasized that cultural decay is not the unavoidable fate of every people. The worse the economic condition of a people is, the more sharply the process of natural selection begins again to operate. Just as prosperity and luxury often hasten decadence or may even bring it about, want and deprivation may make a people stronger.

Establishment of a Professorial Chair for Sexual Hygiene and Sex Education

Sanitätsrat S. Jessner, the Königsberger dermatologist, has been appointed the first incumbent of the new professorial chair recently created at the University of Königsberg.

BUDAPEST

(From Our Regular Correspondent)

Aug. 15, 1921.

Plight of Medical Students

The peace of Trianon has created a curious situation for medical students. Nominally, before the war terminated, Hungary had two universities with medical faculties, one at Budapest, the capital, and the other at Kolozsvár, the capital of Transylvania. While the Budapest University counted from 4,000 to 4,500 medical students, the Kolozsvár University was modestly numbering between 400 and 500 students. This was due to the fact that the Budapest medical faculty had the best possible equipment, its members, in the last years before the outbreak of the war, having been sent to Vienna, Berlin, Paris, London and New York, to study medical institutions and to copy what was best. The government did not

spare money, and the clinics of the Budapest University inspire the greatest enthusiasm among those who see them. Foreign visitors to the 1909 International Medical Congress held in Budapest retain a vivid memory of the clinics of Budapest; in fact, numerous English and American physicians later came to Budapest for graduate medical study. Even Transylvanian students preferred to go to Budapest, not excepting students from Kolozsvár itself. These Transylvanian students, having begun their study in Budapest and having attended four or four and a half years, finished their study in Budapest when Transylvania was torn away from Hungary. When the Roumanian government took over the Kolozsvár University, they employed Roumanian professors, and the language of the university was changed to Roumanian, which was unknown to most of the Transylvanian students. As Transylvania is a large territory, the number of medical students approaching the termination of their studies amounted to about 1,000. These students, not speaking the Roumanian language, preferred to finish their studies in Budapest and pass their final examination in the language which they know. However, when they received their diploma in Budapest and came home to Transylvania, they received the surprising news that they were not allowed to practice in their own land with Hungarian diplomas unless they passed the final examination in Roumanian. This would entail new work for the students and it would mean at least a year's loss to them. This regulation hurt them the more, in that the whole administration of Transylvania has been left unchanged as it was under Hungarian rule. The newly licensed physicians with Budapest diplomas have sent a memorandum to the Bucharest minister of public instruction, who will probably make an exception in the case of those physicians who attended the Budapest University for the greater part of their study, and will withdraw the regulation relating to the passing of the final examination.

A Cry from Russia for Help

The radio station at Bucharest received a message from Moscow that, in addition to the famine, a terrible epidemic is raging in Russia. In seacoast provinces, vast numbers of cholera cases have been reported. In Odessa and the Ukraine and in villages along the Dniester River the situation is similar. To this message was added an appeal by Russian physicians for help, couched in these words:

"Listen to our despairing appeal, which is not dictated by any political feeling. In that territory which fate has designed for us as the site of our activity, hundreds of thousands of men are in danger, and we are virtually powerless. The Asiatic cholera takes more and more shocking measures from day to day, and its consequences, if you do not help us, will be felt over the whole of Europe. The epidemic is caused by the undernutrition of the people, aggravated by the insufferable heat. We medical men are unable to control the latter, but it is our duty to do everything we can to localize and eventually to overcome the epidemic. To this end we need serums, instruments and antiseptics, of which we are very short. In the name of humanity and the solidarity of the medical sciences we appeal to you to throw all your efforts into the balance with your respective governments, that they shall send help without the least delay. As you know, in present conditions, the delay of twenty-four hours means the death of hundreds of miserable women and children who are not responsible for those political walls which stand between us so rigorously. Therefore, help us immediately, because it is late even now. May heaven preserve Europe from the danger that would result should Russia's millions be mastered by the epidemic."

The Bucharest government immediately sent a great quantity of the necessary appliances and drugs, and took precautions against the spread of cholera across the border.

Marriages

DANIEL PARKER CARD, Major, M. C., U. S. Army, West Point, N. Y., to Miss Rosa Whiting Parran of Baltimore, at Monterey, Pa., September 6.

RAYMOND EVAN DAVIS, Ladd, Ill., to Miss Cora Imelda Bradley of East Ottawa, Ill., in Chicago, September 3.

CHARLES A. McDONALD, Sebeka, Minn., to Miss Martha E. Erickson, St. Paul, at Norway, Mich., July 28.

CHESTER WARREN HOWARD, Crawfordsville, Ind., to Miss LaVerna Schultz of Newton, Ind., August 27.

FREDERICK W. SULLIVAN, JR., Ann Arbor, Mich., to Miss Lois Clark of Exeter, N. H., September 6.

CHARLES E. FENWICK, Niagara Falls, Ont., to Miss Jacqueline McCullough, in Toronto, recently.

FRANK ALEXANDER EVANS to Miss Elizabeth Fischer, both of Baltimore, September 7.

Deaths

William Martin Perkins ☉ New Orleans; Tulane University of Louisiana, New Orleans, 1897; former secretary of the state board of health; specialized in surgery; member of the Southern Surgical and Gynecological Association; senior assistant demonstrator of operative surgery, Tulane University; clinical assistant to chair of general clinical surgery, New Orleans Polyclinic; visiting surgeon, Charity Hospital; lecturer on surgery, New Orleans Training School for Nurses; president of the Alumni Association of Tulane University; died, August 21, from cerebral hemorrhage, aged 48.

John J. Marker ☉ Eloise, Mich.; University of Michigan, Ann Arbor, 1890; superintendent of the Wayne County Insane Asylum; formerly assistant and superintendent at the Eloise Hospital for thirty-two years; assistant clinical professor of neurology and psychiatry at the Detroit College of Medicine and Surgery; member of the Detroit Society of Neurology and Psychiatry; was killed when his automobile was struck by a train, September 2, aged 58.

Ora Lee Norris, Deshler, Ohio; Detroit College of Medicine and Surgery, Detroit, 1895; member of the Ohio State Medical Association; president of the Henry County Medical Society; surgeon of the U. S. Pensions Bureau of Examining Surgeons; served as major, M. C., U. S. Army, during the World War; was killed, September 11, when his automobile was struck by an electric car.

Stephen Cooper Ayres ☉ Cincinnati; Medical College of Ohio, Cincinnati, 1864; former lecturer at the Cincinnati Hospital; emeritus professor of ophthalmology, Medical College of Ohio (University of Cincinnati), 1898-1910; member of the American Ophthalmological Society and the American Otological Society; Civil War veteran; died, September 1, aged 79.

Robert Beatty Carey, Glenlock, Pa.; University of Michigan, Ann Arbor, 1871; member of the Medical Society of the State of Pennsylvania; practitioner for over fifty years; formerly on the staff of the Chester County Hospital, West Chester; school director in East Whiteland for thirty years; died, September 2, after a long illness, aged 78.

Richard Addison Powell, Johore Bahru, India; University College of Medicine, Richmond, Va., 1907; served with the British R. A. M. C., during the World War, with the rank of major; formerly on the staff of the Highsmith Hospital, Fayetteville, N. C.; until his death on the staff of the English Hospital, Johore Bahru, died, August 14, aged 37.

Charles E. Crawford, Rockford, Ill.; Hospital Medical College of Evansville (Ind.), 1884; assistant state health inspector of Illinois; previously city commissioner for eight years; member of the Illinois State Medical Society; died, August 27, at the Rockford Hospital, from nephritis, aged 66.

Walter Woodruff Parmalee ☉ Auburn, Me.; University of Vermont, Burlington, 1909; also a druggist; specialized in ophthalmology, otology, laryngology and rhinology; died, September 3, following an operation for carcinoma, at the Central Maine General Hospital, Lewiston, aged 47.

Edwin Jackson Graner, New Orleans; Tulane University of Louisiana, New Orleans; Tulane University of Louisiana, New Orleans, 1887; former president of the Louisiana State Medical Society; former president of the New Orleans Parish Medical Society; died, September 4, aged 58.

Charles Heister Smith, Linglestown, Pa.; University of Pennsylvania, Philadelphia, 1872; practitioner for nearly half a century; served two terms as county commissioner; former school director of Lower Paxton Township; died, August 30, from cerebral hemorrhage, aged 70.

James Robert Swanick, Saratoga Springs, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1898; captain, M. C., U. S. Army, during the late war; died, September 6, at St. Mary's Hospital, Hoboken, N. J., from ptomaine poisoning, aged 45.

Samuel T. Lipsitz ☉ St. Louis; Washington University, Medical School, St. Louis, 1906; on the staff of the St. Louis City Hospital and the Jewish Hospital; assistant professor of medicine, St. Louis University; died, September 2, from septic pneumonia, aged 35.

Demarcus Green Simmons, Hopkinsville, Ky.; Shelby Medical College, Nashville, Tenn., 1861; member of the Kentucky State Medical Association; practiced in Adairville for more than half a century; died, September 1, at the home of his daughter, aged 85.

Sherman L. Lull ☉ Waubay, S. D.; St. Joseph (Mo.) Medical College, 1892; since 1918, surgeon general, U. S. Public Health Service; director of the division of venereal diseases, South Dakota State Board of Health; died, August 29, aged 56.

George W. Smith, Henrietta, Mo.; Barnes Medical College, St. Louis, 1893; member of the Missouri State Medical Association; local surgeon for the Santa Fe and Wabash railroads; died suddenly, July 10, from cerebral hemorrhage, aged 55.

Richard Collier Coatsworth, Toronto, Can.; Trinity Medical College, Toronto, 1886; L.R.C.P., Edinburgh (Scotland); L.R.C.S., Edinburgh; L.F.P.S., Glasgow, 1887; died recently at the Toronto General Hospital, from appendicitis, aged 65.

Cornelius M. Morford, Toledo, Iowa; State University of Iowa, College of Homeopathic Medicine, Iowa City, 1890; mayor of Toledo, from 1907-1915; former president of the Hahnemann Medical Association; died, September 6, aged 56.

Benton Lovelady, Guthrie, Okla.; Chattanooga (Tenn.) Medical College, 1905; specialized in surgery; served in the M. C., U. S. Army, during the late war; died, August 31, following a long illness subsequent to influenza, aged 44.

Edward R. Jackson, Los Angeles; Cincinnati College of Medicine and Surgery, 1874; Hahnemann Medical College and Hospital of Philadelphia, 1881; before his retirement, a physician in Dubuque, Iowa; died, August 30, aged 73.

Marquis Richardson Chamblin, Decoto, Calif.; Jefferson Medical College, Philadelphia, 1850; University of the Pacific, San Francisco, 1860; formerly served as county physician; died, August 30, at the Masonic Home, aged 92.

William Lyon Harcourt, Brandon, Man.; Rush Medical College, Chicago, 1871; former resident physician of the Brandon General Hospital; died recently at Los Angeles, where he had resided for five years.

B. H. McCallon, Dallas, Ore.; Vanderbilt University, Nashville, Tenn., 1880; member of the state legislature in 1905; health officer of Polk County; died suddenly, September 6, from heart disease, aged 72.

John W. Mitchell, Superior, Neb.; Detroit Medical College, 1870; Jefferson Medical College, Philadelphia, 1877; practitioner for nearly half a century; Civil War veteran; died, August 27, aged 74.

Nicholas Norman Blanchard, Brantford, Ont.; University of Toronto, Toronto, 1900; L.R.C.S., Edinburgh, N.B.; L.R.F.P.S., Glasgow, 1901; died recently at the Wellesley Hospital, Toronto.

Charles Wells Ray ☉ Waxahachie, Texas; Vanderbilt University, Nashville, Tenn., 1916; specialist in internal medicine; was shot and killed by a man in his office, September 6, aged 36.

Ramsey Rankin, Stratford, Ont.; McGill University, Montreal, 1914; served overseas during the World War; died recently in Montreal from injuries received in an accident, aged 32.

Timothy M. O'Rourke, Philadelphia; Medico-Chirurgical College of Philadelphia, 1911; for five years resident physi-

☉ Indicates "Fellow" of the American Medical Association.

cian, Medico-Chirurgical Hospital; died, September 6, aged 37.

Alexander Marcy, Sr., Riverton, N. J.; University of Pennsylvania, Philadelphia, 1861; member of the Medical Society of New Jersey; died, August 18, at Cape May, aged 84.

William Scott Dakin, Galt, Ont.; University of Toronto, 1902; former mayor of Galt; died recently from epidemic encephalitis, in the Toronto General Hospital, aged 43.

George Vickers Price, Brooklyn; New York University Medical College, New York, 1885; died, August 30, from arteriosclerosis and cerebral hemorrhage, aged 66.

Richard B. Coutant ☉ Tarrytown, N. Y.; Medical Department of Columbia College, New York, 1872; president of Tarrytown Hospital; died, September 13, aged 76.

Andrew Belton Gresham, Birmingham, Ala.; Birmingham Medical College, 1901; member of the Medical Association of the State of Alabama; died, July 30, aged 44.

Henry C. Buck, Friar Point, Miss. (license, Mississippi, 1882); member of the Mississippi State Medical Association; was found dead in his office, July 30, aged 72.

Herbert Griffin, Hamilton, Ont.; Victoria University, Toronto, 1878; president of the College of Physicians and Surgeons of Ontario; died recently, aged 66.

Gardo J. Questa, Brooklyn; Long Island College Hospital, Brooklyn, 1920; intern, Kings County Hospital, Brooklyn; died, August 2, at Arcade, N. Y., aged 25.

Joseph H. Peck, Cleveland; Western Reserve University, Cleveland, 1883; also a druggist; died, September 2, at his winter home, Fort Orange, Fla., aged 80.

Enoch J. Taylor, Franklin, Ga.; Southern College of Medicine and Surgery, Atlanta, 1913; was shot and died in a La Grange hospital, August 26, aged 43.

Andrew J. Ball, Quanah, Texas; Memphis Hospital Medical College, 1903; member of the State Medical Association of Texas; died, August 19, aged 68.

Lewis C. Page, Honey Grove, Tex.; Rush Medical College, Chicago, 1870; died suddenly, August 20, at the Union Station, Fort Worth, aged 76.

Frederick G. Sawtelle, Watertown, Mass.; Long Island College Hospital, Brooklyn, 1880; veteran of the Civil War; died, September 3, aged 77.

Robert P. Catron, Union City, Tenn.; Eclectic Medical College, Cincinnati, 1870; Civil War veteran; died, August 29, from senility, aged 81.

Charles M. Henderson, Sardis, Miss.; University of Louisville, 1883; also a druggist; died, August 28, from carcinoma of the throat, aged 64.

Albert L. Bondy, Denver; Kansas City Hahnemann Medical College, Kansas City, Mo., 1910; died, September 6, from heart disease, aged 49.

John W. Warren, Snyder, Texas; Kentucky School of Medicine, Louisville, 1891; died in September, following a long illness, aged 64.

William F. Roome, London, Ont.; University of Michigan, Ann Arbor, 1867; former representative for West Middlesex; died, September 1.

W. H. Norris, Albany, Ky.; University of Tennessee College of Medicine, Memphis, 1896; died, August 29, from heart disease, aged 60.

Warren Blanchard Chapin ☉ New York; New York University Medical College, 1888; died, August 28, from heart disease, aged 59.

George L. Calhoun, Seville, Ga.; Georgia College of Eclectic Medicine and Surgery, 1911; died, August 15, from tuberculosis.

Henry S. Taylor, Springfield, Tenn.; Vanderbilt University, Nashville, 1881; Confederate veteran; died, August 17, aged 77.

Washington L. Kistler, Sparks, Nev.; University of Buffalo, N. Y., 1896; died, June 23, from nephritis, aged 56.

Edward Royal Hunlock, Portland, Ore.; Bellevue Hospital Medical College, New York, 1885; died, July 20, aged 66.

Preston A. Geeslin, Kahoka, Mo.; St. Louis College of Physicians and Surgeons, 1906; died recently, aged 54.

Elmore Mossman, Point Pleasant, W. Va. (license, West Virginia, 1883); died, August 1, aged 67.

William Giles, Toronto, Canada; Trinity Medical College, Toronto, 1886; died recently, aged 61.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MAGHEE'S EPILEPSY TREATMENT

During the past year THE JOURNAL has received inquiries regarding an alleged remedy for epilepsy sold on the mail-order plan by Thomas G. Maghee, M.D., of Lander, Wyoming. For instance, a North Carolina physician writes:

"The enclosed card and envelope containing two capsules are self-explanatory. I hope you can inform me concerning this treatment for epilepsy by letter or through THE JOURNAL. (Please omit my name.) What drug is contained in the capsule?"

And this from a physician in Nebraska:

"I am sending, under separate cover, six capsules of some preparation that is used for the treatment of epilepsy by a Dr. Maghee of Lander, Wyoming. Do you know anything about this treatment and will this be a large enough amount for analysis? I have a man here who has been using this for his son."

While this from a layman in Louisiana:

"I herewith attach circular letter on treatment for epilepsy. I would be glad to hear from you if you know anything of this treatment. I have a boy who is about 7 years old and has been suffering from this trouble for about six and one-half years."

Dr. Maghee seems to reach his mail-order clientele through the classified advertising section, of newspapers, the advertisement reading as follows:

EPILEPTICS!

Would you care to learn about the new Rational Treatment for IMMEDIATE RELIEF OF EPILEPSY which positively STOPS all seizures from the first day of its use? Information free. "SPECIALIST," Drawer 592, Lander, Wyo.

According to our records, "Specialist" Thomas G. Maghee was born in 1842 and was graduated in 1873 by the Medical College of Evansville, Ind., which became extinct in 1884.

THOS. G. MAGHEE, M. D.
Recent SUPERINTENDENT
WYOMING STATE SCHOOL FOR DEFECTIVES

*Practice Limited to Treatment
of EPILEPSY and NERVOUS
Diseases*

**LANDER,
WYOMING**

Maghee seems to send his professional card to all who answer his advertisements. Here is a photographic reproduction of the face of the card, showing the persistent attempt to capitalize his one-time connection with the Wyoming State School for Defectives. The reverse side of the card bears the legend: "My Rational Method of Treatment of Epilepsy Affords Immediate, Complete, and Continuous Relief From Seizures and all Other Symptoms."

Dr. Maghee seems to have brought out his epilepsy "treatment" sometime in 1915. At least, western newspapers in March of that year reported that Maghee, who was superintendent of the Wyoming State School for Defectives, and whose dismissal from that position was being considered by the State Board of Charities, had made a plea to the board to be "permitted to remain in control of the patients" for some weeks longer in order to "perfect his discovery." The papers stated further that Maghee "would not reveal to the State Board the nature of his cure." It is worth noting at this point that Dr. Maghee has apparently not revealed "the nature of his cure" to any one else; certainly careful search fails to show that he has ever contributed to medical literature.

Dr. Maghee still continues to capitalize his previous connection with the Wyoming State School for Defectives by

using stationery bearing the imprint "Dr. Thomas G. Maghee, Superintendent, Wyoming State School for Defectives." The word "recent" before "superintendent" is written in by hand. Those who write either to "Specialist, Drawer 592, Lander, Wyoming," or to Thomas G. Maghee, receive a printed letter, on the stationery just described, in which the sufferer is offered a "treatment which from the first day of its use, according to directions, will relieve you completely from any recurrence of seizures or other symptoms of the dread disease." The letter is reproduced in miniature with this article. In addition to the printed letter there is a small eight page leaflet bearing the imprint of "Maghee Chemical Corporation" and entitled "Dr. Maghee's Method of Treatment for the Immediate and Continuous Relief of Epilepsy." There is also a "professional card" of "Thomas G. Maghee, *Recent* SUPERINTENDENT WYOMING STATE SCHOOL FOR DEFECTIVES."

Some of the claims made in this advertising matter are:

"My Rational Method of Treatment of Epilepsy Affords Immediate, Complete, and Continuous Relief From Seizures and all Other Symptoms."

"Seizures will CEASE to occur at once, nervousness will decrease, sleep become normal and refreshing, the complexion will clear up and the MIND WILL IMPROVE RAPIDLY."

"This . . . Treatment . . . has in the five years of its use, prevented more suffering for the unfortunate victims of epilepsy, than the entire medical profession has been able to accomplish, during all the centuries which have rolled by since the practice of medicine began."

It is fairly obvious that the claims emphasized throughout the Maghee advertising matter to the effect that the treatment gives "IMMEDIATE and CONTINUOUS RELIEF of EPILEPSY" that it "positively STOPS seizures at ONCE" and

nor other habit forming drugs. . . . In the box were 40 small sized capsules, containing a powdered mixture of black color; the average contents of each capsule was 0.105 gm. (1.6 grain). Qualitative tests indicated the presence of charcoal ('wood'), bismuth, nitrate and phenobarbital (luminal). The quantitative determinations were as follows:

"Moisture (dried at 120 C.).....	1.0 per cent.
"Bismuth (equivalent to 3.8 per cent. bismuth subnitrate)	2.8 per cent.
"Charcoal	31.9 per cent.
"Phenobarbital (luminal)	64.5 per cent.

"For practical purposes, it may be deduced from the analysis that each capsule contains as its essential ingredient 0.068 gm. (approximately 1 grain) of phenobarbital (luminal) with which has been mixed 0.033 gm. (½ grain) of charcoal and a very small amount of bismuth subnitrate."

We find then that the essential drug in Maghee's "Rational Method for Immediate and Continuous Relief of Epilepsy" is phenobarbital (luminal). Although, from reading Maghee's advertising matter, the public would get the impression that Maghee discovered the value of this drug in epilepsy, the facts are it has been used in epilepsy both in this country and abroad and the results reported on in medical journals for the past nine years.

Summed up, it may be said that there is no rational excuse for the sale of phenobarbital in a secret mixture sold on the mail order plan for the self-treatment of so serious a condition as epileptic seizures.

Correspondence

PUBLIC HEALTH AND PRIVATE PRACTICE

To the Editor:—The interesting article on "Public Health and Private Practice" by Dr. L. L. Lumsden (THE JOURNAL, Sept. 3, 1921, p. 778) deserves a much wider discussion than could be given to it when it was read at the last annual session in Boston. It affects every practitioner in the United States and, as it presents some statements which are not entirely in harmony with facts, I herewith take the liberty to continue the discussion.

The statements to which I strongly take exception are:

(a) "Health service is essentially for the prevention of disease. Medical service is essentially for the cure of disease." Dr. Lumsden proceeds to nullify this line of demarcation by permitting health service to encroach on the sphere of medical service. Thus, he says: "In some instances, the cure of a case of infectious disease in one person is the most practicable means of preventing such disease in other persons," whereby treatment falls within the sphere of health service.

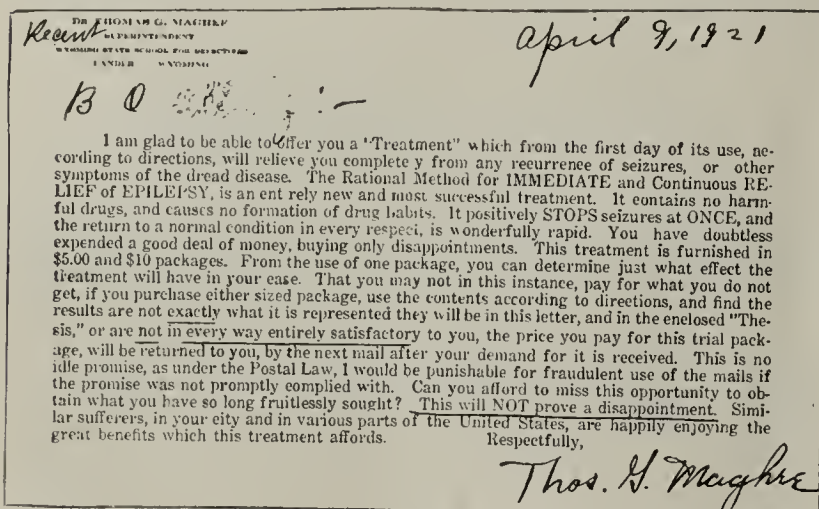
(b) "Though the physicians, through organization, and adroit maneuvering, might obtain temporary advancement of their interests over those of the unorganized majority of citizens. . . ."

(c) "In the program of general welfare for which the popular demand is becoming more and more acute, there is developing throughout the country, at an increasing rate, an intelligent conception of the relative and absolute importance of service for the conservation and promotion of the public health" [italics mine].

(d) "In some instances, private practitioners, either as individuals or in groups, become the main objectors and obstructors to what appears, from the standpoint of the public interests, an entirely reasonable program of public health service in a community."

(e) "Usually the most vexatious difficulty with which the health department has to contend is the securing, from private practicing physicians, of reports of cases of communicable diseases coming under their professional care."

It was a practicing physician, Dr. Stephen Smith of New York, who laid down the first public health law. The practicing physician always prevents disease in addition to his



Photographic reproduction (reduced) of the letter sent out in reply to those who answer the Maghee newspaper advertisements. Note the use of the title "Superintendent" with "recent" written before it. "Recent," in this case, means six years ago.

that those who take it "return to a normal condition in every respect," can mean but one thing to the public, namely, that this is a cure for epilepsy. Nostrum exploiters have, however, learned by unpleasant experiences in the courts that it is dangerous to use the word "cure." This may or may not explain the closing paragraph of Maghee's circular in which he states that "While assurances of CURES have been received from various cases" and regardless of how fondly he "may hope or firmly believe that permanent Cures may result," he does "not feel warranted in making such claim." The average laymen is not going to quibble about words. If he thinks that he can get "immediate and continuous relief" from his suffering and is assured that he will "return to a normal condition in every respect" he will not care whether this is called a "cure" or merely a "treatment."

The Maghee treatment comes in \$5 and \$10 packages. Five dollars was sent to Dr. Maghee with the request that he send a package with full directions. It came in due time and was turned over to the A. M. A. Chemical Laboratory. Here is a summary of the chemists' report:

CHEMISTS' REPORT

"One original box of 'Dr. Maghee's Rational Method of Treatment' for the relief of epilepsy was submitted to the Chemical Laboratory for examination. The box bore the statement: 'It contains no bromides, opiates, other narcotics

curing the patient. As the contagious nature of disease in general became known, his interest in his patient prompted him to apply measures to prevent reinfection of the patient and infection of those near him. The physician does not have to be driven to do this by any social welfare worker. Health service was first created by the private practitioner in order to meet conditions which were beyond his individual sphere of endeavor for the sole purpose of disease prevention. As long as "health service" will be confined to the prevention of disease through proper sanitation and hygienic measures, through popular education and a wide propaganda, that long it must command the unanimous and hearty support of every practicing physician. There is no reason why "health service" should encroach on the field of medical service. Charity is no justification for it, because physicians as individuals have never denied it to any deserving patient; collectively they form dispensaries and hospitals where even the non-deserving free medical-service bargain hunters are treated gratis; besides, every community has its special agency for dispensing charity.

On the other hand, wherever health service has encroached on medical service, i. e., wherever agencies intended for the prevention of disease have also established free clinics for the treatment of patients, great harm has been done to the medical profession by lowering the standard of special fields in medicine and by nourishing the forever present instinct for free treatment in the public. Every young physician who works in such a clinic soon branches out as a specialist in a particular field, without the intensive and special study needed for that purpose, but with an apparent stamp of approval by the board of health. This is an imposition on an unsuspecting public. No specialist of note and maturity will work in a board of health clinic for the small remuneration there obtainable, and the young practitioner becomes a specialist without proper guidance or instruction. I know a few such pediatricians, many nose and throat specialists, and a goodly number of genito-urinary wizards. Such conditions demoralize the practice of specialties which require a broad basis of general practice followed by intensive special studies under competent instruction. The relative pecuniary value of medical services becomes nil in the public mind because the health service agencies have unlimited free advertising under the guise of public education at their disposal with which free medical service is offered to the public.

To accuse the physicians and to insinuate that they "through organization and *adroit* maneuvering might obtain temporary advancement of their interests over those of the unorganized majority of citizens" is a crying injustice toward a body of men who have enriched history by their sacrifices and achievements in the interests of public health. The beggarly existence of the average physician is due to a notorious lack of organization. Conditions will become worse if the medical profession fails to heed the call of the times and to organize economically as other agencies of human activities have done. Medical men have always been organized for the advancement of their science, for public health and general welfare; only recently desultory attempts were made to direct their attention to their own existence by way of organization, and already they are stigmatized as "*adroitly* maneuvering . . . for their own advancement" by a Public Health Service officer.

"In the program of general welfare for which the popular demand is becoming more and more acute" the Public Health Service officer sees "an intelligent conception of the . . . importance of service for the conservation and promotion of public health." If prevention of disease had been left to popular demand, no such thing would have ever existed. The physicians originally forced it on the public and presently fostered the necessary agencies for that purpose. It

is a common experience in every community to see the boards of health begging their municipalities for much needed funds and not receiving them. The department of health in one community of 700,000 is housed in a building that has many sanitary and building violations against it and still there are no funds available for a salutary change. This illustrates the popular demand!

Dr. Lumsden in the next paragraph repeats that there is an "increasing popular demand for service both to prevent and to cure disease." To prevent? No! To cure? Yes! And some of the Public Health Service authorities see an unprecedented opportunity to themselves of becoming popular by extending their activities beyond their intended sphere. In view of what was stated above, Dr. Lumsden's assertions that "in some instances private practitioners either as individuals or in groups become the main objectors and obstructors to . . . health service" should not be permitted to go unchallenged by the profession.

That there exists a "vexatious difficulty with which the health department has to contend, in securing from private practicing physicians reports of cases of communicable diseases" I shall not deny; but this difficulty is the very proof that this kind of health service is not at all popular, or else the public would command its doctors to make proper reports to the boards of health. Quite the opposite is true. There is forever friction between patient and physician whenever such a report is made. The people dislike to be placarded or indexed by their unfortunate illnesses. The health authorities have failed utterly to popularize this kind of health service. It seems to me that discreet reporting by the physician, without provoking placards or visits by the health authorities, would insure prompt and uniform reports, which are undeniably important for health statistics and disease prevention. Any health literature could also be transmitted to the patient by his physician.

Only through the family physician can the ideal state of disease prevention be obtained. He is only too willing to help the health authorities in their work. But his status in the eyes of the public as well as his economic existence must not be undermined by inroads of his own making.

The scope of health service in pure prevention of disease is vast in itself, and must be limited within that function to reach perfection. The recent epidemics are convincing proof that till now it has fallen far short of its ideal.

NICHOLAS LUKIN, M.D., New York.

PROFESSOR IVAN P. PAWLOW STILL ALIVE

To the Editor:—In THE JOURNAL, September 3, there is a paragraph in the letter from your regular correspondent at Budapest, dated July 12, 1921, to which you have given the caption "The Fate of Pawlow." Whatever items under this heading may be correct, the statement regarding his death is wrong. Your Budapest correspondent states that he died in January, 1921. I have, in his own handwriting, a letter from Professor Pawlow dated April 28, 1921, and I have a letter from our mutual friend, Prof. Robert Tigerstedt of Helsingfors, dated July 14, 1921. Certainly on the last date Professor Pawlow was still living.

The pernicious activities of Bolshevik sympathizers, even in so-called "collegiate circles" in America, chiefly persons of Russian descent, make a detailed statement of conditions unwise, as all information is immediately sent back to Russia, with possible inconvenience to the parties under discussion.

As the life work of this great man is so well known to all scientists, it is unfortunate to have a statement of his death appear. The sufferings, privations and moral depression which a man of this remarkable caliber must be going through may, indeed, make death preferable; but, as a matter

of fact, on July 14, 1921, Professor Pawlow was still living, and so far as I know, not in precarious health.

FRANCIS G. BENEDICT, Boston.

Director, Nutrition Laboratory, Carnegie
Institution of Washington.

To the Editor:—In THE JOURNAL, September 3, there is a letter from Budapest, dated July 12, 1921, in which it is stated that Pawlow, the great Russian physiologist, had died in January, 1921. You may know that several years ago there was a rumor that he had died, which proved to be incorrect. Apparently the statement from Budapest is likewise incorrect. I have a copy of a letter from Dr. Edward W. Ryan, commissioner of the American Red Cross to western Russia and the Baltic States, written from Riga, March 23, 1921, to Col. Robert E. Olds, commissioner of the Red Cross in Europe. Dr. Ryan declares that the Red Cross was sending Professor Pawlow food and states that Pawlow's two sons, Victor and Vsevolod Ivanovitch, had not been heard from for two years and that he was very desirous of obtaining information regarding them. Again, April 24, Dr. Ryan reported that he had been able to send to Pawlow certain definite supplies which are listed. Furthermore, I have a letter from Prof. Carl Tigerstedt of Helsingfors, Finland, dated July 30, 1921, in which he acknowledges the receipt of money collected from friends of Pawlow in the United States and sent to him for Pawlow's aid. The Finns have official representatives in Petrograd. Dr. Tigerstedt reports that he has been sending a consignment of food of all kinds twice monthly to Pawlow through the Finnish commission, and that he is thus not suffering any more from lack of nourishment. Nevertheless, I am sending to Dr. Tigerstedt the report from Budapest and asking for specific information regarding Pawlow's welfare.

W. B. CANNON, M.D., Boston.

[COMMENT.—The Professor Pawlow to whom our Budapest correspondent referred may have been Prof. T. P. Pawlow of Petrograd, who held the chair of skin diseases and syphilis. This is not the first time that the death of Prof. Ivan P. Pawlow, the great physiologist, and recipient of the Nobel prize in 1905, has been reported. At the time of the death of E. W. Pawlow, an eminent surgeon of Petrograd, in 1916, a notice appeared to the effect that Prof. Ivan P. Pawlow was dead. It is seldom that one has the opportunity to read his own obituary on two different occasions.—ED.]

THE REVIEW OF HORST OERTEL'S "GENERAL PATHOLOGY"

To the Editor:—I have read the review of my book on general pathology in THE JOURNAL (Sept. 10, 1921, p. 882) with interest and a good deal of concern about your reviewing department.

The reviewer, who is evidently a bacteriologist, has taken pains—and, I may add, with perfect right—to offer a criticism of certain details in the chapter on bacteria only, with certain other remarks on the historical side.

To certain inaccuracies and misprints in the text, he adds some of his own views on what he considers important omissions, such as the grouping of streptococci (by the way, of very doubtful pathogenic importance), the flea in connection with rat plague, the development of antibodies (at present one of the most unsettled questions) and some others, and to make much of them. The main and most important parts of the book, including the manner of treatment of immunity, the discussion on heredity and the whole section on pathologic anatomy and pathogenesis, he dismisses—like Mr. Podsnap—in one (!) sentence, viz.: "The sections on pathologic anatomy and pathogenesis are probably the most carefully worked over parts."

Has he understood them?

But then, after abruptly closing his review of the bacteriologic chapter, which leaves one with the impression that something has been omitted, he finishes with the curt statement that "in its present form the book cannot be recommended as a high class, reliable text."

It seems to me—and I dare say it will so appear to some other reasonable men—that your reviewer has offered no basis for such a wholesale, sweeping condemnation even on face of his own limited review. But to state this without referring in some detail to, or to offer any serious criticism of the main issues and contents of the book, appears to me an entirely unwarranted and serious miscarriage of a reviewer's rights, duties and obligations through personal bias which I can only consider entirely unworthy of any journal.

HORST OERTEL, M.D., Montreal, Canada.

[COMMENT.—In accordance with our custom, Professor Oertel's letter was submitted to the reviewer, who replies:

The part of the book specifically mentioned by Professor Oertel constitutes one half of the volume. The improvement in the quality of the second half does not correct the deficiencies of the first half. I read the entire book before reviewing it, and I regret that I cannot conscientiously modify my opinion. I must disclaim emphatically that personal bias of any kind had anything to do with my conclusion.

The reviewer is recognized as one of the leading pathologists of the country; he is professor of pathology in one of the well and favorably known medical schools, and has contributed widely to the literature on pathology.—ED.]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

FOR CLEANING PRIVY VAULTS

To the Editor:—I should like to have information with regard to some compound used for cleaning out privy vaults. I have seen something used for this purpose that did the work very well, and should like to know what it is. Any information you can give me on this subject will be greatly appreciated.

C. L. BRADLEY, M.D., Newhall, Iowa.

ANSWER.—The "chemical" used in "chemical closets" is generally commercial sodium hydroxid. Some firms direct that, after the solution is made up for use, an oil be poured on the surface to diminish odor. Care must be exercised in the use of such a closet so that splashing will not occur, whereby the flesh might be attacked by the caustic.

RHINOPLASTIC SURGERY

To the Editor:—Please recommend to me two or three of the most recent works on rhinoplastic surgery and the name of the publishers.

KEITH KAHN, M.D., New Orleans.

ANSWER.—The following is a list of references to recent articles and books on rhinoplastic surgery:

Cohen, L.: Further Observations on Correct Rhinoplasty, *Surg., Gynec. & Obst.* 31: 412 (Oct.) 1920.

Chubb, G.: New Method in Rhinoplasty, *Lancet* 2: 354 (Aug. 14) 1920.

Behrend, Moses: Rhinoplasty to Replace Nose Bitten Off by a Rat, *THE JOURNAL*, June 18, 1921, p. 1752.

Gillies, H. D.: Plastic Surgery of Face Based on Selected Cases of War Injuries of Face, New York, Oxford University Press, \$15.

Bourguet, J.: Misshapen Noses and Their Surgical Correction Without Cicatrix, London, Baillière, Tindall & Cox, 3 shillings.

PREVENTIVE OF COLD FINGERS IN DRIVING

To the Editor:—I have found a very simple procedure that has contributed greatly to the comfort of winter driving and is well worth while passing on to the profession. It consists of sewing two pieces of fur of suitable length to the rim of the steering wheel, where it is grasped in driving, and in my experience has proved almost a "specific" in preventing cold fingers, something a glove has failed to do. In warm weather the fur will keep the palms from callusing, thus eliminating uncomfortable gloves.

HARRY W. DAVIS, M.D., Plains, Kan.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

- ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
- ARKANSAS: Little Rock, Nov. 8-9. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville; Sec., Homeo. Bd., Dr. Geo. M. Love, Rogers; Sec., Eclectic Bd., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith.
- CALIFORNIA: Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 135 Stockton St., San Francisco.
- COLORADO: Denver, Oct. 4. Sec. Dr. David A. Strickler, 612 Empire Bldg., Denver.
- CONNECTICUT: Hartford, Nov. 8-9. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford.
- CONNECTICUT: New Haven, Nov. 8. Sec., Homco. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.
- DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.
- FLORIDA: Tallahassee, Oct. 11. Sec., Dr. William M. Rowlett, Citizens Bank Bldg., Tampa.
- GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.
- HAWAII: Honolulu, Oct. 11. Sec., Dr. G. C. Milnor, 401 S. Bercetania St., Honolulu.
- IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.
- ILLINOIS: Chicago, Oct. 19-22. Director, Mr. W. H. H. Miller, Springfield.
- IOWA: Des Moines, Nov. 1-3. Sec., Dr. Guilford H. Sumner, Capitol Bldg., Des Moines.
- KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.
- MAINE: Portland, Nov. 8-9. Sec., Dr. Frank W. Searle, 775 Congress St., Portland.
- MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.
- MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
- MISSOURI: Kansas City, Oct. 10-12. Sec., Dr. Cortez F. Enloe, State House, Jefferson City.
- MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
- NEVADA: Carson City, Nov. 7. Sec., Dr. Simeon L. Lee, Carson City.
- NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. Alexander MacAlister, State House, Trenton.
- NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.
- NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 26-29. Mr. Herbert J. Hamilton, Asst. Professional Examinations, Education Bldg., Albany.
- OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.
- PHILIPPINE ISLANDS: Manila, Oct. 11. Sec., Dr. Fortunato Pineda, 612 Rizal Ave., Manila.
- PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.
- RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.
- SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
- UTAH: Salt Lake City, Oct. 4. Sec., Dr. J. T. Hammond, Capitol Bldg., Salt Lake City.
- WEST VIRGINIA: Charleston, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.
- WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

Georgia June Examination

Dr. C. T. Nolan, secretary, Georgia State Board of Medical Examiners, reports the written examination held at Atlanta, June 8-10, 1921. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Sixty-five candidates were examined, all of whom passed. Twelve candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Atlanta College of Physicians and Surgeons.....	(1901)		90.1
Emory University (1921) 84, 85, 87, 87, 87.2, 87.6, 87.9, 88.1, 88.1, 88.2, 88.2, 88.5, 88.5, 88.7, 89.2, 89.3, 89.3, 89.7, 89.7, 89.9, 89.9, 89.9, 91, 91.5, 91.5, 91.6, 91.8, 91.9, 91.9, 92.5, 92.6, 92.7, 92.9, 92.9, 93.3			
Southern College of Medicine & Surgery.....	(1913)		83.8
University of Georgia (1921) 84.8, 86.5, 87, 87.1, 87.8, 87.9, 88, 88.1, 88.4, 88.9, 89.2, 89.5, 89.6, 90.1, 90.9, 91.1, 91.2, 91.5, 92.7			
Johns Hopkins University	(1919)		93.4
Columbia University	(1921)		92.6
Jefferson Medical College (1916) 88.1.....	(1921)		88.7, 90
University of Pennsylvania.....	(1921)		89.7
Meharry Medical College.....	(1921)		82.3
College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hahnemann Med. Coll. & Hosp. of Chicago.....	(1917)		Tennessee
Tulane University	(1911)		Louisiana
Baltimore University School of Medicine.....	(1897)		Maine
University of Michigan Medical School.....	(1917)		Michigan
Columbian University Medical Department.....	(1882)		New York
Medico-Chirurgical College of Philadelphia.....	(1900)		Penna.
Temple University	(1911), (1913)		Penna.
Medical College of the State of South Carolina.....	(1916)		S. Carolina
Vanderbilt University	(1916)		Tennessee
University of Texas	(1915)		Texas
University College of Medicine.....	(1913)		Virginia

Book Notices

THE SEX-COMPLEX. A Study of the Relationships of the Internal Secretions to the Female Characteristics and Functions in Health and Disease. By W. Blair Bell, B.S., M.D., Gynaecology Surgeon to the Royal Infirmary, Liverpool. Second edition. Cloth. Price, \$6. Pp. 251, with 61 illustrations. New York: William Wood and Company, 1921.

That a second edition of so highly specialized a work should be issued at this time suggests either that the subject is one just now attracting considerable attention or that the author has been peculiarly fortunate in the exposition of his theme. Both of these inferences are correct. Not only does Bell discuss the functions of the reproductive system as directed and controlled by the organs of internal secretion in a manner at once sane and readable, but it is evident from the increasing literature pertaining to the endocrine system that interest in this subject of complexities is not waning. The correlation of the internal secretions in regard to the sex functions—the “sex complex” of the author’s meaning—is here taken up in as much detail as present knowledge permits, an attempt to weld together, to formulate concretely the investigations that have thus far been contributed. This edition presents no new aspects of the subject, but rather alterations in the nature of extensive additions, amplifications and revisions. The work is divided, as before, into two general groups of subjects, the first covering morphologic, physiologic and psychologic considerations; the second, pathologic considerations. Particularly interesting and important is the expression found coming to the surface throughout the volume that, while each of the various endocrine glands may be studied as an anatomic entity, it is only as a collaborating whole that they function. If this were constantly borne in mind by all who contribute to the literature of “endocrinology,” much confusion of thought would be saved. As has been intimated, in this volume is offered one of the sanest and most readable contributions pertaining to the influence of the internal secretions in gynecology.

DIE THERAPIE DER PLACENTA PRAEVIA. Von Professor Dr. F. Hitschmann. Paper. Price, 48 marks. Pp. 175. Berlin: S. Karger, 1921.

This is a minute analytic discussion of the various methods in vogue for treating placenta praevia. The author takes 175 pages to prove what Williams in his textbook on obstetrics covers in three pages, and, as in most German works of this nature, resorts to much repetition and painful detail. The introduction, like a Shaw preface, embraces the first forty pages, consisting of a brief historical sketch of the treatment of placenta praevia from the publication of Braxton Hicks in 1862 to the present time, dwelling at great length on a discussion of Krönig and Sellheim’s work. The latter, based on Aschoff’s anatomic studies of the formation of the lower uterine segment, still remains, says Hitschmann, unproved though not disproved. A critical review of the mortality from sepsis in placenta praevia in the German clinics is given, from which Hitschmann concludes that the mortality from this cause is ten times greater in the clinic and twenty times greater in general practice than when the placenta is normally placed. He finds practically no difference in the mortality whether treated by Braxton Hicks version or by metreurysis (1.4 and 1.3 per cent., respectively). He warns that every patient with placenta praevia should be brought to a maternity at the first hemorrhage without internal examination. The vaginal examination is unnecessary for diagnosis, as bleeding in the last weeks of pregnancy is due to placenta praevia in 95 per cent. of cases. Tamponade for hemorrhage should be resorted to only in extreme necessity, and then under rigid aseptic technic, and only for the purpose of arresting the bleeding while transporting a patient to a hospital.

Under the caption “personal investigation,” the author first takes up a consideration of the third stage of labor in placenta praevia. Postpartum hemorrhage occurred in 909 cases in a series of 2,548 cases reviewed. Of these, in 619 hemorrhage occurred before expulsion of the placenta, and in 290 after expulsion. The placenta was expressed in 327 and manually removed in 292 cases. Hemorrhage from

atony and cervix tears occurred in 290 cases. The fact that only 35 per cent. of this large series had postpartum hemorrhage, and 65 per cent. experienced a normal, smooth third stage is a distinct body blow to the Krönig and Sellheim procedure (cesarean section). The causation of hemorrhage in placenta praevia is discussed at great length, and the procedures in which cervix tears occur are dissected. To the treatment of tears of the cervix and lower uterine segment he gives minute attention and strongly urges the profession to consider more seriously the prevention of such tears.

Under "Choice of Methods" of treatment, Hitschmann concludes from his extensive statistical study that Braxton Hicks version and the use of the hydrostatic bag followed by version are the two methods applicable to the greatest number of cases. Rupture of the membranes alone can be resorted to in a small group (about 12 per cent.) in which only partial praevia with slight hemorrhage occurs, and in which strong pains force the head down and compress the placenta. Cesarean section is indicated in a small group of cases with complete praevia with rigid, undilated soft parts. By this method the maternal mortality is reduced from 10 to 20 per cent. to 5 per cent., and the fetal mortality also reduced to 5 per cent. (Momm) when the baby was alive and viable. Classical cesarean section is advised for all aseptic cases in this group, and extraperitoneal for suspicious or septic cases; vaginal cesarean section is not recommended. In discussing the relative merits of the various methods, the author determines his indications by the severity of the hemorrhage, the time of occurrence, mode of its production, and condition of the mother.

Hitschmann's final conclusions, arrived at after careful scrutiny of the results of the various continental clinics, bring us nothing that is new in the treatment of placenta praevia. The procedure that has been followed in the leading American clinics for many years, as prescribed by our American authorities, is substantiated by this extensive study, and it is gratifying to know that our reasoning in this serious condition proves true in the work of Professor Hitschmann.

PITFALLS. By A. J. Caffrey, M.D. Cloth. Price, \$2 net. Pp. 199. Boston: Richard G. Badger.

"The chapters are taken from notes of twenty years' experience and, barring some frills, are true to life, showing the many peculiar incidents—tragic and otherwise—that crop up in the life of a doctor." True stories, such as occur in the life of every physician and told just as every physician might tell them, form the basis of this book. Dr. Caffrey is awake to what has happened, and he has a news sense which has enabled him to select incidents of interest. The stories have instructive value for those interested in public health work, and the differentiation of right and wrong in medical practice will instruct many of the medical profession as well as the public. Unfortunately, the literary style is not polished. There has been apparently no divinity to shape the ends, rough-hew them as Dr. Caffrey has.

MORBO DI HIRSCHSPRUNG E NANISMO IPOFISARIO. Per il Prof. Dott. Nino Samaja, Primario e Libero Docente. Paper. Pp. 52. Pesaro: Prem. Stab. d'Arti Grafiche Cav. G. Foederici, 1920

This brochure contains the description of an interesting case under the author's observation in a Bologna hospital—megacolon associated with dwarfism of pituitary origin. The patient was a woman, aged 20. She was the oldest child. Two brothers were of normal stature, as was the father; the mother, however, was 18 cm. less than the average height. Megacolon has been found associated with spina bifida occulta and other affections of the nervous system; but after an exhaustive consideration of megacolon in general, hyperpituitarism and hypopituitarism, Samaja concludes that in this instance the association was a mere coincidence.

HARROWER'S MONOGRAPHS ON THE INTERNAL SECRETIONS. Hyperthyroidism: Medical Aspects. Edited by Henry R. Harrower, M.D. F.R.S.M. Paper. Price, \$1.50. Glendale, California: The Editor, 1921.

This monograph is a compilation of scattered facts, shadowy theories, and conclusions that are often unwarranted, the whole largely taken from sources not always reliable, and put together in such a way as superficially to resemble a scientific article. An enumeration of symptoms after the manner of a catalogue, a commonplace insistence

under the head of therapy on the value of proper food, rest, freedom from worry, etc., big words, fanciful speculation, personal opinion pretentiously uttered as by an authority, a bibliography formidable in size but of injudicious selection—these are the outstanding features. The style is untidy; there are many grammatical errors. The book is said to be gotten out by the "Literary Department" of the Harrower laboratory. We cannot help feeling that the departments of literature and advertising are very closely related or that they are, perhaps, one and the same thing. For, unless we are mistaken, there is running through this article a clever plan to lead the unwary to think it is proper to prescribe some or many of the endocrine products of the Harrower laboratory.

Social Medicine and Medical Economics

CHILDREN DEPRIVED OF PARENTAL CARE

Bulletin 81 issued by the Children's Bureau on "Children Deprived of Parental Care" is a study of 513 children removed from their homes by the state of Delaware and cared for by state institutions and agencies. The study covered a two year period. All the children were under 18 years of age. The group studied included 403 white and 110 negro children, constituting, respectively, 79 and 21 per cent. Nineteen were foreign born. One fourth were of foreign or mixed parentage. Twelve per cent. were born out of wedlock. Seventy-six per cent. came from one city, Wilmington. Three hundred and ninety-eight family groups were represented. Forty-three per cent. were from families of five or more children. Three per cent. were full orphans. Thirty-one per cent. were half orphans. With due allowance in cases in which the full facts were not known, from 50 to 66 per cent. had both parents living. Regarding bad home conditions, alcohol was the most frequently reported, being present in more than one fourth of the cases. One fifth of the children were removed from households reported as immoral. Forty-eight per cent. came from families with an income adequate for decent standards of living. In 130 cases, the mother was the economic head of the family. In 105 cases, the mother worked away from home. Seventy-four per cent. of the children under 7 years of age had a record of delinquency. Eighty-three per cent. of the children were placed in institutions, and 17 per cent. in private families. The institutions include industrial schools, homes for dependent children, almshouses, etc. No special provisions are made in Delaware for mentally defective children, of which in this group there were fifty-eight. The remedies enumerated by the Children's Bureau are extension of juvenile court and probation work; state-wide physical and mental examination of delinquents and dependent children; special provisions for mental defectives; exclusion of children from almshouses; enforcement of school attendance; regulation of employment; establishment of recreation centers; increased methods for prevention of disease, and standardization of state child welfare efforts.

CHILD WELFARE IN TENNESSEE

At the request of the Tennessee Child Welfare Commission, the National Child Welfare Committee was requested by the governor of Tennessee to make a survey of child life in the state. The report, entitled "Child Welfare in Tennessee," consists of ten chapters, each written by a specialist, with an introduction by Dr. Edwin M. Clopper, under whose direction the survey was made. The report includes chapters on child and state, health, schools, recreation, rural life, child labor, juvenile courts, mothers' pensions, institutions and home finding. The report on health, written by Dr. H. H. Mitchell, states that preventable disease is holding back progress in Tennessee more than in the United States as a whole, and that the failure of the state to prevent disease, and the lack of sufficient scientific medical service, fall particularly hard on children. In 1917, the year covered by the survey, Tennessee had the largest number of deaths from typhoid per hundred thousand of any state in the registration

area, the death rate from this cause being 38.3 per cent., while the registration area death rate for the same year was only 13.4 per cent. The death rate from dysentery for the same year was more than three times the registration area death rate. An intensive study of three rural communities shows one community with a population of 577, distributed in 111 homes, had 125 cases of typhoid and dysentery in five years, more than one to each home and more than one for every five persons. Another community with a population of 567, in 122 homes, had 199 cases of typhoid and dysentery in five years, more than one case for each three persons. A study of public water supplies in forty-three towns and cities of the state by the United States Public Health Service showed that 39.55 per cent. were polluted with sewage. Hookworm was found in seventy-seven counties, thirty-four of which showed that more than 3 per cent. of children between 6 and 18 years of age were infected. Seventeen counties show a rate of more than 50 per cent., and two counties rates of 71.5 and 73.3 per cent. of infection. An estimate of the prevalence of malaria shows that more than 50,000 children under 20 years of age were suffering from this disease. In 1917, Tennessee had the second highest death rate from malaria of all the states in the registration area. Using the Framingham ratio of nine active cases of tuberculosis for each death, it is estimated that in 1917 there were 33,000 active cases of tuberculosis in the state. Diphtheria, whooping cough, trachoma, physical defects and malnutrition are also considered in this chapter. Dr. Mitchell recommends enlarging and improving the state department of health; larger appropriations for health problems; an enabling act permitting counties to levy a tax to support a county health board; control by the state board of health of all public water supplies and sewage disposal systems in the state; the control of all plans for schoolhouses by the state board of education; and the creation of a division of physical education under the state department of education, and the development of a practical health program, under the direction of the state board of health.

Miscellany

NARCOTIC DRUG REGULATIONS IN ENGLAND

The Dangerous Drugs Act, the British equivalent of our Harrison Narcotic Law, was adopted by the British Parliament in 1920, and a committee was appointed by the secretary of state for the home department to consider the objections raised by the British medical profession to the regulations drafted under the act. Following the report of this committee, the regulations were modified. A synopsis of the revised regulations, which went into effect, September 1, appears in the *British Medical Journal* for August 27.

The drugs affected by this act are opium and morphin and any preparation containing 0.2 per cent. of morphin or more, and cocain and heroin and preparations containing 0.1 per cent. or more. Any duly qualified medical practitioner is authorized to be in possession of a supply of these drugs, so far as is necessary for the practice of his profession. All prescriptions containing these drugs must be dated and signed with the full name and address of the physician issuing the prescription, and must give the name and address of the person for whose use the prescription is given and the total amount of the drug to be supplied. Prescriptions cannot be refilled unless they so direct and then not more than three times, at intervals to be specified in the prescription. Physicians dispensing their own medicine must keep a record of the prescribed drugs showing the date purchased, source of supply, amount and form of the drugs and a daily record showing the amount dispensed, the name and address of the patients, and the date. Personal administration by a legally qualified physician does not come within the law, but drugs left in a private house or administered by a nurse in a hospital must be recorded. Preparations containing less than the minimum amount of these drugs need not be recorded. In hospitals in which there is a licensed pharmacist, prescriptions by the visiting physician or the house physician must

be written on the patient's record sheet or on the order book, and must be initialed by the physician. In hospitals where there is no licensed pharmacist and no medical officer in charge, orders for these drugs must be signed by a member of the medical staff. Any hospital, asylum, institution or sanatorium supported by public authority out of public funds is exempt from the regulations, but is required to comply with "Schedule 1." This schedule provides for the ordering, dispensing and prescribing of habit-forming drugs to patients or inmates of institutions under the control of the physician or pharmacist on the hospital staff, and for necessary restrictions in handling or dispensing these drugs. Teaching institutions approved by the home secretary may authorize any person in charge of a laboratory for the purpose of research or instruction to be in possession of these drugs. The list of approved institutions includes all universities, medical and pharmacy schools of Great Britain and Ireland, the National Institute of Medical Research, and the Royal College of Science for Ireland. Occupiers of factories and work shops to which the Factory and Workshop Act applies may possess cocain solution for use in the eyes. Unregistered dental practitioners may possess cocain solution not stronger than 0.1 per cent. for use as a local anesthetic. Certified midwives may possess and administer preparations of opium. Farmers and stock owners may, on obtaining a police certificate, possess tincture of opium, and skippers of British fishing vessels may purchase compound tincture of chloroform and morphin, and tincture of opium.

THE POWER OF THE HEART

A writer in the *Scientific American* has been doing some figuring as to the horse-power—he does not use this expression—of the human heart, and he evolves some statistics which, while of no practical importance, are interesting. Within each human breast, he says, this energetic organ is beating, on an average, about seventy-five times a minute, or 4,500 times an hour. Accordingly, the heart beats, approximately, 108,000 times daily, 39,000,000 times yearly, and, during a lifetime of three-score and ten years, two billion seven hundred million times. If we estimate the population of our world at 1,700,000,000 people, then all the human hearts on our terrestrial planet are beating at the rate of, approximately, 127,000,000,000 times a minute, or 66 quadrillion times a year. That is to say, these 1,700,000,000 human hearts are throbbing at a rate of about 2 billion times a second.

As we well know, our heart-engine contains four compartments, two auricles and two ventricles. The auricles are reservoirs which supply the pumping ventricles with blood. Therefore, the dynamic energy of the human heart resides in the right and the left ventricles. When these ventricles contract, the right ventricle sends its supply of impure blood to be purified by the oxygen in the lungs, and the left ventricle forces its supply of purified blood to circulate in the body. When the "heart beats," that is, when the right and left ventricles beat, an average of about 10 cubic inches of blood is expelled from the heart engine. Accordingly, in a minute, after seventy-five heart beats the energetic heart has pumped 750 cubic inches of blood. This means that the heart pumps 45,000 cubic inches of blood an hour, 1,000,000 cubic inches of blood a day, and 392,000,000 cubic inches, or more than 225,000 cubic feet, of blood each year. Were the heart a water pump instead of a blood pump, it would expel, since a cubic foot of water weighs about 62½ pounds, approximately, 7,000 tons of water, during the course of one year.

And this amount of work is accomplished by only a part of a small muscular organ about as big as the average human fist! It has been estimated that the left ventricle alone exercises sufficient pressure per square inch to support a column of blood 9 feet in height, and that it performs daily an amount of work equal to 90 foot-tons. Were we able to collect in a cubical reservoir all the blood pumped by one heart-engine in one year, that reservoir would be about 61 feet in each of its three dimensions. Or, were it a circular water-tower, with a diameter of 50 feet, it would be somewhat more than 115 feet in height, and it would contain about 1,700,000 gallons.

Medicolegal

Efforts Should Be Used to Save Injured Arm or Leg

(*Wrenn v. Connecticut Brass Co. et al. (Conn.), 112 Atl. R. 638*)

The Supreme Court of Errors of Connecticut says that the plaintiff, on March 6, 1915, sustained a severe fracture of his left forearm which left his arm in a twisted and unnatural position. A competent surgeon was of the opinion that the operation of effecting a bone graft would make a useful arm of the injured member. The operation was performed, and by the latter part of April, 1916, the forearm had become straight, and the surgeons believed that good functional results would follow, and a useful arm follow the operation. Instead, a suppurative process persisted, and on June 26, 1916, it was necessary to operate further in order to prevent a more serious condition, and this wound finally healed by August, 1916. The arm has never been a useful arm since the original injury, and at no time has it been useful for industrial purposes. Not until August, 1916, to which time the treatment of the arm was continued, when the wound in the arm finally healed and the treatment was discontinued, did the period of incapacity for which the injured employee was entitled to compensation cease and the condition of a complete and permanent loss of the arm exist. For that period he was entitled, under the workmen's compensation act to compensation for the incapacity; and then for the complete and permanent loss of the use of the arm.

All reasonable efforts should be used to save an injured arm or limb, and thus prevent the necessity for its amputation, or its complete loss of usefulness. Until the time for such effort has passed, professional skill should be directed to effect a cure. When competent professional opinion on fair examination reaches the conclusion, or should reach the conclusion, that it is not reasonable to expect to cure or improve the injured arm, it can then be said for the first time that the loss of this member has occurred. Then, unless something further must be done to improve or heal the member, there exists the condition described in the statute, "the complete and permanent loss of the use of one arm," and the specific compensation provided by statute is then due. But this does not compensate the injured employee for the period between the date of injury and the date of determination of the complete loss of use. The incapacity during this period may have been total or partial, and the Connecticut act provides compensation for this period of incapacity as well as for the complete and permanent loss of the use of the arm. The loss of the arm through amputation occurs when the amputation takes place. The complete and permanent loss of the use of the arm occurs when no reasonable prognosis for complete or partial cure and no improvement in the physical condition or appearance of the arm can be reasonably made. Until such time the specific compensation for the loss or for the complete and permanent loss of the use of the arm cannot be made.

The court is not impressed with the argument of the defendants that this interpretation of the act will lead employers and the insurers of employers to cause the amputation of the injured member instead of seeking to effect in all cases a cure before resorting to amputation. The court's faith in the humanity and integrity of employers and insurers and in the good faith and professional honor of surgeons forbids the court's adoption of so repulsive a conclusion.

Physician Allowed to Refresh Recollection from Statement in Abortion Case

(*State v. Grulich (N. J.), 112 Atl. R. 594*)

The Court of Errors and Appeals of New Jersey, in affirming a judgment of the supreme court of that state which affirmed a judgment of conviction of the defendant, quotes the opinion of the supreme court to the effect that the defendant was convicted on an indictment charging her with the crime of abortion, committed on a Mrs. Meyer. The only ground of reversal relied on was directed at a ruling of the trial court with relation to the admission of the testimony of a physician who had been summoned to treat Mrs. Meyer after the abortion. The witness was being examined on what

in his opinion had produced the physical condition in which he found the patient, and whether that opinion was the result of conversations with Mrs. Meyer and her husband. For the purpose of refreshing his memory he was shown a written statement which he said had been prepared in his presence by one Hulsenbach, purporting to contain a recital of what Mrs. Meyer had said before him, Hulsenbach, and others on the day of her death, and was asked whether by looking over that statement his memory would be refreshed as to some of the details concerning which he was uncertain. Replying that it would have that effect on his recollection, he was permitted to examine that written statement, over the objection of the defendant's counsel, and the ruling in that regard was asserted to be erroneous and to justify a reversal of the conviction. But the trial court was right in holding that the witness was entitled to examine the paper writing for the purpose of refreshing his recollection with relation to any facts material to the issue, notwithstanding that the writing was done by a person other than the witness, provided that the latter knew the contents of the paper at the time it was written, and that he had such knowledge the witness had already stated at the time the paper was exhibited to him. The court of errors and appeals adds that it agrees with the supreme court as to the only point discussed in its opinion; let the judgment be affirmed.

Enjoining the Illegal Practicing of Medicine

(*Board of Medical Examiners v. Blair (Utah), 196 Pac. R. 221*)

The Supreme Court of Utah affirms a judgment for the plaintiff in this action brought by the board of medical examiners to enjoin the defendant, a chiropractor, from practicing medicine in the state of Utah without a license. The court does not consider that the legislature, by delegating or granting to the board, a corporate body created by law, the right to institute a civil action to enjoin any one from practicing medicine without a license, acted in violation of the prohibition of the state constitution from enacting any private or special laws granting an individual, association or corporation any privilege, immunity or franchise. The court says that the health of the community is of paramount importance and great public concern. The spread of contagious disease and the suppression or removal of the causes of such diseases is a matter of the utmost concern to the state at large. So long as any regulation is enacted and enforced with the object of protecting the health of the community, such legislation, and regulation should not be nullified by the courts unless it clearly appears to violate some fundamental right of the individual. It is a little late in the history of human progress, considered in connection with the knowledge acquired of physical and mental ailments, the advancement of the science of medicine, the discoveries of the causes and prevention of diseases, to contend now that no particular knowledge or qualification is required for the intelligent treatment of physical and mental ailments. Whether the qualifications as defined and required by the statute are justified by the facts is not a question for the courts to determine. The legislature has the undoubted right to make such requirements. Their extent is clearly within the province of that body. The court is not concerned, nor should it be, with the good or bad results that may follow the treatment by chiropractors, or, for that matter, of any particular method of treating physical or mental ailments. The proceedings authorized by the section of the statutes in question are not directed against any particular system of treatment, but they are directed against those who practice medicine within the state without a license. It is simply a question of requiring every one before attempting to treat physical or mental ailments to obtain the necessary license for the constituted authority so to practice. The right given to the board of medical examiners is not for the benefit or the protection of the members of what is known as the medical fraternity, but rather for the creation of a method of procedure to protect the health of the community. Nor does the court consider that the defendant was entitled to a trial by jury.

It may be conceded that the power to enjoin the threatened commission of ordinary crimes has never been recognized by the courts. But the court is here dealing with the right or power of the legislature to enact and to provide means for the enforcement of regulations looking to the health of the

community. The statute was enacted, not to provide a means of punishing those violating its provisions, but to protect the community from what, in the judgment of the legislature, was or might be detrimental to the public health. The power of the court, while not often called into force, to prevent such an injury, has been repeatedly recognized in the decisions of the courts of this country.

The argument against the statute, because it required chiropractors to have a knowledge of materia medica and some other subjects, was one to be addressed to the legislature. Should it be conceded that the contention against it rendered doubtful the validity of such requirement, it would not render the law invalid, because when there is any reasonable doubt as to the validity of a statute the doubt must be resolved in favor of its validity. Another objection that was one to be urged on the legislature, and not the courts, was that the law was for the protection of the regular physicians and osteopaths, and that it was wholly mercenary in its purpose, and not for the protection of the public, the contention being that one of the elements of the offense of practicing medicine without a license was that the practicing be done for a fee or consideration, and, if done without a fee or without consideration, any one, chiropractor or what not, might treat the sick and afflicted in the state in any manner he might desire, and regardless of results.

Society Proceedings

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Child Hygiene Association, New Haven, Conn., Nov. 2-5.
American College of Surgeons, Philadelphia, Oct. 24-28.
American Public Health Association, New York, Nov. 14-18.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
American Society of Tropical Medicine, Hot Springs, Ark., Nov. 14-15.
Colorado State Medical Society, Pueblo, Oct. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Medical Association of the Southwest, Kansas City, Mo., Oct. 25-28.
Mid-Western Association of Anesthetists, Kansas City, Mo., Oct. 24-28.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
Missouri Valley, Medical Society of the, Kansas City, Mo., Oct. 25-28.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
Southern Gastro-Enterological Association, Hot Springs, Ark., Nov. 14-17.
Southern Medical Association, Hot Springs, Ark., Nov. 14-17.
Tri-State District Medical Society, Milwaukee, Wis., Nov. 14-17.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

August, 1921, 162, No. 2

- *Acute Arteritis Complicating Pneumonia. G. D. Head, Minneapolis.—p. 157.
- *Periarthritis Nodosa. M. Manges and G. Baehr, New York.—p. 162.
- Urticaria, Classification of Types and Its Causes. G. L. Lambricht, Cleveland.—p. 183.
- *Value of Basal Metabolism Studies in Diagnosis and Treatment of Thyroid Diseases. A. H. Rowe, Oakland, Calif.—p. 187.
- *Blood Changes in Gastrectomized Patient Simulating Those in Pernicious Anemia. H. R. Hartman, Rochester, Minn.—p. 201.
- *Streptococcus Hemolyticus Empyema. J. I. Johnston, Pittsburgh.—p. 206.
- Internal Hydrocephalus in a Syphilitic, Probably Due to Intraspinal Treatment. A. Keidel and J. E. Moore, Baltimore.—p. 209.
- *Ozena and Its Relation to Tuberculosis. F. H. Linthicum, Los Angeles.—p. 216.
- *Diabetes Mellitus, Syphilis and Negro. I. I. Lemann, New Orleans.—p. 226.
- *Studies on Dosage of Digitalis in Children. H. McCulloch and W. A. Rupe.—p. 231.
- *Pedunculated Tuberculosis of Peritoneum: Perlsucht: Report of a Case in Human. H. M. Ray, Pittsburgh.—p. 237.
- Sequels of Epidemic Encephalitis. W. Boyd.—p. 248.
- Mechanism of Lowered Resistance Following Exposure to Lowered Temperature. L. B. Bibb, Camp Stanley, Tex.—p. 258.
- Therapeutic Pneumothorax Complicated by Hydropneumothorax and Pleurisy, with Effusion on Untreated Side. B. P. Stivelman, Bedford Hills, N. Y.—p. 270.
- Edema of Glottis in Obscure Deaths. M. M. Canavan, Boston.—p. 273.

Acute Arteritis Complicating Pneumonia.—Head reports a case of lobar pneumonia complicated by arteritis and thrombosis of the right femoral and popliteal arteries; gangrene of the leg; amputation and recovery, and a case of localized gangrene of the skin of the toes complicating bronchopneumonia.

Periarthritis Nodosa.—The diagnosis in the case cited by Manges and Baehr was made early in the course of the disease, and they had the unusual opportunity of studying the vascular lesions both in the early inflammatory stages as well as in the stage of healing toward which it had progressed when death occurred from secondary nephritis. By being thus able to follow the different stages of the process and to compare them with the findings of the necropsy, the authors have been able to correlate the varying pathologic and clinical pictures described in the previously reported cases.

Value of Basal Metabolism in Thyroid Disease.—The importance of basal metabolism studies in the handling of thyroid diseases Rowe urges must be recognized. By metabolic rate determinations diagnosis of early and obscure cases of hyperthyroidism is greatly aided. Moreover, the degree of severity of an obvious hyperthyroidism can be determined by this test. Again, the presence or absence of toxicity of an adenomatous thyroid is made evident through these metabolic studies. As a guide for surgical removal of goiters, surgeons are recognizing the value of this test. Finally, in the diagnosis of hypothyroidism and in directing and gauging thyroid administration metabolic rate determinations are of the greatest importance.

Blood Changes in Gastrectomized Patient Simulating Pernicious Anemia.—Hartman's patient had been operated on for a gastro carcinoma which developed on the base of an indurated ulcer. The cytologic study of the blood revealed the picture of pernicious anemia. The hemoglobin ranged between 53 and 55; the erythrocytes were between 2,000,000 and 2,280,000; the leukocytes varied between 2,200 and 7,600, and the color index was constant at 1.2+. The differential count read as follows: 200 cells counted; polymorphonuclear neutrophils, 59 per cent.; small lymphocytes, 35.5 per cent., large lymphocytes, 5.5 per cent. Slight anisocytosis and poikilocytosis were present. The Ribièrè test revealed an increased resistance of the red cells. The blood Wassermann test was negative.

Streptococcus Hemolyticus Empyema.—Among twenty-five cases which could be classified as empyema; seven were due to *Streptococcus hemolyticus*. These seven patients developed this feature as a complication and not as a sequel of acute pulmonary infection; they were treated by frequent aspirations, which was followed by subsequent resection; the number of aspirations averaged seven in number; the length of time between aspirations was two or three days; the period before resection was done was between two and three weeks; no washing of the pleurae was practiced and all recovered, but over a prolonged period of time. Two of these cases required second resection despite the proper surgical procedure skilfully carried out.

Ozena and Tuberculosis.—Of the various remedies tried by Linthicum in the treatment of ozena by far the best results have been obtained with the use of tuberculin. He insists on the relation that exists between the disease ozena and tuberculosis. Of twenty-eight cases that have come to necropsy, tuberculosis was found in twenty and was the cause of death in fifteen of these. In 129 cases a family history of tuberculosis was demonstrated in seventy-three. In 126 cases in which definite clinical tuberculosis was found in fifty-two.

Syphilis and Diabetes Mellitus in Negro.—Lemann is convinced that there is no relation between the incidence of diabetes mellitus and syphilis in the negro; hence there is no probable etiologic relation between the two.

Dosage of Digitalis in Children.—The results obtained by McCulloch and Rupe show that between 8 and 20 kilograms of body weight, or up to the approximate age of 4 years, children respond more readily to digitalis than do children above this weight and age. It would seem that older children with normal hearts require a larger amount per unit of body weight than is necessary to produce an effect in

adults with heart disease. There is considerable variation in the amount of digitalis necessary to bring about a response in the heart of children. They noticed vomiting to be one of the early signs of the effect from digitalis administration, often occurring before there were any alterations in the electrocardiogram. Changes in the electrocardiogram were not constantly found in all the cases in which a digitalis effect was obtained. The most common change observed in this group of children was the appearance of a sinus arrhythmia. Alteration in the size and direction of the T wave occurred in a small number of all the cases.

Pedunculated Tuberculosis of Peritoneum.—A case of pedunculated tuberculosis of the peritoneum is reported by Ray, and a review is given of the only other two cases of human pedunculated peritoneal tuberculosis recorded in the literature. The condition is compared to the lesion in tuberculosis of the serous membranes of cattle designated as "perlsucht," with which it is pathologically identical. An attempt is made to associate with the process the bovine type of tubercle bacillus, and there follows a discussion of the relative virulence and importance of the bovine and human types of tubercle bacilli in different forms of human tuberculosis, together with a brief review of the methods for differentiation of the two types of bacilli. The pathology is discussed from the standpoint of representing the intestinal equivalent of the multiple benign sarcoids of the skin; in reality, low grade tuberculous infections, better termed nodular cutaneous tuberculomas.

American Journal of Roentgenology, New York

August, 1921, 8, No. 8

- Roentgen-Ray Examination of Chest and Roentgen-Ray Classification of Pulmonary Tuberculosis. H. K. Dunham, Cincinnati.—p. 427.
Gunshot Injuries to Brain. Report of Eleven Cases with Special Reference to Roentgen-Ray Localization Findings. H. Swanberg, Quincy, Ill.—p. 445.
Monometer and Flow Volumeter for Transuterine Peritoneal Inflation to Determine Patency of Fallopian Tubes in Cases of Sterility. I. C. Rubin, New York.—p. 459.
Multiple Osteochondroma. B. P. Widmann, Philadelphia.—p. 462.
Superradiation and Delayed Reactions. A. Soiland, Los Angeles.—p. 466.
Roentgen-Ray Treatment of Acne Vulgaris. J. M. Martin and C. L. Martin, Dallas, Tex.—p. 468.
Roentgen Ray in Dermatology. C. G. Lane, Boston.—p. 476.
*Adenocarcinoma of Stomach; Gastric Ulcer. R. D. Carman, Rochester, Minn.—p. 480.
*Hemangioma of Duodenum. R. D. Carman, Rochester, Minn.—p. 481.
Case of Osteoma. J. H. Lambert, Lowell, Mass.—p. 483.

Gastric Cancer and Ulcer Not Shown by Roentgen Ray.—Carman reports two cases, an adenocarcinoma of the stomach; and a gastric ulcer not shown by the roentgen ray, but found at operation.

Hemangioma of Duodenum.—The case of hemangioma of the duodenum reported by Carman is the first that has been encountered in the Mayo Clinic. A woman, aged 22, complains of having had chronic dyspepsia since childhood. The milder spells were characterized by nausea and marked frontal headache followed by sour emesis and relief. The roentgen-ray examination revealed a negative stomach. The duodenum was shadowed as a ring with a translucent center, suggesting the presence of a polypoid growth. The same appearance was seen at a second examination. The pylorus was wide open; just below the pylorus in the first part of the duodenum was a tumor 7 cm. by 5 cm. completely filling the duodenum and with a sessile attachment to the duodenal side of the pyloric ring. The tumor was easily enucleated through a transverse incision on the anterior surface of the duodenum. Pathologic report: tumor of the duodenum, hemangioma.

American Review of Tuberculosis, Baltimore

August, 1921, 5, No. 6

- *Reinfection in Tuberculosis. Experimental Arrested Tuberculosis and Subsequent Infections. E. R. Baldwin and L. U. Gardner, Saranac Lake, N. Y.—p. 429.
Some Causative Factors of Pulmonary Tuberculosis. L. Brown.—p. 518.

Reinfection in Tuberculosis.—It is evident, Baldwin and Gardner state, from what has been presented in the experimental and pathologic study on man and animals that successive infections do occur, and that the first often modifies the course of the later ones. In comparison with the ease with which a primary infection is acquired, the later inhaled and

ingested bacilli are resisted more or less strongly by the relative "immunity from infection." In applying these principles to human tuberculosis many evidences of confirmation may be noted, which, in the main, are satisfactory. There are reasons to suspect mild infections, both as a quantity and virulence, occurring infrequently, but, by a cumulative effect, ultimately arousing the disease process. The earliest exogenous reinfections are probably often well resisted and may produce no noticeable symptoms. Good physiologic functions combined with the immunity from infection tend to ward off further infection after adult age is reached. Should the conditions be otherwise than favorable, or the infection frequent or potent, disease results. The authors discuss the unlikelihood of massive infections by inhalation, and the doubt about other ways of reinfection. From the very small quantities taken in at one time and the slow development of the disease they are inclined to the theory of cumulative infection during childhood and youth. The majority of individuals who are to develop pulmonary tuberculosis for the first time after 20 have already acquired it to a degree. Were it possible to discover these potentially diseased cases, who may or may not break down, there would be but a small percentage not accounted for among the victims of tuberculosis in civilized countries. It is virtually impossible to associate many cases of clinical tuberculosis in adults with a recent exogenous source of infection, except under family exposure. Even in family disease, as is well known, the patient often develops the first recognized symptoms years after the death of the relative. The town or city dweller is a survivor in the sense that he has reached maturity in the face of more or less inevitable exposure to human and bovine infection. The lesson to be learned and applied is that hand in hand with efforts to safeguard the young from infection more attention should be paid to safeguarding both young and old from disease. Without sputum and dairy hygiene the supply of dangerously infected young people will be kept up; without earlier diagnosis, education, and favorable conditions of life for the prospective victims, clinical tuberculosis will continue at an irreducible minimum.

Archives of Surgery, Chicago

September, 1921, 3, No. 2

- *Perforating Hemorrhagic (Chocolate) Cysts of Ovary. Their Importance and Especially Their Relation to Pelvic Adenomas of Endometrial Type ("Adenomyoma" of Uterus, Rectovaginal Septum, Sigmoid, etc.). J. A. Sampson, Albany, N. Y.—p. 245.
*Is Paget's Disease of Nipple Primary or Secondary to Cancer of Underlying Breast? A. R. Kilgore, San Francisco.—p. 324.
*Squamous Cell Carcinoma of Urinary Bladder. A. J. Scholl, Jr., Rochester, Minn.—p. 336.
Cancer of Breast. B. B. Davis, Omaha.—p. 348.
*Observations Based on a Study of Injuries to Elbow. I. Cohn, New Orleans.—p. 357.
Torsion of Cecum and Ascending Colon. J. Homans, Boston.—p. 395.
*Blood Nitrogen Estimations in Genito-Urinary and Abdominal Conditions. J. W. Vaughan and P. F. Morse, Detroit.—p. 405.
Function in Relation to Transplantation of Bone. S. L. Haas, San Francisco.—p. 425.
*Composition of Appendiceal Concretions. M. E. Maver and H. G. Wells, Chicago.—p. 439.

Perforating Hemorrhage Cysts of Ovary.—According to Sampson perforating hemorrhagic cysts of the ovary occur most frequently in women between 30 years of age and the menopause. In the twenty-three cases reported by Sampson, only two patients were under 30 and the oldest was 47. It is quite a common condition, probably occurring in nearly 10 per cent. of the women of these age limits who require abdominal operations for the relief of pelvic disease. The cysts are usually small, between 2 and 4 cm. in diameter, occasionally less than 2 and also occasionally larger than 4 cm. They are quite frequently bilateral, as in eight of the twenty-three cases. At operation the cyst or ovary is found to be adherent, and in freeing it the "chocolate" contents escape because a previous perforation, which had been sealed by whatever structure the ovary had become adherent to, is reopened or the cyst is torn. Adhesions, due to the "irritating" action of the material which had previously escaped from the ovary, are always present, and these vary greatly in location, density and extent. They may be found in any of the natural pockets and folds of the pelvis where such material would be apt to lodge, and especially in the cul-de-sac. When slight, they simulate the adhesions resulting from pelvic peritonitis of tubal origin; on the other hand,

the adhesions in the culdesac may be accompanied by such a marked reaction as to resemble malignancy. The histologic findings in these cysts vary in different specimens and in different portions of the same cyst. Sampson has never found these cysts in women after the menopause. Histologically, the epithelial lining of the ovarian hematomas is similar to that of the uterine hematomas, due to the retention of "menstrual" blood, often present in "adenomyoma" of the uterus. The fact that material escaping from the ovarian hematomas may give rise to the development of adenoma of endometrial type in the tissues thus soiled is further proof that these hematomas contain "endometrial" tissue.

Paget's Disease of Nipple.—Three cases are reported by Kilgore demonstrating that Paget's disease is usually primary to cancer of the breast. In one of these cases no change whatever had as yet occurred in the breast, and in two cases the early changes of what was probably duct carcinoma had begun when the breast was excised. A fourth case is reported in which all the evidence of histology and pathology points to a reversal of this order, the cancer in the breast apparently originated first, and was followed by Paget's disease of the nipple. If the deductions in this case are correct, then both schools in the controversy over the primary or secondary nature of Paget's disease have been right, since either order of events may occur.

Squamous Cell Carcinoma of Bladder.—Three of the six patients reported on by Scholl were seen in an operable condition an average of three months after the first appearance of symptoms. One of these had a recurrence four months after operation, and died eight months later; one died six months after operation, and one, the only patient who did not die from the disease, is living and well nine years after operation. The other three patients had inoperable tumors. In the inoperable cases, there had been symptoms referable to the carcinoma for an average of twelve months. Two of the six patients had histories of urinary trouble with undoubted cystitis for more than twenty-eight years. In only one patient was the tumor complicated by stone formation. The average age of the patients was 46 years, strikingly lower than the general average age of patients with carcinoma of the bladder. The incidence of sex, four women and two men, is also exceptional and contrary to the usual occurrence in which the male outnumbers the female three or four to one. One case indicates that a permanent cure is possible. The tumor in this case was highly malignant. An early resection was successful in spite of the local extension and the extreme malignancy of the tumor. In most cases the insidious onset and the rapidity of the growth make squamous cell tumor of the bladder an exceptionally dangerous disease.

Injuries to Elbow.—Cohn is of the opinion that three things are necessary in the treatment of fractures: a clear knowledge of the normal on the part of the roentgenologist; a more careful examination of the patient, to eliminate unnecessary work, and, last, a closer cooperation between the roentgenologist and surgeon which will prove helpful to all. A suggestion from the roentgenologist that, as a result of his study of the picture, he would make a prognosis of a deformity if the fracture is allowed to remain in the position that it was in when the patient was sent to him, will prevent many future disabilities and deformities.

Blood Nitrogen Estimations in Prostatic Obstruction.—In general, Vaughan and Morse assert, it can be stated that a low blood nitrogen in prostatic obstruction may be used as a guide as to the advisability of a one-stage or a two-stage operation. However, other factors than this must be taken into consideration, and it is the author's belief that the cause of death in many cases, given as uremia following prostatectomy, is erroneous in the extreme, it being due to a low grade infection solely.

Composition of Appendiceal Concretions.—The composition of three collections of concretions found in human appendixes was found by Maver and Wells to vary somewhat, but, in general, there was a similarity in the make-up of each lot of concretions. They contain about half their weight soluble in fat solvents, this material being chiefly soaps, but with considerable koprosterol and little cholesterol. Of the

soaps but a very small proportion seems to have been calcium soaps. About one fourth of the total weight was composed of inorganic material, chiefly calcium phosphate. About one fifth of the material was organic residue, mostly vegetable fiber, indicating that some part of the appendiceal concretions, at least, comes from the cecum. Probably the rest of the concretion is deposited from the walls of the appendix, since the bowel secretions are known to contain much fatty material and calcium.

Arkansas Medical Society Journal, Little Rock

August, 1921, 17, No. 3

Recent Limitations in Operative Gynecology. F. J. Taussig, St. Louis.—p. 57.

Boston Medical and Surgical Journal

Sept. 1, 1921, 185, No. 9

Extrapleural Thoracotomy for Advanced Unilateral Pulmonary Tuberculosis. Report of Case. W. Whittemore and G. L. Chaffin, Boston.—p. 249.

End-Results in Cancer Cases; Cancer of Breast. R. B. Greenough and C. C. Simmons, Boston.—p. 253.

Myxedema Following Treatment of Graves' Disease with Roentgen Ray. M. Seymour, Boston.—p. 261.

Progress in Surgery. E. H. Risley, Waterville, Maine.—p. 262.

Iowa State Medical Society Journal, Des Moines

July 15, 1921, 11, No. 7

Relation of Family Doctor to Specialist, General Public and Future of Medicine in Iowa. D. Macrae, Jr., Council Bluffs.—p. 227.

Symposium on Surgical Diagnosis. I. Case History. O. C. Morrison, Carroll.—p. 234.

Id. II. Physical Examination. J. C. Hancock, Dubuque.—p. 236.

Id. III. Laboratory Procedures. F. H. Lamb, Davenport.—p. 244.

Id. IV. Roentgen-Ray Examination. T. A. Burcham, Des Moines.—p. 250.

Id. V. Summary: Final Correlation. C. S. James, Centerville.—p. 254.

Acidosis. T. Byrnes, Atlantic.—p. 257.

Journal of Industrial Hygiene, Boston

September, 1921, 3, No. 5

Fatigue and Error in a Mental Occupation. J. P. Baumberger.—p. 149.

Work Chair. A. B. Emmons and J. E. Goldthwait, Boston.—p. 154.

Practical Hygienic Efficiency of Palmer Apparatus for Determining Dust in Air. H. F. Smith and M. Iszard, Philadelphia.—p. 159.

Physical Education from Standpoint of Industrial Physician. R. W. Elliott, Cleveland.—p. 168.

Journal of Laboratory and Clinical Medicine, St. Louis

August, 1921, 6, No. 11

Accurate Method for Clinical Determination of Early Arterial Disease. H. Brooks, New York.—p. 597.

*Ventilation, Weather and Common Cold. G. T. Palmer, Detroit.—p. 602.

Review of Ninety-Four Necropsies, with Special Reference to Pneumonias. G. W. Covery, Lincoln, Neb.—p. 611.

*Method for Determination of Blood Volume. E. Franke and S. R. Benedict, New York.—p. 618.

Standard Method for Preparing and Standardizing Lipoidal Antigens for Wassermann Test. L. G. Hadjopoulos, New York.—p. 624.

Simple Device for Demonstration of Heart Block in Student Laboratory. N. B. Eddy, Edmonton, Canada.—p. 635.

Exposure of Ciliary Ganglion in Dog for Use in Experimental Work. A. R. Cooper and J. T. Groot, Chicago.—p. 639.

Value of Ross-Jones Test on Bloody Spinal Fluid. S. M. Feinberg, Chicago.—p. 642.

Training and Proper Recognition of Laboratory Technician. R. B. H. Gradwohl, St. Louis.—p. 644.

Ventilation, Weather, and Common Cold.—Palmer presents a study of the prevalence of respiratory affections among school children and their association with school ventilation and the seasonal changes in weather.

Blood Volume Determination.—On account of the difficulties at present in obtaining reliable dye preparations which do not penetrate cells or tissues, it occurred to Franke and Benedict that hemoglobin might be used with advantage in the determination of blood volume. Hemoglobin is nontoxic, and owing to its high molecular weight and intense coloring power should be admirably adapted for use where a non-diffusible colored product is desired. Experiments have shown that oxyhemoglobin does not penetrate the red cells to the slightest degree, and remains in the circulation without detectable alteration for periods of time quite sufficient to allow of thorough mixing with the blood and removal of samples for analysis. The final concentration of hemoglobin in the plasma is readily determined by comparison in a colorimeter with a portion of the solution injected, after suitable dilution. It is unnecessary to use purified hemoglo-

bin for the determination. Results are exactly as satisfactory where a solution obtained by laking corpuscles with water, followed by addition of enough salt to make the whole solution isotonic, is employed. The hemoglobin employed need not come from the same species of animal as the one used in the experiment. Injection can be made as rapidly as possible without detectable effect on the general condition of the animal. The principle of the method is the introduction into the blood stream of a solution of hemoglobin, prepared by laking blood, and the subsequent determination colorimetrically of the concentration of this hemoglobin in the plasma by comparison with a suitable standard mixture of hemoglobin and plasma. The volume of the corpuscles in the blood must also be determined. This can be done either with a hematocrit, or by a method described which depends on addition of hemoglobin solution to whole blood, and the subsequent determination of the hemoglobin concentration in a portion of the plasma.

Kentucky Medical Journal, Bowling Green

September, 1921, 19, No. 9

- Congenital Club Foot. W. B. Owen, Louisville.—p. 557.
Intra-Urethral Chancre: Case Report. C. G. Hoffman, Louisville.—p. 561.
Bronchial Asthma: Case Report. J. W. Bruce, Louisville.—p. 563.
Orthopedic Treatment of Infantile Paralysis. B. S. O'Brien, Louisville.—p. 566.
Congenital Hypertrophic Pyloric Stenosis. Case Report. J. G. Sherrill, Louisville.—p. 572.
Bone Infections. B. W. Bayless, Louisville.—p. 577.
Nonunion of Abdominal Wound. M. Casper, Louisville.—p. 579.
Rupture of Spleen: Splenectomy. Case Report. G. P. Grigsby, Louisville.—p. 581.
Case of Lethargic Encephalitis Complicated by Syphilis and Goiter. W. E. Gardner, Louisville.—p. 583.
Fourth Venereal Disease. C. W. Jekerson, Louisville.—p. 586.
*Carcinoma of Papilla of Vater Treated by Radium. I. Abell, Louisville.—p. 589.
Gunshot Wounds of Abdomen. Report of Cases. C. Farmer, Louisville.—p. 591.
Appendicitis. W. E. Fallis, Louisville.—p. 597.
Diagnosis of Incipient Pulmonary Tuberculosis. W. T. McConnell, Louisville.—p. 601.
Venereal Disease at State Reformatory. E. C. Roemle, Frankfort.—p. 604.
Refraction of Eye. A. D. Banfield, Catlettsburg.—p. 606.
Endometritis. A. R. Kempf, Olmstead.—p. 609.
Two Cases of Hemorrhage Following Peritonitis Abscess. W. J. Thomasson, Newport.—p. 611.

Radiumtherapy of Carcinoma of Vater's Papilla.—In the case cited by Abell the duodenum was exposed, mobilized and opened; 25 mg. radium in two tubes was anchored immediately against the growth by passing a needle containing No. 10 plain gut, superficially through the mucous membrane above and below the growth and tying these two over each end of the capsules or tubes containing the radium. The capsules were attached to strands of heavy braided silk which were brought out of the mouth by means of a stomach tube passed in the usual manner and guided through the pylorus to the incision in the duodenum. The duodenum and abdomen were then closed. The radium was allowed to remain twelve hours, at the end of which time it was readily removed through the mouth by traction on the silk strands. The method demonstrates that radium in almost any sized dose can be applied directly to some types of internal cancer which are not amenable to ordinary surgical removal.

Military Surgeon, Washington, D. C.

September, 1921, 49, No. 3

- Dispersion of Bullet Energy in Relation to Wound Effects. L. B. Wilson.—p. 241.
Neurology of Syphilis. R. Sheehan.—p. 252.
Syphilis and Venereal Disease: A Service Liability. C. S. Stephenson.—p. 263.
Military Neuroses: General and Fundamental Etiology. S. Wolfe.—p. 272.
Suggestions for Treatment of Nerve Injuries. K. W. Ney.—p. 277.
Vincent's Angina. D. F. Elmendorf.—p. 287.
Model Sanitary Order. C. W. Decker.—p. 292.
Etiology of Influenza. M. W. Hall.—p. 300.
Case of Anthrax. F. D. Francis.—p. 306.
Fractured Sesamoids as Source of Pain Around Bunion Joint. J. C. Brugman.—p. 310.
Postwar Medical Conditions Among Armenia Refugees in Southern Turkey and Syria. R. A. Lambert.—p. 314.
Perforating Wounds of Eye. Use of Conjunctival Flaps. First Aid in Battle Injuries of Eye. Indications for Removal of an Eye. H. V. Würdemann.—p. 333.

Nebraska State Medical Journal, Norfolk

September, 1921, 6, No. 9

- Campaign Against Cancer. F. C. Wood, New York.—p. 261.
Early Diagnosis of Cancer of Digestive Tract. G. W. Covey, Lincoln.—p. 267.
Earlier Diagnosis of Cancer of Breast. D. C. Hilton, Lincoln.—p. 269.
Cancers of Skin and Mucous Membrane. A. F. Tyler, Omaha.—p. 274.
Precancerous Lesions of Uterus. P. Findley, Omaha.—p. 278.
Radiotherapy in Cancer. D. T. Quickly, Omaha.—p. 280.
Roentgen Ray, Radium and Surgery in Treatment of Cancer. R. L. Smith, Lincoln.—p. 282.
Civilian Surgeon's Story of Great War. H. W. Orr, Lincoln.—p. 285.

New Jersey Medical Society Journal, Orange

September, 1921, 18, No. 9

- Survey of Modern Medicine. Newer Methods in Diagnosis and Therapy. M. J. Synnott, Montclair.—p. 269.

New York Medical Journal

Sept. 7, 1921, 114, No. 5

- Peritonitis. J. B. Deaver, Philadelphia.—p. 257.
Surgical Conditions of Stomach. J. J. Gilbride, Philadelphia.—p. 261.
*Action of Various Salts and Other Substances on Liver After Their Introduction in Duodenum. M. Einhorn, New York.—p. 262.
*Clinical Gastric Analysis with Detail of Method and Consideration of Maximum Information to Be Obtained. B. B. V. Lyon, H. J. Bartle and R. T. Ellison, Philadelphia.—p. 272.
*Personal Experiences with Nonsurgical Biliary Drainage. J. Friedenwald and T. H. Morrison, Baltimore.—p. 280.
Gastroenterologic Gleanings from Mayo, Sippy and Boston Clinics. S. Wendkos, Philadelphia.—p. 285.
Interesting Gastric Cases. H. F. Graham, Brooklyn, N. Y.—p. 289.
Abdominal Cases. V. Kenerson, Buffalo.—p. 291.
Spontaneous Pneumoperitoneum Demonstrated by Roentgen Ray in Acute Gastro-Intestinal Perforations. W. A. Kellogg, New York.—p. 294.
Diagnosis and Treatment of Gallbladder Disease. A. O. Wilensky, New York.—p. 295.
Nonsurgical Drainage of Gallbladder as Aid in Roentgen Ray Diagnosis of Gallstones. S. Weis, New York.—p. 297.
Carcinoma of Stomach Simulating Pernicious Anemia. A. E. Oliensis, Philadelphia.—p. 298.

Action of Salts on Liver.—Einhorn asserts that Lyon's assumption of the different sources of bile, as judged by the color, does not seem to be correct. Inasmuch as the magnesium sulphate and other liver stimulants increase the flow of bile from the liver and drive it, so to say, quickly and directly into the duodenum, there will be after these substances a bile product from the liver direct containing very little if any bile from the gallbladder. In the fasting condition and with any previous stimulation the aspiration succeeds in obtaining what little bile there is in the duodenum from the liver and the gallbladder, or there seems to be more chance for the appearance of some gallbladder bile when the flow of liver bile is not extensive. In practicing bile examinations in the fasting state of the patient, for the last ten years or so, Einhorn found this to be the case. Diagnostically, many more valuable hints regarding gallbladder lesions can be found from the examination of the natural fasting bile than from the bile obtained after the stimulation by magnesium sulphate. In case of jaundice, however, in which no bile is found in the fasting state, a liver stimulant may be injected into the duodenum, in order to ascertain whether the increased flow of bile from the liver is still able to push through some of its products into the duodenum. In fact, in a number of such cases of chronic jaundice with no bile in the duodenum while fasting the magnesium sulphate caused the appearance of some bile after a short time, thus showing that the common duct occlusion was not complete. In these cases the magnesium sulphate or peptone or glucose test is of diagnostic aid.

Fractional Method of Gastric Analysis.—Lyon, Bartle and Ellison favor the fractional method of gastric analysis. They emphasize the need of investigation into the associated findings of the stomach, other than the acid values. These include the presence of mucus and bile, and the addition of the pathologic products, such as bacteria, pus, blood and tissue juices. These associated findings all have a direct influence on the interpretation of the acid curves and also yield much information as to the intragastric and extragastric pathology. They give a detailed description of their method of performing the actual test. Each patient is given typewritten instructions preparatory to presenting himself for a gastric analysis. Fifteen minute extractions are now made over an average period of two hours, making eight extractions in all.

Diagnostic Value of Nonsurgical Biliary Drainage.—Friedenwald and Morrison consider the method of biliary

drainage, as instituted by Lyon, a valuable aid in the diagnosis of gallbladder affections. It is particularly valuable in that it permits of diagnosing these conditions early before evidence of complications have manifested themselves. It presents an important means of determining the presence of focal infection in the gallbladder. This method furnishes a means of affording definite relief in certain biliary affections for which hitherto radical measures have been required. It is an extremely valuable aid in the treatment of catarrhal jaundice, biliary stasis, and gallbladder infections, and is helpful in relieving the infection which may still remain following gallbladder operations.

Ohio State Medical Journal, Columbus

Sept. 1, 1921, 17, No. 9

- *Ruptured Gastric Ulcer: With Case Reports. C. T. Souther, Cincinnati.—p. 605.
- Slow Perforations of Abdominal Viscera. S. D. Foster, Toledo.—p. 609.
- *Ulcer and Cancer of Stomach and Ulcer of Duodenum. G. W. Crile, Cleveland.—p. 611.
- Obstetric Obligations. M. A. Tate, Cincinnati.—p. 613.
- Vaginal Cesarean Section: Its Field of Usefulness, with Case Report. L. E. Leavenworth, Canton.—p. 617.
- Progress in Treatment of Syphilis. A. Ravogli, Cincinnati.—p. 619.
- Syphilis in Its Relation to Medical and Surgical Diagnosis. J. D. Dunham, Columbus.—p. 623.
- *Tumors of Corpus Callosum. E. M. Baehr, Cincinnati.—p. 626.
- *Intravenous Administration of Protein in Treatment of Arthritis. C. W. Waggoner, Toledo.—p. 628.
- Death Following Operation of Tonsillectomy with Reference to Motor Driven Apparatus for Anesthesia. I. G. Clark, Columbus.—p. 631.

Ruptured Gastric Ulcer.—Souther reports four cases of ruptured gastric and duodenal ulcer in which he operated and the patients recovered.

Ulcer and Cancer of Stomach and Duodenum.—Crile is convinced that no absolute differential diagnosis between cancer and ulcer is possible before operation; nor at the operation except by the pathologist; nor by the pathologist in certain borderline cases. Irrespective of operative treatment, the dietetic management of all ulcer cases is an essential before and after surgical intervention. It has been found that the fainting point can be used clinically to arrest hemorrhage from gastric or duodenal ulcer. In patients, exhausted by long standing ulcer or cancer, conservation and restoration of bodily economy must be secured by restoration and preservation of the acid-alkali balance of the cells, particularly of the brain and liver; maintenance of an adequate circulation; as well as a minimizing and, where indicated, a dividing of the trauma of operation. Crile summarizes his views in a series of surgical suggestions, the following of which have enabled him to reduce the mortality rate in stomach operations, gastro-enterostomies and resections, to 1.5 per cent.

Tumors of Corpus Callosum.—In the case coming under his observation Baehr was able to determine the presence of a soft, nonexpansible cerebral neoplasm. This tumor was very strictly to the corpus callosum and hence its symptom complex did not include those symptoms due to an extension of the process and to pressure on distant parts. While Bristowe's syndrome still stands, Baehr is inclined to modify it as follows: Tumors of the corpus callosum show disorders of intelligence; absence or insignificance of signs of increased intracranial pressure; absence of definite evidence of tumor of the frontal lobe and absence of paralytic or convulsive phenomena, until by encroachment motor and sensory pathways or cranial nerves are affected.

Intravenous Protein Therapy in Arthritis.—Waggoner is convinced that intravenous vaccine therapy produces marked results in the recipient as evidenced by chill, fever, sweating and change in the blood picture. The average dose for inauguration of treatment is from 20 to 50 millions of dead typhoid bacilli, depending on age, size and robustness of the individual patient. Diet should be regulated and assisting measures should be employed. The case must be one of acute or chronic infective joint lesion. In acute cases there is marked improvement and cure in 50 per cent. of cases after from one to five injections given each third to fourth day and in these cases there have been no complications. In 50 per cent. of acute cases with recurrences, if foci of infection have been destroyed, more treatment will usually clear them up; 10 per cent. of chronics are made practically normal; 80 per cent. are improved and 10 per cent. remain unchanged.

Public Health Journal, Toronto

August, 1921, 12, No. 8

- Etiology of Tuberculosis. W. J. Dobbie.—p. 337.
- Healthy Child: Our Greatest National Asset. H. Spohn.—p. 352.
- Provincial Public Health Nursing in Manitoba. E. Russell.—p. 360.

Tennessee State Medical Ass'n Journal, Nashville

August, 1921, 14, No. 2

- Ruptured Uterus; Twisted Ovarian Pedicle; Dermoid Cyst Blocking Pelvic Outlet. E. T. Newell, Chattanooga.—p. 121.
- Gastric and Duodenal Ulcer. J. T. Moore, Algood.—p. 126.
- Modern Surgical Operation. C. N. Cowden, Nashville.—p. 130.
- Medical Society. J. A. McCulloch, Nashville.—p. 134.
- Vertigo. J. J. Shea, Memphis.—p. 138.
- Tonometers and Tonometry. J. Green, Jr., St. Louis.—p. 141.
- Value of Determination of Basal Metabolism; Report of Cases. W. H. Cheney and F. B. Bogart, Chattanooga.—p. 149.
- Enlarged Prostate: Its Diagnosis and Management. W. D. Haggard and H. L. Douglass, Nashville.—p. 153.

Texas State Journal of Medicine, Fort Worth

August, 1921, 17, No. 4

- Congenital Hypertrophic Pyloric Stenosis. C. W. Flynn, Dallas.—p. 199.
- Vomiting in Infancy. H. L. Moore, Dallas.—p. 202.
- Cerebral Spastic Paralysis, with Case Reports. E. G. Schwarz, Fort Worth.—p. 204.
- Focal Infection in Children. M. C. Harper, San Antonio.—p. 208.
- Problem in Municipal Sanitation. V. M. Ehlers, Austin.—p. 211.
- Malarial Control in East Texas. J. M. Travis, Jacksonville.—p. 213.
- Symptoms and Differential Diagnosis of Exanthems. A. S. Garrett, Weatherford.—p. 215.
- Relationship of Public Health Nurse and County Health Officer, as Pertains to Public Health Nursing. E. G. Pinder, St. Louis.—p. 216.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

Aug. 20, 1921, 2, No. 3164

- Changes Induced in Blood Constituents by Radiations. S. Russ.—p. 268.
- Radiation in Treatment of Diseases of Blood. G. L. Gulland.—p. 271.
- Surgical Diathermy. E. P. Cumberbatch.—p. 275.
- Section of Ambulance and Red Cross. J. Cantlie.—p. 281.
- Case of Trypanosomiasis Treated by Intrathecal Serum. J. W. H. Eyre and C. H. Marshall.—p. 284.
- *Glycosuria of Malarial Origin. A. Castellani and J. G. Willmore.—p. 286.
- *Sloughing of Lower Uterine Segment Following Placenta Praevia: Laparotomy: Recovery. J. R. C. Canney.—p. 286.
- Lethargic Encephalitis with Severe Hiccough at Onset. A. Howell.—

Glycosuria of Malarial Origin.—A case of malarial glycosuria and one of malarial diabetes are recorded by Castellani and Willmore. In the first case quinin caused the disappearance of the glycosuria. At no time was the patient put on antidiabetic diet, and there was no restriction of his carbohydrate intake. There can be little doubt, therefore, that the disappearance of the sugar was due to the administration of quinin. The second case shows that there is a form of glycosuria of malarial origin, and that this condition may, at times, become so severe as to simulate true diabetes, the patient losing flesh, becoming very weak, complaining of thirst and hunger, and passing a large amount of saccharine urine. The glycosuria in this case was cured by the administration of quinin in full doses without any dietetic treatment.

Placenta Praevia Causing Sloughing of Lower Uterine Ligament.—Canney's case was one of infection of the placental site, aided, possibly, by its low position in the uterus, followed by a gradual sloughing of the uterine wall at the placental site, and secondary hemorrhage therefrom. A coil of small intestine lying in Douglas' pouch became adherent and eroded, and the infection spreading produced pelvic peritonitis and pelvic abscess. Although the bacteriology of the case was not worked out, the strong presumption is that it was an infection by *B. coli-communis*.

Aug. 27, 1921, 2, No. 3165

- Diagnosis and Treatment of Cystitis. J. F. Dobson.—p. 305.
- Bladder Growths and Their Treatment. S. MacDonald.—p. 310.
- *Open Prostatectomy. J. W. T. Walker.—p. 311.
- Effect of Health Legislation on Health of People. W. E. Elliott.—p. 313.
- Importance of Industrial Medicine to Community. E. L. Collis.—p. 315.
- *Luminal Contrasted with Bromid in Epilepsy. F. Golla.—p. 320.
- *Recurring Dislocation of Shoulder Joint. T. L. Sandes.—p. 332.
- Pruritus Ani. W. F. Somerville.—p. 323.
- Ruptured Ectopic Gestation and Uninterrupted Uterine Pregnancy. C. M. Rolston.—p. 323.

Open Prostatectomy.—In this operation the bladder is distended with fluid and opened and the prostate enucleated with the gloved forefinger of the right hand. A catgut stitch is placed in each lip of the bladder wound and the patient placed in the Trendelenburg position. The bladder retractor is then introduced. The condition of the opening into the prostatic cavity first receives attention. Strips and folds of mucous membrane are picked up with long forceps and clipped away. This trimming at the vesicoprostatic orifice leaves a large oval opening, which fully exposes the interior of the prostatic cavity. The control of hemorrhage in this open operation is usually complete and accurate. This operation is an attempt to bring the control of hemorrhage and the prevention of sepsis in prostatectomy into line with that practiced in other modern surgical operations. It also recognizes the fact that postprostatectomy obstruction at the outlet of the bladder may occur in the hands of the most experienced operators, and it effectually prevents this sequel.

Luminal and Bromids in Epilepsy.—A study of the results recorded by Golla shows that thirty-six out of a total of 125 patients were either not improved or deteriorated under luminal treatment, while the remainder did better under luminal than under bromid. The patients most beneficially affected by luminal were those with fits occurring at frequent intervals, and the patients least affected were those whose fits occurred in bouts at considerable intervals of time. The doses of luminal employed have rarely exceeded 6 grains a day of the sodium salt. The drug is, as a rule, well tolerated, and most patients found that they were far brighter and more cheerful after a change to luminal from bromid treatment. Twelve patients complained of giddiness and drowsiness. Five of these patients showed definite affection of the gait, reeling slightly as if under the influence of alcohol. By diminishing the dose of luminal, Golla was able to secure eventual toleration in all but four patients, who complained so persistently of giddiness that the luminal treatment was suspended. Urticarial rashes appeared in two cases at the onset of treatment, but disappeared when it had been continued for a few days. There has in no case been any sign of the formation of a drug habit, and suspension of the treatment has never given rise to any disturbance. There is a tendency in all cases for the number of fits to increase slightly after the first two months of treatment.

Recurring Dislocation of Shoulder Joint.—Sandes makes an artificial ligament from a strip of fascia lata. It is passed through a hole drilled in the head of the humerus and slung over the clavicle.

China Medical Journal, Shanghai

July, 1921, 35, No. 4

- Studies on Diet of Koreans. J. D. Van Buskirk.—p. 305.
 *Postoperative Catheterization in Korea. R. G. Mills.—p. 310.
 Obstetrical Experiences in Futsing City, Fukien, China. M. C. Poulter.—p. 331.
 Lithiasis at Canton Hospital. J. O. Thomson.—p. 347.
 A Year's Experience in Eye Clinic. W. S. T. Neville.—p. 369.
 Intestinal Parasitism in South Fukien. J. P. Maxwell.—p. 377.
 Communicable Diseases Among Domestic Servants. J. H. Korn.—p. 382.

Postoperative Catheterization in Korea.—Postoperative catheterization in the surgical service of a modern hospital in Korea, Mills says, is a procedure much less employed than under similar conditions in the United States. The urinary mechanism of the average Korean patient is less influenced by disturbing and inhibiting factors, for which certain reasons are suggested: (1) Less highly organized and more stable nervous system, evidenced by better endurance of pain, less nausea and vomiting and lower percentage of individuals with a neurotic temperament. (2) Greater freedom of patients as to movement in bed and the more liberal use of fluids after operation. (3) The establishment of no arbitrary time within which a patient must urinate or be catheterized, each being allowed to void when he feels so inclined, even though this may be twenty-four or more hours after the operation.

Journal of Laryngology and Otology, Edinburgh

July, 1921, 36, No. 7

- Vestibular Face Reflexes. S. Mygind.—p. 321.
 Chondroma of Cricoid. E. B. Waggett.—p. 338.
 Lethargic Encephalitis Complicated by Double Chronic Suppurative Otitis Media. J. Don and H. R. Souper.—p. 343.

Lancet, London

Aug. 20, 1921, 2, No. 8

- Objective Study of Neurosis. F. L. Golla.—p. 373.
 *Treatment of Imperfectly Descended Testicle. C. A. Pannet.—p. 379.
 Gastric Operations: One Hundred Consecutive Cases. L. E. B. Ward.—p. 382.
 Experimental Study of Prophylactic Inoculation in Typhus Fever. S. Kusama.—p. 386.
 *Basal Metabolism in Menstruation. M. O. P. Wiltshire.—p. 388.

Treatment of Imperfectly Descended Testis.—Pannett states that the future treatment of the incompletely descended testicle will lie in the direction of furnishing the missing stimulus to full development. The ectopic testicle can usually be transferred to the scrotum without endangering its future growth. It is not possible to implant a testicle arrested in the inguinal canal into the scrotum without damage to the organ. The replacement of such a testis into the abdomen will destroy any prospect of ultimate spermatogenesis, while it will not interfere with the internal secretory function. The seminal tubules are unable, apparently, to secrete against the high resistance imposed by the passage through the con vasculosi and epididymis, unless they are aided by the contractions of the cremaster muscle. Early operation is not recommended. An uncomplicated bubonocoele is no indication for operation, but attacks of torsion or strangulation are. When it is impossible to bring down the testicle into the scrotum without endangering its blood supply, orchidocelioplasty is preferable to removal. The technic of the operation is indicated.

Basal Metabolism in Menstruation.—Observations were made by Wiltshire on five subjects. The premenstrual values varied from 32.2 to 40.7; the menstrual from 31.3 to 40.4; the postmenstrual from 31.5 to 40.5, and the intermenstrual values from 32.2 to 40.9. The cost of work and the rate of recovery from work are the same during the menstrual and intermenstrual periods.

Quarterly Journal of Medicine, Oxford

July, 1921, 14, No. 56

- *Unilateral Alterations in Blood Pressure: Differential Blood Pressure Sign. E. F. Cyriax.—p. 309.
 *Sugar Tolerance; Variations Found at Different Ages. J. C. Spence.—p. 314.
 Incidence of Infections with Pfeiffer's Bacillus Before, During and After 1918 Epidemic. J. W. McLeod, A. G. Ritchie and C. A. Dottridge.—p. 327.
 Law of Cardiac Muscle with Special Reference to Conduction to Mam-malian Heart. T. Lewis.—p. 339.
 *Metabolism of Rickets. L. Findlay, D. N. Paton and J. S. Sharpe.—p. 352.
 *Blood Viscosity and Blood Pressure. D. M. Lyon.—p. 398.

Unilateral Alterations in Blood Pressure.—The results found in surgical cases, as given in a previous communication, were fully confirmed by Cyriax, the only exception being that the differential blood pressure sign was also found to occur frequently in operations on structures in the middle line. The differential blood pressure sign is also frequently encountered in unilateral medical cases and in bilaterally equal and constitutional affections. As regards the maximum pressures, differences of 10 mm. and over are found in about 35 per cent., and of 20 mm. and over in about 7 per cent. of all cases. As regards the minimum pressures, similar differences are found, respectively, in about 45 per cent. and 4 per cent. Neglect to exclude the presence of the differential blood pressure sign Cyriax asserts may easily lead to totally erroneous conclusions as to the state of the circulation.

Sugar Tolerance at Various Ages.—It is shown by Spence that the same degree of sugar tolerance is not constant at all ages. It is greatest in infancy, and tends to become lessened as age advances. Of five men over 60 years of age who were examined, four showed a marked diminution of carbohydrate tolerance with consequent hyperglycemia. In children under 3 years of age a low blood sugar curve must be taken as the expression of the normal sugar tolerance; in children above that age the blood sugar curve resembles that of a young adult. In cases of cancer the sugar tolerance was variable. It was normal in the younger and decreased in the older patients. This suggested that the hyperglycemia and decreased sugar tolerance, which have been described in some cases of nephritis and in cancer, are due to the hyperglycemia of old age, which is so frequently present even in

apparently healthy old people. A decreased sugar tolerance was found in a case of active rickets, and in a case of lethargic encephalitis.

Metabolism of Rickets.—Changes in bones, simulating somewhat those in rickets, Findlay and his associates state can be caused by feeding on a calcium low diet, but the condition is of the nature of osteoporosis and not true rickets. The tissues other than bone in experimental rickets in dogs are not deficient in calcium. The calcium content of the blood in experimental rickets in dogs shows no divergence from the normal. No support is given to the view that rickets is due to a deficient supply of calcium to the bone.

Blood Viscosity and Blood Pressure.—It is concluded by Lyon that the viscosity of the blood is a very important factor in maintaining the blood pressure, but that alterations in the thickness of the blood can be easily compensated for by the body, and hence only in exceptional cases (anemia and chronic venous congestion with cyanosis) does this control show itself in an altered blood pressure.

Sei-I-Kwai Medical Journal, Tokyo

August, 1921, 40, No. 3

- Antidotal Activities of Serums Against Organ Toxins. H. Wago.—p. 1.
Effective Principles in Extract of Pituitary Body. Y. Saito.—p. 4.

Medical Journal of South Africa, Johannesburg

June, 1921, 16, No. 11

- Massive Collapse of Lung. C. J. Scholtz.—p. 202.
Problem of Tuberculosis in South Africa. J. A. Mitchell.—p. 205.
Introduction of Schistosoma Mansoni Infection to South Africa. F. G. Cawston.—p. 209.
Roentgen-Ray Findings in a Case of Abdominal Pain Due to Gastric Ulcer. L. E. Ellis.—p. 210.

South African Medical Record, Cape Town

July 23, 1921, 19, No. 14

- Laboratory Aspect of Meningococcal Meningitis; Review of Infection and Immunity. F. S. Lister.—p. 263.
Diagnosis and Treatment of Cerebrospinal Meningitis. A. P. Watkins.—p. 269.
*Case of "Peptic" Ulcer of Intestine after Gastro-Enterostomy. E. O. Ashe.—p. 271.
*Case of Abscess Attached to Liver, and Removed by Operation. J. J. Levin.—p. 272.

Peptic Ulcer of Intestine After Gastro-Enterostomy.—Ten years ago Ashe's patient was operated on for duodenal ulcer, the ulcer being infolded, not excised, and either at that time, or soon after, the appendix was removed. After some years of greater or less abdominal discomfort and pain, the woman was operated on four years ago, anterior gastrojejunostomy being performed. The surgeon intended to do the posterior operation, but found so many adhesions that this was impossible. A few months ago Ashe first saw her for severe abdominal pain and a hard tender spot to the left of the epigastrium. Ashe made a diagnosis of peptic ulcer at or near the anastomosis, which had perforated and was eating through the abdominal parietes. He operated and found his diagnosis absolutely correct. The ulcer was at the line of the old anastomosis, and from this line a double thread, 2 inches long, hung down into the lumen of the bowel. A further inch was imbedded in the stomach wall. The imbedded part was white, the loose part black and curly, and had a large knot on its free end. When the curls were straightened out, this part was 3 inches long. The material looked like celluloid or linen, and the thread was still fairly strong, though it parted with quite a moderate pull.

Abscess Attached to Liver.—Levin cites a case of abscess about the size of an adult cranium, attached to the left lobe of the liver which followed a pimple on the right leg below the knee; the pimple became infected and developed into an abscess, which opened spontaneously under home treatment. The parents noticed a red line running up the leg from the abscess up to the groin, and the boy complained of pain in the abdomen. When the abscess burst the pain in the abdomen ceased for a while. Levin saw him one month afterward. He removed the abscess. He suggests: (1) Either the infection, by means of the veins or the lymphatics, traveled on to the region of the umbilicus, and thence along the round ligament in the falciform ligament directly to the left lobe of the liver. Or—(2) The infection traveled on to the abdomen, then on to the under surface of the diaphragm, and thence by means of the veins of Sappey (or the lymphatics),

which form an anastomosis with the portal circulation, on to the left lobe of the liver. Or—(3) The abscess in the liver was in the nature of a metastasis.

Tropical Medicine and Hygiene, London

Aug. 15, 1921, 24, No. 16

- Treatment of Kala-Azar with Some New Antimonial Preparations. U. N. Brahmachari.—p. 213.
Case of Afebrile Quartan Malaria, with Urticaria. J. A. G. Froes.—p. 215.
*Cancer of Liver in African Native. A. Y. Massey.—p. 216.

Cancer of Liver in African Native.—Massey has seen two cases of cancer of the liver in the Belgian Congo. The first was in a Batatela woman, aged 30, who had lived the ordinary native life, her food consisting of maize, kassava, monkey nuts, native greens, palm oil, with now and again a little fish from the local streams, or wild meat such as that of the antelope, buffalo, or small rodents. The tumor was of the ordinary large nodular form and weighed 14 pounds. The second case was in a man, aged about 40, of the same race but far removed as to locality. He was of the ordinary common or garden type of native who has never wandered from his native heath. His tumor was the same as in the first case, and weighed 10 pounds. In each case the weight represents the entire liver. Both tumors were of the multiple nodular form, the umbilicated surface nodules as big as walnuts and easily felt through the abdominal wall. It is evident that they were secondary in origin, although Massey did not find the primary focus.

Tubercle, London

August, 1921, 2, No. 11

- *Resistance to Tuberculosis in Early Infancy. A. Wallgren.—p. 481.
Climatic and Sunlight Treatment of Surgical Tuberculosis. O. Bernhard.—p. 490.
*Can Tuberculosis of Lungs Be Activated by Syphilis? D. Bonnert.—p. 497.

Resistance to Tuberculosis in Infancy.—Wallgren's investigations do not show that young animals are less resistant to tuberculosis than older animals, but rather the contrary. It would also appear that the amount of lymphoid tissue present does not affect the course of infection.

Tuberculosis Activated by Syphilis.—Bonnert cites one case in which an acquired syphilis caused a latent tuberculosis to flare up.

Archives de Médecine des Enfants, Paris

July, 1921, 24, No. 7

- *Aortic Insufficiency in Children. P. Nobécourt.—p. 393.
*Epidemic Meningitis. K. Lewkowicz.—p. 407. Begun No. 6, p. 329.
*Technic for Detubation. T. Reh.—p. 432.
*Umbilical Diphtheria in the New-Born. J. Comby.—p. 437.

Aortic Insufficiency in Children.—Nobécourt gives diagrams from some typical cases of aortic insufficiency entailed by febrile articular rheumatism in children. This type is almost invariably endocarditic, while in adults the insufficiency is generally of arterial origin. In children, there are usually other lesions in the endocardium and pericardium, but when these are slight, the aortic insufficiency may be borne without apparent harm, the hypertrophy of the left ventricle providing compensation. If symptoms from the mitral valve predominate, the outlook is much graver. Careful hygiene, regulation of exercise and digestion, and warding off return of the rheumatism—which are effectual in pure aortic insufficiency—are inadequate for management of the mitral type. This requires treatment for hyposystolia and asystolia.

Epidemic Meningitis.—Summarized on page 891.

Detubation.—Reh compares the various maneuvers in vogue for extraction of the tube in diphtheria.

Diphtheria of the Umbilicus.—Comby comments on Schönfelder's recent report of institutional epidemics of umbilical diphtheria in the newborn, a total of thirty-three cases. Comby suggests that it may occur in other institutions and escape detection.

Bulletins de la Société Médicale des Hôpitaux, Paris

July 22, 1921, 45, No. 26

- Epidemic Encephalitis. P. Ravaut.—p. 1158.
*Diphtheria Antitoxin by the Mouth. E. C. Aviragnet et al.—p. 1160.
*Nervous Reflexions of Dyspepsia. Loeper et al.—p. 1164.
*Acute Tabetic Arthropathy. A. Lemierre et al.—p. 1170.

- *Spasmodic Coryza from Chilling. J. Lermoyez.—p. 1183.
 *Experimental Hay Fever. Idem.—p. 1187.
 The Vegetative Nervous System in Epidemic Encephalitis. Laignel-Lavastine and Coulaud.—p. 1192.
 *Pneumococcus Abscess of Lung. Idem.—p. 1195.
 *Organotherapy in Sclerodermia. P. Lereboullet.—p. 1200.
 *Treatment of Migraine. J. A. Sicard, Paraf and Forestier.—p. 1204.

Diphtheria Antitoxin by the Mouth.—The Schick test never showed the slightest modification when applied to fifteen children given 250 units of diphtheria antitoxin by the mouth or rectum for several days in succession. This and other experiences cited reestablish the inefficacy of antitoxin by this route.

Nervous Reflexions of Dyspepsia.—Loeper and his co-workers explain that as the epithelium of the stomach lining is fragile, the nerve terminals close beneath it are liable to suffer from toxic action and mechanical traction, setting up direct nervous disturbances, possibly remote, as well as by reflex action. The nerves absorb toxins and poisons, and neuritis secondary to some lesion in the gastric mucosa is common. No symptoms followed injection into the dog brain of a filtered emulsion of the pneumogastric nerve from a fasting dog, while accidents followed if the nerve had been taken from a dog during digestion. Other experiments show that the toxin absorbed by the nerve may creep up as far as the medulla oblongata. This warns that when there is a known gastric lesion, substances with an affinity for the nervous system should not be taken into the stomach. Also that existing toxins should be got rid of as soon as possible, and the digestive powers augmented. It is possible, they add, that pepsin has a direct action on the nervous system by this mechanism, instead of being merely a digestive ferment. They refer in conclusion to a previous study of how to give pepsin, which was summarized in these columns, Sept. 17, 1921, p. 975.

Acute Tabetic Joint Disease.—The man of 51 developed an acute pathologic condition in the left knee which proved to be the first manifestation of tabes. In a few days it had caused complete dislocation of the joint, with fever. The diagnosis at first had been lymphangitis or phlebitis. Agonizing pain in the calf had been the first symptom, followed by hot, red edema of the entire leg, high fever and delirium. The local phenomena partly retrogressed but the fever persisted, with retention of urine and atrophy of muscle. The end was hastened by pneumonia in less than two months from the first symptoms. Several similar cases are known, but this is the only one in which the histologic findings were noted. They indicated an acute diffuse syphiloma of the joint with necrosis, the tabes imprinting special features on it; no micro-organisms were found.

Spasmodic Coryza.—Lermoyez presents arguments which seem to demonstrate that coryza may be a manifestation of colloidoclasia like asthma, hay-fever, etc. In the case described, chilling induced the autocolloidoclasia, causing a protein shock. This could be detected by the test hemoclasia before the actual coryza developed. This case confirms the assumption that we must distinguish between the anaphylactic shock and the protein shock. Hay-fever is an example of anaphylaxis from sensitization by a pollen, while spasmodic coryza from chilling belongs in the group of phenomena of the protein shock type.

The Hemoclastic Crisis in Hay-Fever.—Lermoyez brought on the recurring attack of hay-fever in four subjects by having them inhale in winter pollens or horse emanations. In each case the hemoclastic crisis was manifest before the clinical symptoms appeared. They responded with urticaria to inoculation of the skin with the same. In the discussion that followed, Pagniez referred to his success in warding off hay colds by having peptone taken before meals.

Pneumococcus Abscesses in Lung.—The multiple abscesses in the left lung following pneumonia retrogressed under anti-pneumococcus serotherapy. There was nothing to suggest secondary infection, and the cure was complete in two months during which 710 c.c. of the antiserum had been injected. Netter stated that in this case the subcrepitan râles could be heard with an interval of over 1 cm. between the ear and the skin.

Sclerodermia and Organotherapy.—In the extreme case of sclerodermia described, at the age of 17 the face seemed to

be a wax mask; the cheeks looked as if glued to the skeleton. The neck was hard and rigid, and it was impossible to take up a fold in the skin on the chest. The hands were bluish and the fingers immovably pressed against the palms. The upper part of the arms seemed the only regions that escaped the severe sclerodermia. Under treatment three years later with thyroid, pituitary and suprarenal extract simultaneously—all of which seemed to be called for by certain symptoms—plus phosphoric acid and arsenic tonics, marked improvement was realized even in two months, and by the age of 24 the sclerodermic condition and infantilism had entirely disappeared, the general aspect of the young man being now normal.

Treatment of Migraine.—Sicard and his co-workers noticed that when persons subject to migraine were being treated for varicose veins by intravenous injection of sodium carbonate, the migraine did not return afterward. From five to eight injections were made, each 1.5 to 2 gm. of an 80 per cent. solution of the sodium carbonate, and 2 or 3 gm. of sodium bicarbonate was taken before meals. This method was applied first in February, 1921, and there has been no recurrence of the migraine in any instance. Sodium carbonate seems to prevent the hemoclastic, seric, arsphenamin and similar reactions, by its effect in stabilizing the colloids in the serum. This anticolloidoclastic property therefore logically suggests its use in migraine, and possibly also in certain vasomotor, gastro-intestinal and other disturbances of the menstrual period.

Gynécologie et Obstétrique, Paris

July, 1921, 4, No. 1

- *Radium in Treatment of Uterine Hemorrhages. H. Pouey.—p. 4.
 *Antisyphilis Dispensary in Maternity. A. Couvelaire.—p. 9.
 *Protein Therapy in Gynecology. G. Bouché and A. Hustin.—p. 13.
 *Protein Therapy in Puerperal Septicemia. E. Lévy-Solal.—p. 48.

Radium in Treatment of Uterine Hemorrhage.—Pouey is convinced that surgical measures in the forty cases he reports would not have given such good results as the radium treatment. The hemorrhages in all were so profuse and frequent that only a mutilating operation could have been considered otherwise. The experiences in the infected cases teach the advisability of attenuating or curing the infection before applying the radium, whenever possible.

Antisyphilis Dispensary in Maternity.—Couvelaire's innovation in this line was mentioned as a news item recently. Instead of waiting to treat inherited syphilis when the child is born, this dispensary gathers the pregnant women and treats the fetus. Attendance at the maternity consultation dispensary does not have the stigma of an ordinary venereal disease station, and the women have flocked to it, and great good has been accomplished in warding off injury of the unborn child.

Treatment Based on Anaphylactic Shock Applied in Gynecology.—Bouché and Hustin have been applying the anaphylactic shock or vasotrophic shock in treatment of certain cases of amenorrhea and to arrest metrorrhagia or regulate menstruation. The method of application differs for each. Ten normally menstruating women were given a subcutaneous injection of 3 c.c. of normal horse serum and fifteen days later 1 or 2 c.c. of serum was injected into the cavity of the uterus with a Braun syringe. In from four hours to four days afterward blood appeared at the vulva, and this oozing of blood continued for from six hours to six days. A similar effect was realized in 3 or 8 women with amenorrhea, and systematic repetition of the procedure reestablished the rhythm of spontaneous menstruation. No effect was apparent in the others. In 15 cases of metrorrhagia the second injection of 1 or 0.5 c.c. of the horse serum was made subcutaneously, and this was repeated at intervals of one or two weeks. At first the sensitizing injection had little or no effect on the metrorrhagia but the anaphylactic shock from the second and later injections displayed a pronounced hemostatic action, although they did not modify an existing menstrual hemorrhage. In 9 cases of irregular menstruation, repetition of the anaphylactic shock seemed to have a stabilizing action, especially during the period preceding the menopause. Leukorrhea also seemed to be favorably influenced. He theorizes to explain the action of this treatment as a kind of anti-anaphylactic vaccination by a series of small repeated shocks.

Protein Therapy in Puerperal Septicemia.—Lévy-Solal reports what he thinks is the first case of puerperal fever to be published in which intravenous injection of 10 c.c. of a 5 per cent. solution of peptone was followed by prompt recovery. This treatment had been given as the last resort the fifteenth day, the condition growing constantly graver.

Lyon Médical, Lyons

July 10, 1921, 130, No. 13

Acidosis and Coma in Diabetes. G. Mouriquand.—p. 575. Conc'n No. 14, p. 631.

Paris Médical, Paris

July 30, 1921, 11, No. 31

*Technic for Reconstruction of the Face. J. Molinié.—p. 89.

*Epidemic Meningitis in Two Adults. R. Le Dentu.—p. 95.

*Typhoid Delirium Suggesting Rabies. P. Remlinger.—p. 99.

Reconstruction of the Face.—Molinié expatiates on the numerous advantages of taking the flap to support the nose or the orbit, jaw, etc., from the angle of the scapula instead of using costal cartilage or bone from elsewhere. A few illustrations show some of the fine results he has realized by this means during the last two years.

Epidemic Meningitis.—In the first case the young man apparently recovered under intraspinal serotherapy, but symptoms flared up again after a latent period of two or three weeks and necropsy revealed external hydrocephalus with ventricular distention from hypersecretion. In cerebrospinal meningitis if the head is pushed down while examining for Kernig's sign, this exaggerates the response to the latter. By combining thus the neck test and the Kernig, the response is peculiarly instructive.

Delirium Suggesting Rabies.—The delirium which deceptively simulated rabies in the man of 30 proved to be the initial manifestation of a rapidly fatal typhoid.

Aug. 13, 1921, 11, No. 33

Digestion Leukocytosis in Infants. H. Dorlencourt et al.—p. 129.

Blood Pressure with Limb in Different Positions. Moulinier.—p. 132.

*The Sugar in the Blood in Chronic Nephritis. H. Bierry, F. Rathery and F. Bordet.—p. 136.

The Blood Sugar in Nephritis.—The research reported and study of the literature seem to show that the content in the plasma of free sugar is of far less import for the prognosis in chronic nephritis than the content of the balance of the total sugar. With the Bierry and Portier method it is possible to estimate this balance, the proteidic sugar, as it is called. Hyperglycemia is common in grave chronic nephritis. The content in proteidic sugar is remarkably stable in different individuals, and the figure is high and constant in certain forms of chronic kidney disease. The technic for its determination is not described here.

Presse Médicale, Paris

Aug. 10, 1921, 29, No. 64

Convulsions in Young Children. A. B. Marfan.—p. 633.

*Correction of Facial Paralysis. L. Ombrédanne.—p. 636.

Correction of Deformity from Facial Paralysis.—Ombrédanne gives illustrations of a case already summarized in these columns when published elsewhere. A hook device is worn on a back upper tooth, and this hook lifts up the sagging corner of the mouth, restoring the symmetry of the face. The hook does not interfere with mastication, but the patient is advised to take it out at night.

Aug. 13, 1921, 29, No. 65

Experiences with Vaccine Therapy in Canada. Benoit.—p. 641.

*Technic for Arsphenamin Injections. G. Milian.—p. 643.

Present Status of Acidosis. J. Rouillard.—p. 645.

To Ward Off Accidents with Arsphenamin.—Milian refers in particular to the congestion following immediately the intravenous injection of the drug. As the symptoms resemble those from inhalation of amyl nitrite, he calls it the nitritoid crisis, and warns that acidity, low blood pressure, overfunctioning of the thyroid, nervous haste and fatigue predispose to it. Hence he makes a practice of insisting on an hour at least of repose before he makes the injection. A preliminary injection of epinephrin is indispensable for some. Certain patients bear the arsphenamin perfectly under hospital conditions who have severe nitritoid crises every time when they come from outside for the injections. A tendency to acidity

of the humors can be combated with alkalines, Vichy water, etc. At the first signs of an impending nitritoid crisis, he injects 1.5 mg. of epinephrin into the muscles of the thigh, and then draws 3 or 4 c.c. of artificial serum into the same syringe, and injects very gently this rinsing of the syringe, fractioned, into a vein. The first signs of the congestion crisis are acceleration of the pulse and blood-shot conjunctiva, even before the patients complain of prickling in the tongue, fingers, etc., and weakness.

Progrès Médical, Paris

July 16, 1921, 36, No. 29

*Serotherapy for Hemorrhage. H. Dufour and Y. Le Hello.—p. 333.

Serotherapy for Pulmonary Gangrene. Weil, et al.—p. 336.

Serotherapy and Vaccine Therapy of Pneumonia. Debray.—p. 340.

Serotherapy of Puerperal Fever. Mme. Skrongold-Vinaver.—p. 341.

Serotherapy of Hemorrhage.—Dufour and Le Hello noticed in a case of severe rebellious hemorrhagic purpura that the hemorrhagic tendency seemed to be arrested during the course of serum sickness when serotherapy had been applied. This occurred more than once, and the coagulability of the blood was found much augmented at these times. This casual observation led to the systematic production of symptoms of serum sickness in the animals yielding the antiserum. By this means an antihemorrhage action is secured. They call this the *sérum sérique anti-hémorrhagique*, and here present further testimony as to its value. It is obtained from rabbits given several very small intravenous injections of horse serum. The blood is drawn three weeks after the first injection. The serum from it injected into a guinea-pig sensitizes it at once, and notably increases the coagulating power of the blood, as also in man. About 10 or 20 c.c. are injected subcutaneously in treatment of hemorrhage, and also to ward off hemorrhage, from three to five hours before an operation. Eleven new cases are added to those already published to sustain further its efficacy.

Schweizerische medizinische Wochenschrift, Basel

July 28, 1921, 51, No. 30

*Cataract from Electric Accident. J. Strebel.—p. 689.

*Joint Anomalies. A. L. Vischer.—p. 696.

*Hypertrophy of Pylorus with Pernicious Anemia. T. Mayeda.—p. 699.

Epidemic Herpes Labialis. K. Mayer.—p. 703.

Cataract.—Strebel applies to cataract in general what has been learned from cataract following electric accidents. He advises to extract an electric cataract as soon as possible, as this will give a usable eye when the cataract starts in the other eye. In one of his cases the electric cataract developed in both eyes in three weeks; in another case the interval was six months in one eye and two years in the other.

Joint Anomalies in the Jaws.—Vischer found numerous evidences of arthritis deformans in a recent collection of anthropologic specimens from New Caledonia and the Loyalty Islands. In seventy-eight of 242 skulls the temporo-mandibular articulation showed most peculiar and uniform changes, which he is unable to explain.

Hypertrophy of Pylorus with Pernicious Anemia.—Mayeda queries whether the hypertrophy of the pylorus manifest in the case of pernicious anemia described had preceded or followed the development of the pernicious anemia. He cites as instructive Koch's twelve cases of hypertrophy of the pylorus wall with evidences of pernicious anemia in three. This large proportion can scarcely be a mere coincidence.

Aug. 4, 1921, 51, No. 31

*High Blood Pressure in Nephritis. A. E. Alder.—p. 713.

*Differential Diagnosis of Scarlet Fever. H. Raymond.—p. 719.

Familial Trichophytosis. M. Ganzoni.—p. 722.

Digitalis in Treatment of Aortic Insufficiency. E. Attinger.—p. 725.

Cause and Treatment of High Blood Pressure in Nephritis.—Alder suggests that spasm-inducing proteinogenous substances may form in the blood under the influence of infections, like those generated during a pregnancy. Under normal conditions they are taken care of by the liver, but when the liver is not working properly, they accumulate and the resulting spasm of the smaller vessels sends up the blood pressure. Acute diffuse nephritis in an infectious disease is thus only one symptom of the general toxicosis. It is most evident in the kidneys because these organs are so vitally important. The different amin bases involved explain the differing symptoms, those of pregnancy toxicoses coming

probably from the placenta and those in infectious diseases coming from the bacterial products. The kidney suffers diffusely from their toxic action, but acute focal nephritis is the work of the infection itself. The acute diffuse toxic kidney disturbance with the resulting high blood pressure from the toxic spasm of the minute arteries in the kidneys, is best combated by reducing the task of the kidneys, shutting off both food and fluids for a few days to give the kidneys a chance to recuperate. Thirst can be relieved with a little fruit juice or scraps of ice. If the blood pressure still keeps high, a water test can be given, having 1,000 or 1,500 c.c. of water or weak tea sipped in the course of half an hour. The resulting freshet may overcome the spasm. As the flood of urine follows, the blood pressure drops. If this freshet does not develop and the fluid is retained, energetic measures may be required, venesection, lumbar puncture and strophanthin, but he has never encountered a case in which the water test was followed by serious consequences. In many cases it seemed to have been the only means for warding off chronic nephritis from long persistence of this blocking of the kidneys and the high blood pressure.

Venesection is a valuable adjuvant in rebellious cases as it induces, by reflex action, dilatation of the vessels, especially those in the kidneys, in addition to the direct relief from the withdrawal of fluid. Venesection can be repeatedly applied in all forms of kidney disease with high blood pressure, as also with sclerosis of the kidneys with still satisfactory function. Lumbar puncture is also useful to combat high blood pressure, especially when there is a tendency to uremia and pseudo-uremia. Pilocarpin and papaverin tend likewise to reduce the pressure while they are being taken. The blood pressure is the best index of the gravity of an acute nephritis and the best guide to the treatment required in the individual case and hour. The patient should stay in bed in acute nephritis so long as the blood pressure is high. In view of the discouraging prognosis of chronic nephritis, and of the complete cure possible in acute nephritis under proper treatment, the management of acute nephritis entails grave responsibility.

Differential Diagnosis of Scarlet Fever.—Reymond made 145 injections of normal serum of adults in ninety-seven cases of eruptive diseases and found that the eruption disappeared in this area in 82 per cent. of the seventy-two scarlet fever cases and only in these, and that this extinction phenomenon could not be traced longer than the first three weeks. The serum is injected as if to form a wheal, and the exanthem around it disappears at the eighth to twelfth hour. It is not mere blanching, but actual extinction of the eruption over this area, the *Auslösch*- or discutient phenomenon as it is called.

Policlinico, Rome

Aug. 15, 1921, 28, No. 33

*Cocain and Cocainism. G. Dragotti.—p. 1100.

*Impalement Injury of Rectum. G. Regoli.—p. 1105.

*Fork in Stomach. G. Carossini.—p. 1107.

*Vaccination During Epidemic Smallpox. G. Pollaci.—p. 1108.

Indications for Treatment in Appendicitis and Ileus. P. Gilberti.—p. 1110.

Cocain and Cocain Poisoning.—Dragotti discusses legislation to check the traffic in cocain which is assuming large proportions since the war. Germany is producing synthetic cocain in enormous quantities, and the rate of exchange is rendering the traffic extremely profitable.

Fork in Stomach.—The young woman was trying to remove a fish-bone in her throat, using the handle of a fork, when the fork slipped out of her grasp. Roentgenoscopy showed the fork entirely in the stomach, the prongs pointing toward the heart. Fearing injury from retching, she was kept under the influence of ethyl chlorid and then of ether until the fork was removed through a median laparotomy, without apparent injury.

Vaccination During Epidemic of Smallpox.—Pollaci calls attention to recent experiences at Palermo when smallpox was prevailing. Of the 982 vaccinated or revaccinated with positive results, who were all in contact with smallpox cases, only fifteen developed smallpox, and in thirteen of these the symptoms appeared in less than twelve days, showing that infection must have already occurred, and the disease was unusually mild.

July 15, 1921, 28, Surgical Section, No. 7

Tumor in Accessory Salivary Gland. C. Ansaldo.—p. 277.

*Partial Resection of Kidney. G. Berti.—p. 289. Conc'n.

Oblique Internal Inguinal Hernia in Woman. C. F. Bianchetti.—p. 309.

"Inflammatory Tumors" on the Limbs. M. Giannantonio.—p. 317.

Partial Resection of Kidney.—In this concluding instalment of Berti's report on his experimental research in this line and analysis of clinical experiences, he emphasizes that partial resection of the kidney is not followed by hypertrophy enough to compensate for the loss. When the resection involves the pelvis, there is always danger of a urine fistula. It takes about a year for the circulation to become restored. The other kidney hypertrophies; the tubules lengthen, as a compensating process. He warns that a partial resection should never be attempted in malignant disease, and it is rarely indicated in tuberculosis of the kidney. In his tests on animals he examined the portion left of the kidney and the sound mate after intervals of from seven to 355 days. In a clinical case described the persistence of symptoms and development of new ones after the wandering kidney had been fastened in place, were explained by cicatricial adhesions entailed by the nephropexy. This third of the kidney, the superior pole, was resected, and the portion left was fastened to the twelfth rib. The cure was complete. In 112 cases of partial resection on record, all were cured in the 10 cases of solitary cyst, 3 of hydronephrosis, and all but 2 in the 15 cases of hydatid cysts. In the total number, 86 were cured and 11 died; nephrectomy was required later in 7 cases and a fistula was left in 5. The outcome is not known or dubious in 4. The total 112 cases included 5 cases of cancer, with 2 cures; 15 of tuberculosis, with 7 cures; 15 of simple pyonephrosis, with 14 cures, and 18 horse-shoe kidneys, with 12 cures.

Aug. 1, 1921, 28, Medical Section No. 8

*Kahler-Bozzolo's Disease. C. Cantieri.—p. 329.

*Acute Necrosis in Liver. G. Dagnini.—p. 343.

*Nitrobenzol Poisoning. L. Paterni.—p. 353.

Kahler's Disease.—Cantieri's patient was a farmer who practically starved himself into Kahler's disease in his efforts to escape from military service. For three or four months he ate only lemons and vinegar and salt fish, refraining from bread, meat and vegetables, taking castor oil frequently, and drinking a decoction of tobacco leaves. He obtained temporary release from service, and for three months took ordinary food, then restricted himself anew to lemons and vinegar for three or four months. By this time the digestive apparatus was much impaired and there were spontaneous fractures and Bruce-Jones proteinuria. Then came intense pains, suggesting left sciatica, with intense pains in the chest. All the bones of the chest seemed soft and yielding, an actual osteomalacia from the deficient nourishment. The man of 36 died from the progress of the Kahler-Bozzolo disease in less than four years from his first attempt to secure exemption by this means.

Acute Necrosis of Liver.—The patch of acute necrosis in the woman of 55 surrounded the central vein of the lobule of the liver while the portal region was intact. There were also a few small calcareous deposits in the liver. The woman died a week after an ovariectomy for a cystic tumor, done under prolonged chloroform anesthesia and followed by persisting vomiting and coma. A certain degree of parenchymatous nephritis evidently enhanced the toxic action of the chloroform, to which Dagnini ascribes the necrosis at a point of hampered circulation.

Nitrobenzol Poisoning.—The odor of bitter almonds explained the severe clinical picture in the unconscious and intensely cyanotic young woman as a hydrocyanic acid or nitrobenzol poisoning. As an hour had elapsed before she reached the hospital, Paterni regarded nitrobenzol as more probable. The nitrobenzol had been taken with suicidal intent. Dimness of vision was the first symptom, then dizziness, vomiting and total blindness, followed by cyanosis, spasms and coma. The stomach was repeatedly rinsed out and camphor and caffein injected, oxygen given, and heat applied to the body. After three hours of this, consciousness began to return, and by the tenth hour vision and hearing. The reflexes were exaggerated. The cyanosis persisted intense until the fourth day, and hemolytic jaundice followed by the sixth day, the erythrocytes dropping to 2,600,000 by the ninth day, but the jaundice had disappeared by the tenth. The

urine contained numerous hematin crystals, with urobilinuria most pronounced during the febrile period; acetonuria and diacetic acid were also evident. By the thirteenth day the storm had practically passed over although the erythrocytes still numbered only 2,500,000.

Riforma Medica, Naples

July 16, 1921, 37, No. 29

*Joint Disease in Malta Fever. O. Cignozzi.—p. 674.

*Multiple Sclerosis After Encephalitis. P. de Tommasi.—p. 675.

*Carbon Sulphid in Treatment of Pneumonia. L. Masciaglioli.—p. 677.

*Supplementary Gastro-Enterostomy. E. Aievoli.—p. 679.

Hip Joint Complications of Malta Fever.—Cignozzi warns that in every case of hip joint disease which seems to be a typical tuberculous process except that it displays a tendency to heal, agglutination tests should be applied. In two such cases this revealed that the coxopsoitis was a manifestation of Malta fever. Both children recovered the use of their hip joint in two or three months. These and other cases further testify to the efficacy of serotherapy in Malta fever.

Multiple Sclerosis Left by Encephalomyelitis.—In De Tommasi's case the girl of 8 developed encephalomyelitis after influenza, and this in turn was succeeded by multiple sclerosis.

Carbon Sulphid in Treatment of Pneumonia.—Masciaglioli has been preaching for some years the value of carbon sulphid in treatment of fibrinous pneumonia. He describes here a striking case in a man of 73 which illustrates the advantages of this treatment in addition to the usual measures. He does not mention the technic, referring for this to his earlier communication in the *Riforma* 22:37.

Supplementary Gastro-Enterostomy.—Aievoli discusses the conflicting views as to the advisability of a gastro-enterostomy as a routine procedure after various operations on stomach or bowel.

Rivista Critica di Clinica Medica, Florence

July 25, 1921, 22, No. 21

*The Umbilicus Sign. S. Pisani.—p. 241.

Test for Lactic Acid. F. D'Arbela.—p. 244.

The Umbilicus Sign.—Pisani explains the diagnostic significance of traction on the umbilicus from pathologic conditions in the vicinity. The traction is not direct. With gastroptosis, for example, the sagging stomach drags on the lesser omentum, and this in turn on the liver. The latter pivots on its transverse axis, and this pulls on the ligaments and draws up the umbilicus, making more prominent the fold of skin on the top while flattening out the fold at the bottom.

Archivos Latino-Amer. de Pediatría, Buenos Aires

May-June, 1921, 15, No. 3

Tributes to Prof. L. Morquio.—p. 177.

*Fever from Pyelitis in Infants. Olan Chans.—p. 198.

*Buttermilk in Infant Feeding. E. Gaing.—p. 201.

*Lymphosarcomas in Children. J. M. Macera.—p. 206.

Prenatal and Infant Welfare Work. J. Sanchez.—p. 217.

*Anthrax in Children. M. A. Lasala.—p. 222.

*Chronic Hemorrhagic Purpura. J. Bonaba.—p. 226.

Intraspinal and Mediastinal Hydatid Cyst. P. de Pena.—p. 230.

*Cerebellar Tuberculoma. L. Valabrega.—p. 235.

*Prognosis in Meningitis. E. Caprario.—p. 240.

Pyrexia in Infants Due to Pyelitis.—Olan Chans has often found that fever in infants for which no cause was evident on clinical examination, was explained at once by analysis of the urine. Pus and a little blood locate the causal process in the kidney pelvis. When the kidney proper is involved, albumin and tube-casts are found. Almost invariably such children are bottle fed, and the colon bacillus is responsible for the pyelitis. In one artificially fed infant of 11 months the temperature ran up to 42.1 C. (107.8 F.). Under treatment with tepid baths, breast milk exclusively, cupping, and hexamethylenamin internally (a teaspoonful every three hours of a 1 per cent. solution), recovery was complete in a week. The stools were normal throughout. This infant has had four returns of the pyelitis since, but never with such high fever. Salol can also be given, or potassium citrate to combat the acidity of the urine. Two or three enemas a day of 1:3,000 methylene blue may also be given, but hexamethylenamin is the main reliance.

Buttermilk for Infant Feeding.—Gaing ascribes the "unsurpassable results" he obtains with buttermilk in infant feeding

to his mode of preparation, using only separator cream for it, allowing it to stand for twenty-four hours and after churning out the butter bringing it slowly to boiling, stirring constantly with a cream whip. One or two tablespoonfuls of sour cream from the day before are added to the cream before it is set aside.

Lymphosarcoma in Child.—The large growth in the boy of 6 was in the duodenum but had invaded the pancreas. It proved fatal in twenty-seven days after the first symptoms.

Anthrax in Children.—In the five cases described the lesions were on face or neck, and were all benign, as usual in children.

Chronic Purpura.—The girl of 6 had hemorrhagic purpura and for two years afterward it recurred from time to time. Notwithstanding the hemorrhages the child passed apparently unharmed through typhoid, measles and influenza. She seems now, at 9, to be clinically cured, having had no hemorrhages for a year. Cauterization of the nose had cured the tendency to recurring epistaxis.

Tuberculoma of the Brain.—Valabrega found the tumor, as anticipated, in the cerebellum of the boy of 6. Other signs of tuberculosis had suggested its nature.

The Prognosis in Meningitis.—Caprario found 96 per cent. polynuclears and 4 per cent. lymphocytes, among the 490 leukocytes per c. mm. but no micro-organisms, in the lumbar puncture fluid of the boy of 8 with the pronounced clinical picture of meningitis. Two weeks later the fluid was clear and recovery soon complete. The albumin content of the fluid was not above normal at either puncture, and the leukocytes had their normal outline. It is the second case in his experience of rapid cure with up to 3,160 leukocytes per c. mm., 97.5 per cent. polynuclears, and no micro-organisms found in the puncture fluid.

Revista Mexicana de Biología, City of Mexico

August, 1921, 1, No. 6

*Physiology of the Testicle. F. Ocaranza.—p. 229.

*Relations Between Comparative Neurology and Psychology. I. Ochoterena.—p. 252.

Evolution and Involution of Nervous System. Idem.—p. 262.

*Mexican Protozoa. Idem.—p. 267.

Physiology of the Testicle.—Ocaranza relates that the number of erythrocytes first dropped and then ran high after removal of one or both testicles in seven guinea-pigs. The figure finally settled back to the preceding figure or kept permanently above normal. His research was continued for six months on each animal, but nothing was found abnormal in respect to weight, chest or abdomen measure, or temperature after the first. He cites Lipschütz and Ottow's recent announcement that one sixteenth of normal testicle in mammals is enough to provide for normal development.

Comparative Neurology.—Ochoterena emphasizes the importance of comparative neurology for the understanding of human psychology and especially for training the young. The human cortex is a recent addition to the brain proper which is common to all vertebrates. The latter is the animal in every human being, and its voice is heard even in the infant and it intervenes in every action throughout life. All education, all training of the young should utilize the instinctive curiosity of the animal brain, discipline it, and balance by other activities what can never be extirpated, namely, anger, fear and sexual impulses. The structure of this brain, common to all vertebrates, limits the liberty of the individual, and ethical and social ideals can prevail only when they do not conflict with the law of evolution of the universe.

Mexican Protozoa.—Ochoterena discusses here the biology of trichomonas.

Revista Médica del Uruguay, Montevideo

July, 1921, 24, No. 7

*Epidemic Encephalitis. B. Etchepare.—p. 277.

*Juvenile General Paresis. W. Martínez.—p. 285.

Hemoplastin. P. J. Martino.—p. 289.

Treatment of Diphtheria. L. Morquio.—p. 293.

Epidemic Encephalitis.—Etchepare's patient developed the disease with a confusional state at first, suggesting general paresis as the pupil reflexes were sluggish and there were certain motor disturbances in the young prostitute. The progressive increase in the glucose content of the cerebrum

spinal fluid to 1 gm. was a striking feature of the case, as it has persisted during the five months to date since recovery. His illustrations show the woman placidly sleeping when sitting or standing or reclining. The somnolency persisted for five months; whenever she was left to herself she slumbered. Etchepare then made an intraspinal injection of 10 c.c. of her own blood serum, and great improvement was evident by the fifth day, and in three weeks more the cure seemed complete. He states that he had a brilliant success with this autoserotherapy in another case of lethargic encephalitis. In the discussion that followed, Duprat reported notable benefit in a number of cases from intraspinal injection of 10 c.c. of a 10 per cent. solution of hexamethylenamin. In one man with slight ptosis, pains, impaired vision and vomiting, the presumptive diagnosis was a brain tumor. Glucose to 0.7 or 0.8 gm. was evident in the spinal fluid, and after an intraspinal injection of 1 gm. of hexamethylenamin the symptoms all vanished. The injection was always followed by a febrile reaction for a few hours. In this latter case the man has had no further symptoms during the year to date.

Juvenile General Paresis.—Martínez' patient had an alcoholic father and syphilitic mother, but the onset of the general paresis so early—the picture was complete at 17—was probably connected with the injury from a street car accident to the skull.

Semana Médica, Buenos Aires

June 16, 1921, 28, No. 24

- *Origin of Keratoconus. O. Wernicke.—p. 693.
- *Operative Treatment of Genital Prolapse. E. A. Fox.—p. 696.
- *Tests for Aviation Candidates. A. Milano.—p. 697.
- *Treatment of Febrile Abortion. W. Latzko.—p. 709.
- *Hemolysis in Ileus. A. B. Ribeyrolles.—p. 714.

Origin of Keratoconus.—Wernicke tears the mask of keratoconus from multiple sclerosis. The assumption of underlying multiple sclerosis would also explain the features of glaucoma better than anything else, he says, and he urges others to look for this association. The nervous system, etc., should be examined with special care at necropsies of persons with these two eye diseases.

Operative Treatment of Uterovaginal Prolapse.—Fox has applied Bumm's method of colli fixatio uteri and has been much gratified with the results to date. The cervix is drawn up and fastened to the tendon portion of the rectus muscles. This does not interfere with pregnancy later, but Fox thinks that the pressure on the pouch of Douglas is too much of a strain, and hence he does not advise this technic except when other methods are contraindicated.

Tests of Candidates for Aviation.—Milano gives an illustrated summary of the methods in vogue in Italy.

Febrile Abortion.—Bermann has translated a still unpublished work by Latzko on this subject. He regards fever as a formal contraindication against curetting the uterus. If the practitioner is unable to enforce bed rest in his expectant treatment, he must insist on the woman's going to the hospital in every grave case of febrile abortion.

Hemolysis in Ileus.—The research on dogs reported by Ribeyrolles supplements his clinical study of the serum in cases of intestinal obstruction. Everything sustains the assumption that the hemolysis is the work of toxins resorbed from the intestines.

June 23, 1921, 28, No. 25

- *The Herxheimer Reaction. D. Speroni.—p. 725.
- *The Aid Given by North Americans to Children in Austria. J. C. Navarro.—p. 727.
- *Extramembranous Pregnancy. G. F. Costa.—p. 731.
- Vaccine Therapy of Fibrous Pneumonia. C. E. Pico.—p. 740.
- Proposed Dental Nomenclature. E. Amato.—p. 747.
- *Disease in Centers of Musical Language. V. Ribón.—p. 748.

The Herxheimer Reaction.—Speroni utilizes the Herxheimer reaction in diagnosis of syphilis. Just as a small injection of tuberculin activates the tuberculous process in any organ, the same focal reaction is evident in syphilis after injection of a small dose of neo-arsphenamin. The great resemblance between tuberculosis and syphilis, and their identical manner of responding to their specific treatment, render this test injection of neo-arsphenamin dependable, like an injection of tuberculin in tuberculosis, he says.

North American Aid for Children in Austria.—Navarro describes in detail the "actual miracle that has been accomplished in Austria by the combination of Yankee philanthropy and the Austrian spirit of organization." The work was partly described in THE JOURNAL, July 31, 1920, p. 332.

Extramembranous Pregnancy.—Costa remarks that nothing but an extramembranous pregnancy will explain the discharge of a clear or blood-stained fluid from the genitals during a pregnancy, the discharge keeping up more or less continuously and debilitating the woman. The uterus is found small, out of proportion to the stage of the pregnancy, and the development of the fetus is defective and delivery difficult, owing to the lack of amniotic fluid. Six such cases are described in detail. Two of the pregnancies proceeded to term with birth of apparently normal infants except that the foot of one was twisted. The other cases all terminated in spontaneous or therapeutic abortion. Treatment can be only expectant as a rule, warding off congestions and fatigue, taking the temperature twice a day, and emptying the uterus if there are the slightest signs of infection, or the anemia becomes menacing after the premature rupture of the amnion or chorion.

Disease in Music Centers.—Ribón compares the literature on aphasia and amusia, hypermusia and paramusia, citing a number of interesting examples and discussing the organic basis.

July 7, 1921, 28, No. 27

- *Brain Tumor and Pseudocyst. Mariano Alurralde.—p. 1.
- *Foreign Body Stools in Infants. C. R. Castilla.—p. 7.
- *Bone Grafting in Pott's Disease. A. Gutiérrez.—p. 11.
- *Deep Roentgenotherapy. R. Espinola.—p. 15.
- Tuberculin in Prophylaxis. F. Jauregui and L. Sivori.—p. 18.
- *Glaucoma and Multiple Sclerosis. O. Wernicke.—p. 21.

Cystic Brain Tumor.—As Alurralde explains, the case in a boy of 10, which he reports, teaches the remarkable tolerance of the brain for slowly growing, fluid filled tumors. The necropsy confirmed his diagnosis of a cystic tumor of the left hemisphere in the region of the temporal lobe, probably close to the ventricle. The right ventricle was also enormously distended, an actual pseudotumor or pseudocyst in this ventricle.

Foreign Body Stools.—Castilla has noted that the diapers are characteristic when a healthy baby has swallowed a foreign body, although the clinical manifestations may range from zero to severe meningism. When an infant in the midst of health begins to vomit and becomes fretful, with other signs of disturbance that do not yield to the ordinary measures, discovery of the foreign body stools will give the clue. The stools are numerous but bunched; there will be four or five in a short time and then a free interval of six or eight hours, but during the day there may be about fifteen or twenty. The stools are serous and scanty, preceded by gases, and each one weakening the infant, the temperature dropping, and the child becoming chilly and sweating, and then dropping to sleep. Occasionally there may be a compact stool. The characteristic feature of the foreign body stool is a spot in the expanse of stool which is free from the ordinary fecal matter, the cloth showing through at this spot. The difference in the aspect of this serous patch and of the well digested rest of the stool is as marked, he says, as the difference between a water color painting and an oil painting. Hence he calls this the aquarelle stool sign of a foreign body. The patch may or may not differ in color from the rest of the stool.

It is important to warn mothers against allowing the infants a chance to get in their mouth a scrap of wool or fur from a blanket or robe or garment, a hair or a thread, as this class of foreign bodies is particularly hard to expel. Scraps of paper and cork pass off more readily, and a scrap of waxed paper, of a pea-pod, etc., is usually easily expelled. Infants' lips are always moist and the hand is carried constantly to the mouth, and scraps of wool and thread and fur from blankets, cap or other garment touching the face easily get into the mouth. The resulting disturbance may be ascribed to indigestion or teething. Even after expulsion of the foreign body, the characteristic stools from the irritation may continue for a day or two. Castilla warns that if there is much debility, the child suffering from loss of fluids, it is better not to purge until this is corrected. He advocates saline infusion, with or without epinephrin, small doses of castor oil, baths, etc., instead of a vigorous purge, and says that

children who have had these foreign bodies relatively frequently, and have even reacted with brain symptoms, yet have developed perfectly since.

Bone Grafting in Pott's Disease.—Gutiérrez used a rib resected from another patient to allow access to a cyst in the lung. The curve of the rib was an advantage in the special case described, in a woman of 28. The graft had been kept in physiologic salt solution for two weeks before it was implanted. The operation was a complete success, relieving the pain and restoring function to the spine. The Albee technic was not followed on account of the lack of the special instruments, but the outcome could not have been better. Two months after the operation she could stoop to the floor.

Deep Roentgen-Ray Treatment of Cancer.—Espinola comments on the revolution in roentgenotherapy which followed the invention during the war of a generator which produces over 200,000 volts. This was followed by the Fürstenau-Coolidge tube which can stand this voltage without harm. In Germany the rays are measured with an iontoquantimeter or electroscope as a rule.

Glaucoma as Manifestation of Multiple Sclerosis.—Wernicke's suggestion that keratoconus and glaucoma are an intra-ocular manifestation of multiple sclerosis has already been mentioned in these columns. We know that multiple sclerosis is the most frequent cause of retrobulbar neuritis, and the clinical picture of glaucoma shows many analogies, as he explains.

Siglo Médico, Madrid

June 18, 1921, 68, No. 3523

Three Year's Experience with Luminal in Treatment of Epilepsy; Nine Cases. C. Juarros.—p. 573.

*Protein Therapy with Optic Neuritis. M. Marín Amat.—p. 575. Conc'n in No. 3524.
Eczemas. Sicilia.—p. 578.

Protein Therapy.—Marín Amat reports the rapid cure after parenteral injections of milk in a case of intense intra-ocular optic neuritis or papillitis, with total amaurosis of the one eye involved.

July 9, 1921, 68, No. 3526

*Recurrence of Malaria After Splenectomy. R. Jiménez and G. Pittaluga.—p. 645.

*Treatment of Diphtheria. Martínez Vargas.—p. 648.
Gastro-Enterostomy Versus Gastrectomy. S. Carro.—p. 650.

Recurrence of Malaria After Splenectomy.—Summarized on p. 896 when published elsewhere.

Diphtheria in Spain.—Martínez Vargas relates that notwithstanding all the medical progress of the day there were 3,009 deaths from diphtheria in Spain during 1919, while the number was only 2,917 in 1905. The lack of recognition of the diphtheria in its early stages can be the only explanation of this increasing mortality. Diphtheria in the nose is particularly likely to be overlooked.

July 16, 1921, 68, No. 3527

Disease in Centers for Musical Language. V. Ribón.—p. 669.

*The Hypogenital Hand. G. Marañón.—p. 672.
Uric Acid of the Blood. Chauffard.—p. 675. Conc'n No. 3528, p. 700.

The Hypogenital Hand, or Acrocyanosis.—Marañón is convinced that the vasomotor disturbances inducing the acrocyanosis are traceable to insufficiency of the genital glands, predominantly of the ovaries, and hence his term "hypo-genital hand." There may be insufficiency of other endocrine glands, but the genital insufficiency is predominant and constant. A glimpse of the congested cyanotic, clammy hands is enough to suggest genital infantilism; the hands are usually puffy and doughy, and the nails are often spotted. The age is between puberty and maturity or at the menopause, and the subjects are usually females. Time and organotherapy are the reliance in treatment, especially intensive and prolonged ovarian treatment. Heliotherapy has also yielded excellent results in his hands, both for acrocyanosis alone or associated with tuberculosis or other chronic infection.

July 23, 1921, 68, No. 3528

*Ptosis of Cecum and Kidney. P. Chutro (Buenos Aires).—p. 693.

*Steinach's Rejuvenation Operation. A. Lorand.—p. 697.

Ptosis of the Cecum and Right Kidney.—Chutro explains how the kidney is dragged down by a large heavy cecum.

As the ptosis progresses, traction on the ligaments pulls on the biliary apparatus besides. Reflex gastrosuccorria may be entailed. Although the symptoms from these disturbances may be numerous and different, the aspect of these patients is always much alike. They are usually young, pale, with acne, constipation and poor appetite, and borborygmus. The physician pays little heed to these symptoms, and the consequence is that 80 per cent. of all women have signs of constipation and more or less sagging of the right kidney. The most common mistake in these cases is to incriminate and treat the biliary apparatus as the one primarily at fault. The sagging kidney may induce symptoms resembling somewhat those of duodenal ulcer. The so-called "hunger-pain" is comparatively frequent from ptosis of the right kidney alone, but it may develop at once or long after a meal, and it is relieved by reclining, and this pain may alternate with actual neuralgia of the solar plexus, especially when there is much traction on the ligaments. Appendectomy and fastening the kidney in place not only are ineffectual but actually aggravate conditions, for reasons which he explains.

When seen early, the ptosis may be corrected by organotherapy and posture, but as a rule the ptosis is recognized only when the symptoms show that conditions are beyond the medical stage. Fastening the cecum to the posterior parietal peritoneum has often sufficed to cure these young patients completely and permanently. If the cecum is much enlarged, a fold can be taken up in it. He has done this with five or six silk stitches on the last 10 cm. of the intestine, leaving the ends of the silk long enough to use to fasten the intestine to the posterior parietal peritoneum. If the mesentery is too long, this may have to be corrected. In cases with severe auto-intoxication, a preliminary course of bed rest, raising the foot of the bed for 25 or 30 cm., proctoclysis, and other medical measures may be necessary for a few months to recuperate tone. If the ptosis is general, operative measures are contraindicated and a supporting orthopedic corset should be worn after the course of a few months in bed. If conditions then actually require operative intervention, he has found that cecosigmoidostomy gives better results than joining the ileum to the sigmoid.

Rejuvenation Operations.—Lorand asserts that the results of recent research have confirmed his theory announced in 1904 that senility is the result of primary degeneration of all the ductless glands, not merely of the genital glands alone. He says that he has been very successful in arresting the onsets of the signs of senility by a combination of thyroid and genital gland extract treatment, especially in women. Menstruation returned in many cases of amenorrhea under this treatment, after a hiatus of three to six months. He always examined the pulse and heart every four or five days, and has never had any mishaps in the sixteen years he has been applying it. Sun baths and the vaporized mercury light baths proved useful adjuvants, along with moderation in eating. After 50, the sensation of a full stomach should be avoided at all costs, especially if there is arteriosclerosis.

Deutsche medizinische Wochenschrift, Berlin

July 14, 1921, 47, No. 28

*Sterility in Women. G. Winter.—p. 797. Conc'n.

Catarrhal Jaundice. K. Retzlaff.—p. 798.

Acute and Subacute Atrophy of Liver. G. Lepehne.—p. 800.

Artificial Pneumothorax in Pneumonia. O. David.—p. 802.

Treatment of Interlobar Pleural Empyema. L. Böhm.—p. 803.

Surgical Adjustment of Malposed Bone Fragments. M. Katzenstein.—p. 803.

Skin Diseases and Their General Treatment. C. Bruck.—p. 806.

Experiences with Swimming Pool Conjunctivitis. W. Comberg.—p. 809.

Grave Hemorrhages After Expulsion of Placenta. Blumreich.—p. 810.

Causes and Treatment of Sterility in Women.—Winter states that corpulence in women is without doubt closely connected with sterility. He quotes Kisch who, in his Marienbad practice, found in a series of 215 women with pronounced obesity forty-eight cases of sterility, or 22 per cent., as compared with the average 10 per cent. The cause lies rarely in mechanical disturbances of conception due to accumulations of fat about genitalia, or in sexual frigidity, which is common in such women, but is rather to be sought in a disturbed functioning of the ovaries, which through lack of ovarian hormones leads to an accumulation of fat, resembling the formation of fat during the climacteric. Therefore,

disturbances of menstruation are often found associated with lipomatosis. A previous instalment of Winter's long study of sterility was summarized, p. 977.

Deutsche Zeitschrift für Chirurgie, Leipzig

July, 1921, 164, No. 4-6

- *The Vegetative Nervous System and the Blood Picture. F. Breuer.—p. 225.
- *Fracture of Vertebrae. A. Müllerder.—p. 269.
- *Flail Joints. K. von Dittrich.—p. 315.
- *Plaster Extension for Fractures. E. Birt.—p. 328.
- *Gastric and Duodenal Ulcer. H. Zoepffel.—p. 342.
- *Enterostomy in Postoperative Ileus. W. Vollhardt.—p. 352.
- Tests of Antiseptics on Animals. M. Feiler.—p. 379.
- *Strangulation of Small Intestine by Tube. E. Boerner.—p. 392.
- *Racemose Arterial Angioma. E. Schwarz.—p. 408.
- Perforation of Nondistended Intestine. A. Nägelsbach.—p. 424.

The Vegetative Nervous System and the Blood Picture.—Breuer comments on the constantly increasing importance of the blood as an index of vital processes. In constitutional diseases the blood shows changes which seem to suggest an abnormal influence on the vegetative nervous system, possibly from the endocrine glands. Lymphocytosis is the rule in constitutional diseases. The influence on the vegetative nervous system from the neurotropic products of bacteria also has to be reckoned with. Tuberculosis is usually a mixed infection, which explains the variable blood findings. It is both an infectious disease and a constitutional disease, he reiterates, and lymphocytosis can be the expression of either. Pilocarpin elicits a more pronounced response when there is lymphocytosis. As the disease progresses, the balance in the vegetative nervous system tends toward the autonomic side, the autonomic system becoming more irritable. He tabulates the blood findings after epinephrin, pilocarpin and atropin tests, in fifteen cases of surgical tuberculosis. The methods of investigating the vegetative nervous system are still very imperfect. This is the more to be regretted as this system may prove to be the key to explain many constitutional conditions.

Fracture of Vertebrae from Contusion.—Müllerder reviews the results of treatment for these injuries applied in forty-seven cases in Eiselsberg's service during the last thirteen years. The list includes five children over 4 and fourteen women. The Albee bone graft promises to give better results than any yet attained. The operation should follow as soon as possible when the cord seems to be injured with fracture of thoracic vertebrae. He regards isolated paralysis of the bladder and the Bruns-Bastian set of symptoms as contra-indicating intervention. A removable supporting corset should be worn for six months after taking off the plaster corset, worn for two or three months. Exercises under medical supervision are indispensable, and a Förster operation should be considered with spastic paralysis from injury of vertebrae. There is considerable hampering of movement after fracture of vertebrae, and reduction of earning capacity even at the best. The disability is complete for a year at least. The course in several typical cases is described in detail.

Flail Joints.—Dittrich expatiates on the fine results attainable by loosening up and separating the muscles and drawing skin down to cover all the exposed parts; then a cuff is worn on the region above and another on the region below, a connecting hinge contrivance providing an artificial joint in the usually right angled gap. This is Götze's method, and Dittrich has applied it, among others, in four cases of war wounds of the elbow with considerable loss of bone.

Plaster Extension for Fractures.—Birt's experience with seventeen cases confirms the special advantages of this method of treatment, for compound fractures in particular.

Gastric and Duodenal Ulcer Operations.—Zoepffel urges the necessity for reducing secretion of hydrochloric acid as an indispensable element in treatment of ulcer. The organism seems to adapt itself perfectly to this artificial achylia which, he says, follows removal of the pylorus. He argues that the contact of the food with the pyloric mucosa is the main stimulus for secretion of gastric juice. The ulcer should be resected at the same time. He has applied the Billroth II method in twenty-eight cases on the foregoing reasoning, and thinks that his experience has amply demonstrated the essential advantages and success of this mode of inducing achylia, and thus theoretically warding off danger of recurrence and of peptic ulcer.

Enterostomy in Postoperative Ileus.—Vollhardt's experience in fifteen cases confirms that outside of tracheotomy there is scarcely any operation that is so directly life-saving as this.

Ileus from Foreign Body.—The small intestine was found strangulated by the fallopian tube and a diverticulum in which was discovered a gauze compress. The girl of 15 had had the appendix removed a year before.

Racemose Arterial Angioma.—In the case described the angioma had developed on the thigh of the man of 45.

Medizinische Klinik, Berlin

July 10, 1921, 17, No. 28

- *Modern Problems in Gynecology and Obstetrics. L. Seitz.—p. 831.
- The Practitioner and Treatment of Syphilis. Buschke.—p. 834. Cont'n.
- Bacteriemia and Its Import. K. Bingold.—p. 838.
- Desiccated Milk in Infant Feeding. Neuland and Peiper.—p. 841.
- *Protein Therapy in Infants. B. Epstein.—p. 842.
- Congenital Drumstick Fingers. E. Lewy.—p. 845.
- Symptoms from Striated Body in Encephalitis. W. Leibbrand.—p. 848.
- Opsonic Index for Staphylococci in Scabies. W. Löwenfeld.—p. 849.
- Otosclerosis. K. Grahe.—p. 851. Cont'n.

The Questions of the Day in Gynecology.—This is Seitz' inaugural address on assuming the chair of gynecology and obstetrics at Frankfurt a. M. His roentgen-ray work that has attracted so much attention was done at Erlangen. He remarks that the last twenty years have almost revolutionized obstetrics by the knowledge that the placenta is a complex organ, modifying albumin and fats; also the perfecting of cesarean section. The extraperitoneal incision on the lower segment has rendered obstetrics much more conservative, as we now can placidly wait to the very last limit for spontaneous delivery. But the greatest progress in the pathology of women has been realized with radiotherapy. Functional uterine hemorrhage, of ovarian origin, can be certainly arrested with 34 per cent. of the skin unit dose. After shutting off ovarian functioning in this way for a few months to a year and half, the ovaries resume their physiologic task again after the temporary castration. The way in which myomas stop bleeding and retrogress under the roentgen rays suggests that they, too, are due to some substance generated in the malfunctioning ovaries, the supply of which can be shut off in this way. Radium treatment of uterine carcinoma now has a record of 20 per cent. cured for five years to date, which is the same average realized by surgical measures. But deep roentgen-ray treatment, he continues, accomplishes more than this. He has a record of numerous cases with an interval since of two years without recurrence. Of fifty-eight cases of cervical cancer, given combined radium and roentgen treatment with an interval since of five years, from 12 to 20 per cent. are still living. With the method of six or seven cross-fire fields attacking the primary tumor at one sitting, and the parametrium at a second and third sitting, the carcinoma cells can be killed almost regularly. The ulcerating tumor retrogresses completely in five or six weeks, and no further traces of it can be detected even with the microscope in excised scraps a little later.

Protein Therapy for Infants.—Epstein declares that the defective functioning of the defensive forces in the prematurely born and in infants with the severest form of pedatrophia offer the most promising field for protein therapy. This treatment activates the defensive forces, and his experience with seven cases described in detail shows that it is harmless for infants in the form he used, namely, repeated daily injections of from 0.5 to 2 c.c. of normal horse serum or sheep serum. The vitality showed the effect promptly, and the weight began to increase at once. All were feeble, prematurely born or debilitated, but without infectious processes, the lack of vitality, the hypofunctioning of the cells, the cause of the pedatrophia.

Monatsschrift für Kinderheilkunde, Berlin

May, 1921, 21, No. 2

- Theory as to Origin of Salt Fever. A. Hirsch and E. Moro.—p. 129.
- Hereditary Syphilis in Second Generation. Bernheim-Karrer.—p. 130.
- Hydrogen-ion Concentration in Stomachs of Infants in Acute Disturbances of Nutrition. E. Hainiss.—p. 134.
- Suppuration in Urinary Passages in Childhood. Mautner.—p. 145.
- An Eye Symptom in Tetany. K. Ochsenius.—p. 151.
- Chronic Myelogenous Leukemia in Three Children. Langsch.—p. 152.
- *Epidemic Encephalitis in Childhood. O. Voigt.—p. 156.
- Paralysis of Respiratory Organs in Infancy. Haberkamp.—p. 163.
- Cholesterin Content of Blood in Chickenpox. E. Wentzler.—p. 165.
- Diphtheria Bacilli in Nose in Childhood. H. Opitz.—p. 170.

Epidemic Encephalitis in Childhood.—Voigt reports five cases and ascribes his success in the treatment of Cases 1 and 2 to frequent lumbar puncture. In both cases, after each puncture, a marked remission of the acute manifestations occurred, which was followed by a drop in the temperature during the next few days, so that a repetition of lumbar puncture was always strongly indicated, until finally when deferescence was accomplished also the acute clinical symptoms disappeared. In addition to lumbar puncture, he prescribed hexamethylenamin and salicylates.

Münchener medizinische Wochenschrift, Munich

July 15, 1921, 68, No. 28

- *Invisible Stage in Life of Protozoa. R. Kraus, et al.—p. 867.
- Predisposition to Lung Gangrene. H. Schridde.—p. 868.
- Effect of Inflammation on Nervous System. H. Groll.—p. 869.
- Septic Form of Stomatitis. P. Widowitz.—p. 871.
- Treatment of Streptococcus Empyema. P. Erlacher.—p. 872.
- Disappointing Late Results of Friedmann Treatment of Surgical Tuberculosis. J. R. Gossmann.—p. 873.
- Effect of Collargol. A. Böttner.—p. 876.
- Trephining in Acute Hematogenic Osteomyelitis. T. Naegeli.—p. 877.
- Treatment of Acute Osteomyelitis. P. G. Plenz.—p. 879.
- Significance of Position in Lung Examination. Hildebrandt.—p. 880.
- Effect of Roentgen Rays on Mitosis in Carcinoma Tissue and on the Blood Vessels. A. Reichold.—p. 881.
- Apparatus for Passive Exercise of Leg. L. Böhler.—p. 881.
- Perforation of Uterus and Intestinal Injury from Attempt at Abortion on Nonpregnant Woman. H. H. Schmid.—p. 883.
- Red Blood Corpuscles in Darkfield Illumination. E. Salén.—p. 885.
- Prosthesis for Kineplastic Amputations. Schlesinger and Meyer.—p. 886.
- Diabetes in Relation to Surgery. A. Krecke.—p. 887.

Invisible Stage in Life of Protozoa.—Summarized when published elsewhere, Sept. 3, 1921, p. 822.

Therapeutische Halbmonatshefte, Berlin

May 15, 1921, 35, No. 10

- Blood Transfusion. F. Balhorn.—p. 289.
- Epilepsy and the Suprarenal Glands. A. Brüning.—p. 297.
- Accurate Drug Administration. E. Fuld.—p. 301.
- Syphilis in the Pregnant. L. Preuss.—p. 306.
- *Endolumbar Treatment of Syphilis. W. Jacobi.—p. 307.

Intraspinal Treatment of Syphilis.—Jacobi reports two fatalities following endolumbar injection of sodium arsphenamin by Gennerich's technic. Necropsy showed severe irritation with hemorrhages in the pia.

Wiener klinische Wochenschrift, Vienna

July 14, 1921, 34, No. 28

- 1. Removal of Cystadenoma from Pancreas and Implantation of the Pancreatic Duct in the Stomach. II. Advanced Carcinoma of Gallbladder, Cured Three Years Ago. H. Lorenz.—p. 339.
- *The Subphrenic Abscess. F. Kovács.—p. 340.
- Esophageal Stricture. G. Lotheissen.—p. 342.
- Intravenous Therapy and Effect of Intravenous Injections of Hypertonic Solutions. K. Stejskal.—p. 343.
- Methods of Determining Coagulation Time of Blood. A. Frisch and W. Starlinger.—p. 344.

Subphrenic Abscess.—Kovács recommends that if the diagnosis "subphrenic abscess" is assured and localization of the abscess is possible, the patient should receive surgical treatment as soon as possible. The method of choice is that used for the empyema operation—the so-called transpleural operation—opening of the abscess cavity combined with rib resection and followed by drainage. Whether general or local anesthesia should be employed will depend on the general condition of the patient. In those cases in which the inflammatory process is beneath the thorax in the epigastrium or the lumbar region, which fact is recognized by the accentuated local manifestations, the incision is made at those points. The prognosis of surgical intervention is in general not unfavorable, but success will depend not only on the nature of the fundamental affection and the general condition of the patient at the time of the operation, but on whether the opened abscess cavity is the only one or if not whether neighboring cavities can be opened from it. If other peritonitic abscess cavities or multiple abscesses of the liver still persist unopened, the prognosis is of course less favorable. But even though the local problem seems successfully solved by the operation, complications may still arise that will lead to a fatal issue. In any event, the percentage of cures effected by operative intervention is large—vastly larger than the very small number of cases that have turned out favorably when operation was neglected.

Zeitschrift für Tuberkulose, Leipzig

July, 1921, 34, No. 6

- *Pneumothorax Treatment of Pulmonary Tuberculosis. C. Saugman.—p. 425.
- *Tuberculosis of the Sphenoid Bone. H. Kurzak.—p. 433.
- *Tuberculosis at German Medical Congress. Simon.—p. 443.

Pneumothorax Treatment.—A similar communication from Saugman was summarized, March 26, 1921, p. 903. His material has increased in the interim from 400 to 530 cases.

Tuberculosis of the Sphenoid Bone.—Kurzak gives the details of a case in which a tuberculous process in the sphenoid bone was responsible for retrobulbar injury of the optic nerve in the young man. He died in a few days after bilateral evacuation of pus in the sphenoidal sinus. The fatal outcome was ascribed to sepsis, but necropsy revealed the tuberculous process in both bone and sinus. He compares with this case six from the records in which there was a tuberculous process in the sphenoid bone or pituitary (both in three cases); and thirty-four in which the pituitary alone was the seat of tuberculosis. In the seven sphenoid cases there were always signs of tuberculosis in other organs.

Tuberculosis in Recent Medical Congresses.—The discussions on the natural healing tendency and other aspects of tuberculosis at the recent German Congress of Internal Medicine and German Tuberculosis Congress are reported with some detail.

Zentralblatt für Chirurgie, Leipzig

July 16, 1921, 48, No. 28

- *Arthrodesis in Hip Joint Disease. M. Kappis.—p. 990.
- Surgical Treatment of Intractable Furunculosis of Axilla. H. F. Brunzel.—p. 991.
- Free Transplants of Testis. H. F. O. Haberland.—p. 993.
- Aseptic Resection of Rectum. A. v. Rothe.—p. 994.
- Character of Urine Obtained by Ureter Catheter. Pflaumer.—p. 995.
- Plastic Tamponade of Bleeding, Hard Gastric Ulcer. Brewitt.—p. 996.

Arthrodesis by Implantation of Strip of Bone Close to Joint in Tuberculosis of Hip Joint.—Kappis recalls that tuberculous coxitis, if it heals at all, usually leaves a certain stiffness in the joint; sometimes the position is good but often enough it is bad; occasionally a flail joint results. Most surgeons, however, for various reasons, do not like to perform hip joint resection. So-called para-articular arthrodesis appears, therefore, justified as a midway position to take between operative and conservative treatment of tuberculous coxitis. A strip of bone is implanted between the trochanter and the crest of the ilium, whereby the joint is stiffened, with a view to shortening the period of treatment and the duration of the healing process, and thus get the patients back on their feet as soon as possible. Kappis has performed this operation eight times since August, 1920, with good results in each case. The pains disappeared at once. The patients could get up and walk in two weeks, wearing still a small bandage, and in five or six months they could discard all supports, and remained free from pain.

Zentralblatt für Gynäkologie, Leipzig

July 9, 1921, 45, No. 27

- Etiology of Reduplication of Female Genitalia. F. Lichtenstein.—p. 949.
- Cause of Uncontrollable Vomiting in Pregnancy. M. Schwab.—p. 956.
- Coil of Umbilical Cord About Arm of Child. G. Kaboth.—p. 958.
- "Formation and Function of Corpus Luteum." J. Novak.—p. 960.
- *Aorta Clamp in Postpartum Hemorrhage. B. Lörinz.—p. 962.
- *Modification of Sehrt's Aorta Clamp. H. Becker.—p. 965.

Aorta Clamp in Postpartum Hemorrhages.—Lörinz has used Sehrt's instrument in several cases, and, while it has not fulfilled all expectations, he found it especially valuable in genuine cases of atonia uteri and in hemorrhage from a torn cervix. He does not use it unless the more common methods have failed. It may serve as an indicator in that it shows when manual intervention becomes necessary. Its use may be dangerous if the postpartum hemorrhage is caused by retained placental fragment. If the hemorrhage recurs after thirty minutes of continued compression of the aorta, the cause lies doubtless in a placental remnant, which must be removed. An illustration of the clamp appeared in THE JOURNAL, Feb. 28, 1920, p. 640.

Modification of Sehrt's Aorta Clamp and Its Use in Postpartum Hemorrhage.—Becker found at first Sehrt's aorta clamp successful in checking hemorrhage in only about half the cases. He discovered that the pad in the Sehrt instru-

ment was too hard. He increased the padding, whereby the effect was vastly improved. There are two illustrations of the modified clamp. He reports briefly twelve cases in which the aorta clamp was used.

July 16, 1921, **45**, No. 28

- Paralysis of Facial Nerve in New-Born. H. Rossenbeck.—p. 981.
Observations on Duration of Gestation. P. W. Siegel.—p. 984.
Genesis of Hydrops Gravidarum. M. Beckman.—p. 995.
Supernumerary Ovaries and Their Tumors. B. Liegner.—p. 1000.
"Free Autogenous Peritoneal Transplants." A. H. Hofmann.—p. 1008.

Zentralblatt für innere Medizin, Leipzig

July 16, 1921, **42**, No. 28

- *Pulse Pressure After Ingestion of Alcohol. P. Engelen.—p. 570.

Pulse Pressure Findings After Ingestion of Alcohol.—Engelen reports the results of experiments on 60 patients of both sexes of various ages and with various diseases, to show the effect on pulse pressure of a slight quantity of alcohol (10 c.c. for the habituated and 7.5 c.c. for the nonhabituated), ingested in a 50 per cent. dilution. For purposes of comparison, 52 subjects were given the dose in two different positions (lying and sitting, lying and standing, or sitting and standing). In 8 cases the findings were taken in three positions before and after ingestion of the alcohol. In one patient in the last stage of pulmonary tuberculosis there was no change of the systolic or the diastolic blood pressure, either in the recumbent or the sitting posture. In a man of 50 (used to alcohol) with sciatica, maximal and minimal pressure remained unchanged, in the recumbent position, but when standing the pulse pressure was lowered 10 mm. of mercury by the alcohol. In general, it was found that the ingestion of 7.5 to 10 c.c. of alcohol exerted no such marked pharmacodynamic effect on the circulation that any rule expressing the regularity of its influence could be established.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 25, 1921, **1**, No. 26

- *Pirquet's Nem System in Dietetics. E. C. van Leersum.—p. 3466.
*Bovine Tubercle Bacilli in Surgical Tuberculosis. S. Poliakoff.—p. 3479.
Case of Goring of Abdomen. C. J. Albertyn.—p. 3485.
Case of True Melena. J. W. Napjus.—p. 3487.
Modern Views on Antibodies and Internal Secretion. J. Koopman.—p. 3489.
Housing Distress and Means to Remedy It. R. N. M. Eykel.—p. 3521.

The Nem System.—Van Leersum gives a detailed description of the Pirquet system and the index of nourishment, and their practical application. His final comment is, *plus ça change, plus c'est la même chose*.

Bovine Tubercle Bacilli in Surgical Tuberculosis.—Poliakoff's tables demonstrate that the proportion of cases of surgical tuberculosis is higher in the rural districts of the Netherlands than in the cities. This suggests possible infection with bovine tubercle bacilli, but in eighteen Amsterdam cases none but the human type could be cultivated from the surgical tuberculous processes. He urges research in this line by others.

July 9, 1921, **2**, No. 2

- *Serodiagnosis of Carcinoma. N. Waterman.—p. 197.
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*Fatal Bleeding from Varicose Vein on Leg. H. J. Schoo.—p. 219.
The American Institute of Medicine. W. S. Stekhoven.—p. 241.

Serodiagnosis of Cancer.—Waterman remarks that serodiagnostic tests for cancer have to contend with the fact that the apparently normal controls may have unsuspected cancer at the time. Another difficulty is that as the response is a chemical and physical phenomenon, it is generic rather than specific. He has been studying the miostagmin reaction in particular, and regards it as extremely important that the reaction is never positive in the healthy while it is usually positive with cancer of internal organs. The other conditions in which it is sometimes positive could scarcely be mistaken for a malignant growth. He used in his miostagmin tests a dog's pancreas and acetone-free alcohol. The modified stalagmometer records on a drum each drop as it falls. A still simpler method is now used by Izar which does not require a stalagmometer. The antigen is diluted 1:25 with alcohol and 1 c.c. is added to 0.5 c.c. of filtered distilled water. After standing one hour, 7 c.c. of 30 per cent. sodium chlorid is added. Then to 1 c.c. of the mixture, 0.2 c.c. of

clear, nonhemolytic serum is added. The slightly opalescent fluid is then kept at 36.5 to 37 C. for from twenty-four to thirty-six hours. In the normal, the fluid persists unmodified; with malignant disease there is flocculation with precipitation, leaving the supernatant fluid clear. He tabulates the findings with the stalagmometer test in 108 clinical subjects: In all except five, the findings harmonized with the clinical course. The conflicting ones were in cases of diabetes, tuberculous peritonitis, enlargement of the prostate, or syphilitic disease of the liver. The difference in the findings with gastric ulcer and gastric cancer was most striking.

Roentgen-Ray Treatment of Goiter.—In the 15 cases reported by Gaarenstroom, 7 were of the exophthalmic type and 4 others were cancerous. In one other case the simple goiter was causing suffocation. In the simple and exophthalmic goiter cases, improvement under radiotherapy was the rule; the thyroid returned usually to normal size, and the disturbances of nervous, vascular and metabolic nature subsided more or less completely. In the malignant cases, one man of 41 has been free from all disturbances during the year and a half since the goiter retrogressed under the exposures. In the second case the cancer had already invaded the air passages and the patient succumbed. In the 2 other malignant cases the goiter rapidly retrogressed, and the men of 60 and 30 have been free from disturbance during the year and a half and six months since. It seems to be a simple matter to induce the retrogression of a cancerous goiter, as the tissues are exceptionally sensitive, and a cure may be counted on, he asserts, if there is no metastasis.

In Case of Doubt, Operate.—Lanz reports a case in which, to save the man from impending fracture of the femur from a metastatic sarcoma in the upper third, he enucleated the hip joint although regarding the condition as beyond all permanent relief. The sarcomatous kidney on that side had been removed two years before. The man has been free from all signs of malignant disease during the seventeen years since to date. Another patient with a mammary cancer was operated on eight times in the course of twenty years, and has had no recurrence since. A third patient, with malignant goiter, has been cured for ten years since the sixth operation in the course of twelve years.

Fatal Hemorrhage from Varices.—Schoo remarks that bleeding from a ruptured varicose vein is never treated by the laity as sensibly as a burst water pipe would be managed, but the principle is the same. In a case described, the elderly woman died from loss of blood while she was hunting for and applying cobwebs, etc., to arrest the bleeding.

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- *Spondylosis Versus Spondylitis. G. E. Schrøder.—p. 951.
*Fracture of Cricoid Cartilage. H. O. Wildenskov.—p. 962.
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Pin Perforates from Bronchus into Aorta. N. R. Christoffersen.—p. 971.
Case of Circumscribed Edema. L. Tarp.—p. 973.

Spondylosis Versus Spondylitis.—Schrøder compares the clinical picture and the course of a typical case of rhizomelic spondylosis with a typical case of spondylitis deformans. The pains, the aspect, the ankylosis seem to be the same in both, but the roentgen rays show the wide difference between these two pathologic conditions in the spine, even from their very incipency. There is usually a history of some specific infection in the spondylosis cases; chronic latent gonorrhea seemed probable in the case described. Spondylitis deformans, on the other hand, seems to be a primary affection.

Fracture of the Cricoid Cartilage.—Wildenskov's patient was a girl of 10, and the bulging of the neck after the accident showed that the larynx had probably been ruptured. There was no dyspnea or cyanosis, but the cricoid cartilage was tender. High tracheotomy showed the sagittal rupture of the cricoid cartilage along the median line. A tracheotomy tube was introduced, and healing proceeded smoothly, the laryngoscope soon showing normal conditions. Isolated fracture of the cartilage is rare. Only six cases are known in children under 6, the elasticity of the tissues in children usually warding off fractures. If the mucosa is not torn, the symptoms are very slight. The patient should be brought immediately to the surgeon.

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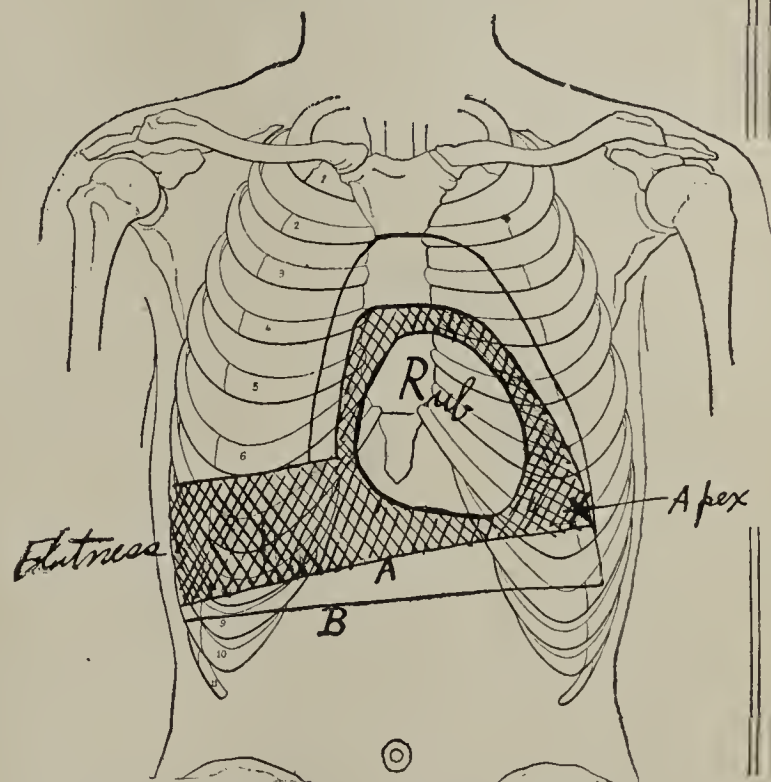
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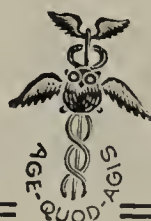
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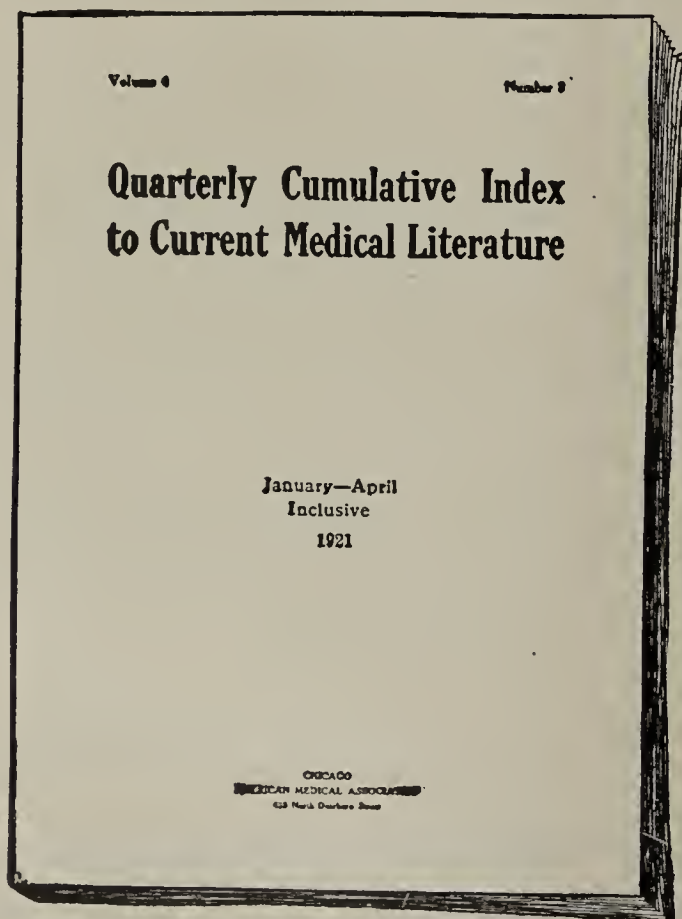
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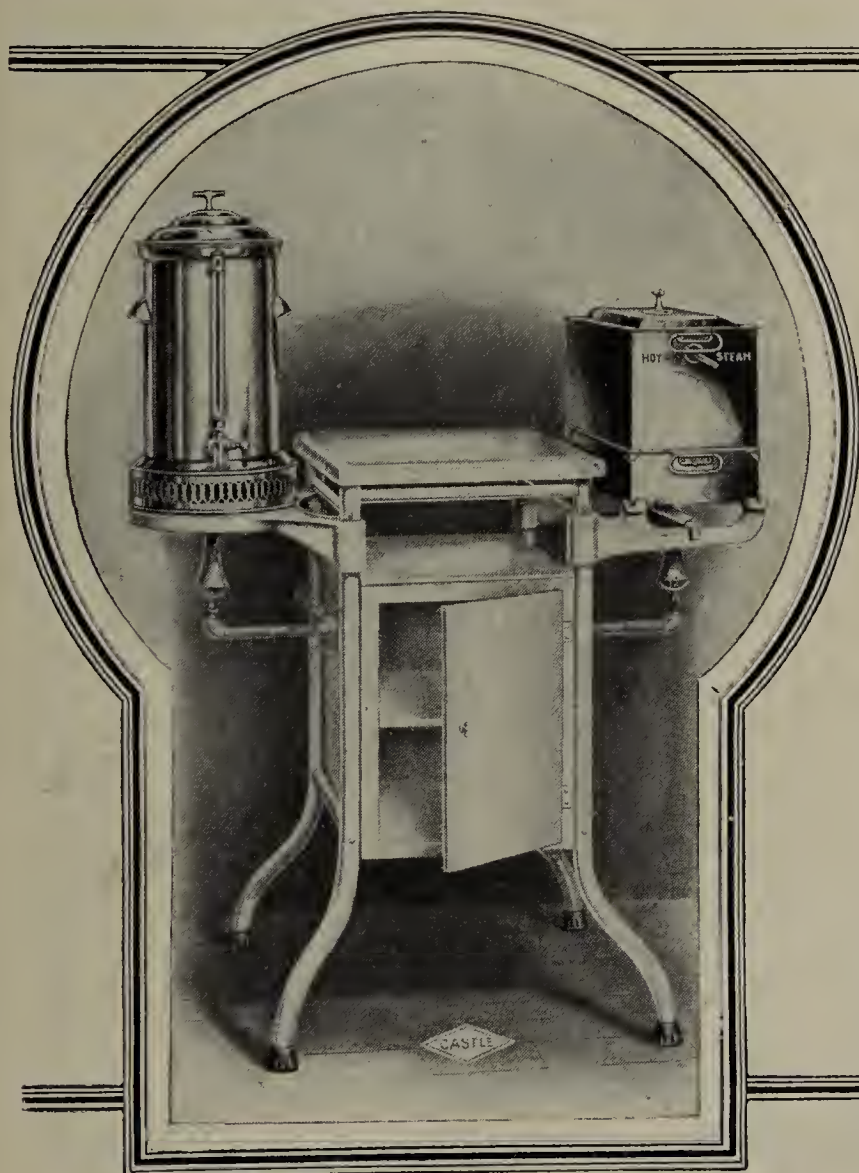
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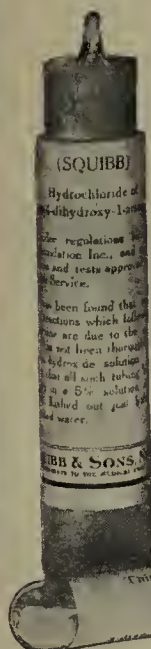
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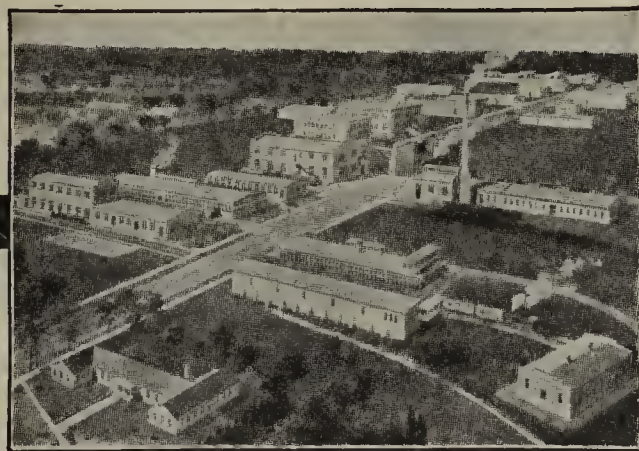
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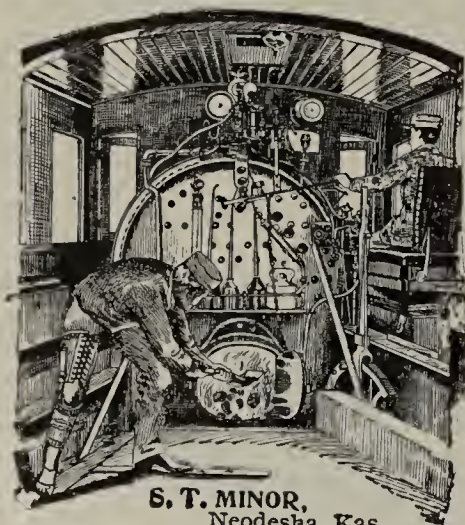
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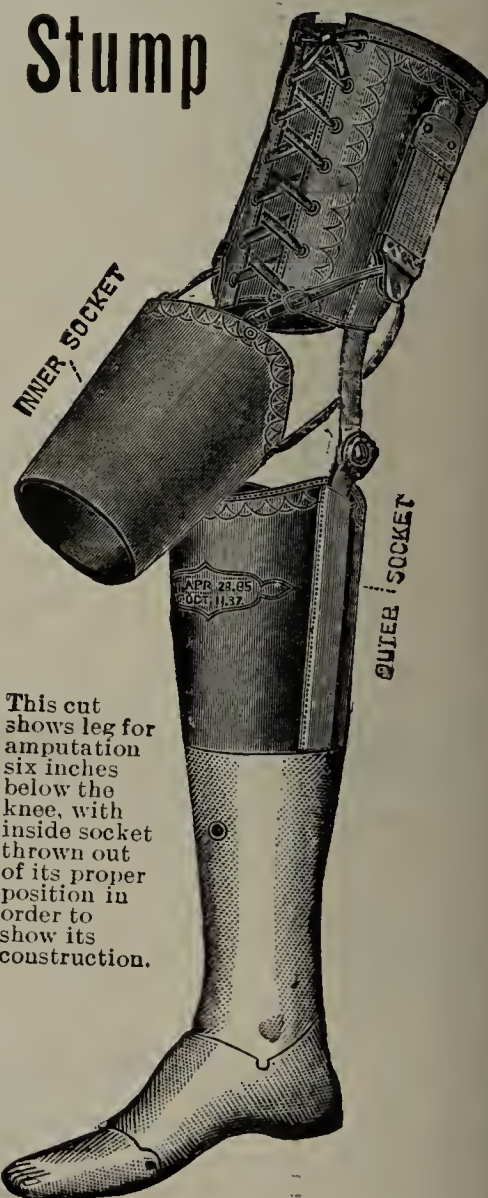
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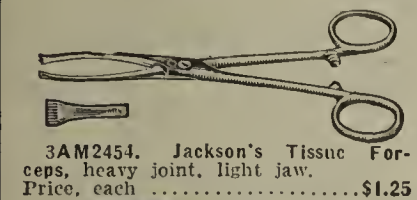
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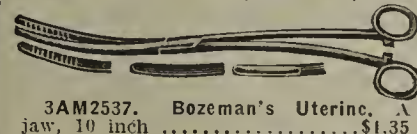
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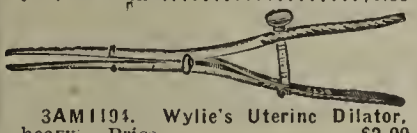
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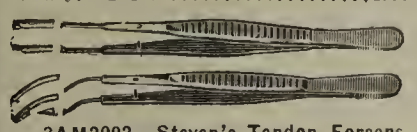
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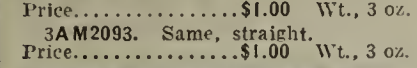
3AM2537. Bozeman's Uterine Jaw, 10 inch\$1.35



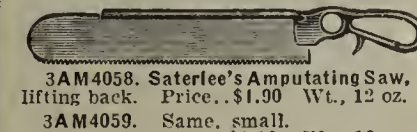
3AM1194. Wylie's Uterine Dilator, heavy. Price.....\$2.00



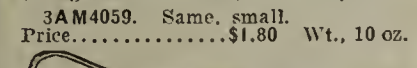
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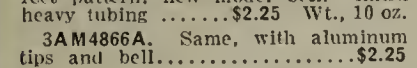
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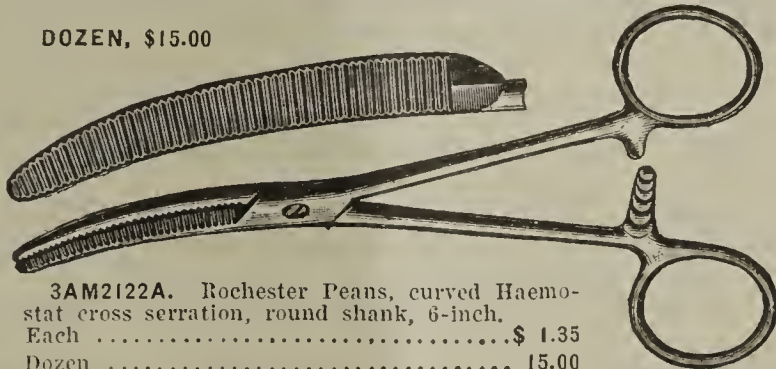


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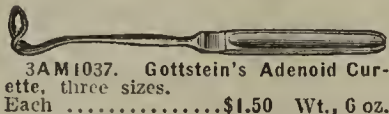


3AM4866A. Same, with aluminum tips and bell.....\$2.25

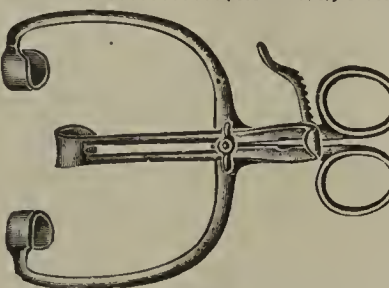
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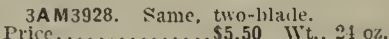
3AM2122A. Rochester Peans, curved Haemostat cross serration, round shank, 6-inch. Each\$ 1.35 Dozen 15.00



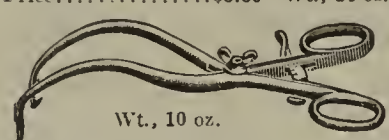
3AM1037. Gottstein's Adenoid Curette, three sizes. Each\$1.50 Wt. 6 oz.



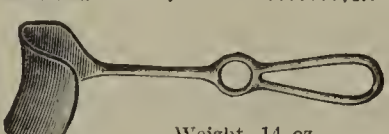
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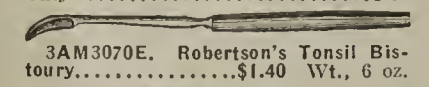
3AM2216. Jarvis Splinter Forceps. Price60c



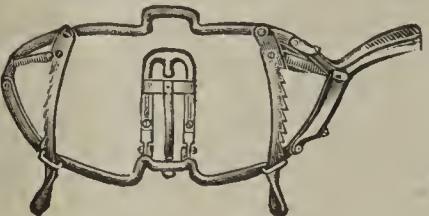
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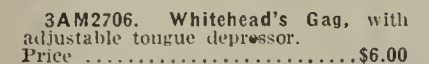
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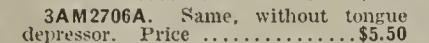
3AM3070E. Robertson's Tonsil Bistoury.....\$1.40 Wt. 6 oz.



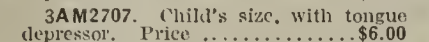
MOUTH GAGS



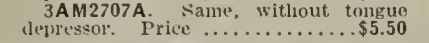
3AM2706. Whitehead's Gag, with adjustable tongue depressor. Price\$6.00



3AM2706A. Same, without tongue depressor. Price\$5.50



3AM2707. Child's size, with tongue depressor. Price\$6.00



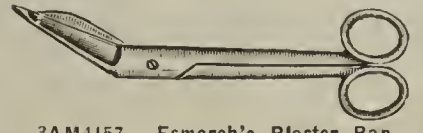
3AM2707A. Same, without tongue depressor. Price\$5.50



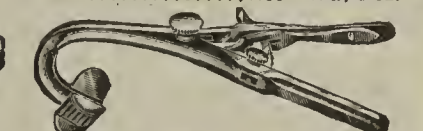
3AM2067. Lambert's Chalazion, with set screw.....\$1.25 Wt. 3 oz.



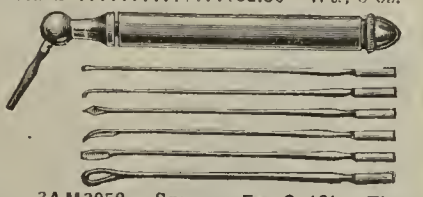
3AM4128. Straight, 4 1/2 in., screw lock65c



3AM4157. Esmarch's Plaster Bandage Shears, 7-inch. Price.....\$1.50 Wt. 8 oz.



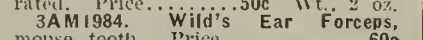
3AM2701. Denhart's Mouth Gag, left jaw, with lead jaw. Each\$2.50 Wt. 8 oz.



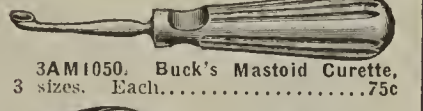
3AM3050. Sprague Ear Outfit. The complete set of instruments fits in the handle. Our price.....\$4.50



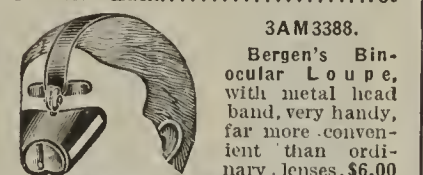
3AM1983. Wild's Ear Forcep, serrated. Price.....50c Wt. 2 oz.



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"It's me."

"Pass, brother."

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"Who's there?"

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"Pass, buddy."

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FOR SALE—Fourteen hens and one bicycle in good condition. 314 E. Michigan av. 9-6-3t

THESE DIFFICULT TIMES

A well-known actor was being shown around a lunatic asylum. Seated under a tree in the garden was a man who was counting his fingers again and again, muttering: "Eeney, meeny, miney, moe."

"Who's this?" asked the actor.

"A strange case, sir," replied the attendant. "We found him in the street. He's harmless, but hopelessly insane."

The actor looked at the lunatic closely, while the attendant moved away. "Bless my soul!" he exclaimed presently. "He resembles a former member of my company. Tell me, aren't you Bawl, the actor?"

"Cheese it," whispered the lunatic. "If they don't find me out I can stay here all the summer rent free."—*Argonaut.*

THE SPANISH WIT

Revista Medica Veracruzana

"Doctor, as soon as I get through with my meals, I feel awfully sleepy. What should I do so as not to go to sleep at the table?"

"Go to bed immediately!"

(Continued on page 24)

(Continued from page 20)

WANTED—RESIDENT ANESTHETIST and roentgenologist; male; single; for hospital of 125 beds; good salary to right person. Add. 2200 B, % AMA.

WANTED—ASSISTANT PHYSICIAN AT Home for the Feeble-Minded; married or single; salary \$1,500 per year with maintenance; give full particulars and references in first letter. Add. Superintendent, Box 340, Chipewa Falls, Wis. B

WANTED—TWO ASSISTANT PHYSICIAN (male) at the Bridgewater State Hospital (Insane). For further details apply to Dr. F. H. Carlisle, Medical Director, State Farm, Mass. B

WANTED—ASSISTANT—SPECIALIST IN genito urinary diseases has an opening for permanent assistant in large office practice and hospital, with 60 bed genito urinary service; applicants must have had hospital experience and be unmarried. Add. H. H. Morton, M.D., 32 Schermerhorn St., Brooklyn, N. Y. B

WANTED—WEST VIRGINIA—ASSISTANT physician at once for mine practice; salary \$150 per month; drugs, board and room furnished; give age, college and year of graduation in first letter; West Virginia license required. Add. 2124 B, % AMA.

PHYSICIANS WANTED

WANTED—HIGH CLASS CLINICAL PATHOLOGIST; must have good training and experience; graduate physician of an A1 school; well connected and of indisputable standing; scientific and progressive man; give particulars and state salary in first letter. Add. 2109 C, % AMA.

WANTED—ASSISTANT IN LARGE EYE, ear, nose and throat office, preferably single and willing to work hard; fine opportunity to get practical experience; state experience, age and approximate salary expected. Add. 2075 C, % AMA.

WANTED—PATHOLOGIST TO DO LABORATORY and x-ray work in 75-bed growing hospital; Illinois city of 70,000; desirable, permanent position for competent man with executive ability; salary and percentage basis considered; references and full details first letter. Add. 2193 C, % AMA.

WANTED—PHYSICIAN AS SECOND ASSISTANT; \$1,000 per annum; no private practice; full time; must have hospital experience in surgery. Add. Iowa State University, Orthopedic Service, Iowa City, Ia. C

WANTED—YOUNG GENERAL SURGEON, absolutely right, as office associate by established, progressive, ethical doctor doing gastrointestinal work in a large Indiana city; central location, choice building, x-ray and general laboratories; no investment; splendid opportunity to build up. Add. 2225 C, % AMA.

WANTED—AT ROCHESTER, N. Y.—A resident physician for temporary duty of not less than 4 months, in an infectious disease hospital of 100 beds; must have some experience in intubation; be a graduate of an A1 college, with hospital experience; salary \$100 a month and maintenance. Add. Dr. George W. Goler, Health Bureau, Rochester, N. Y. C

WANTED—AT CORNELL UNIVERSITY, Department of Hygiene and Preventive Medicine, two physicians to begin work September 19; one as assistant medical adviser of men and instructor of hygiene; one woman physician as assistant medical adviser of women; write giving training and experience. Add. Dr. Dean F. Smiley, Ithaca, N. Y. C

WANTED—RESIDENT PHYSICIAN FOR 35-bed tuberculosis sanatorium; state experience and salary asked. Add. 2227 C, % AMA.

WANTED—TWO MEN OF REPUTATION and experience; one to specialize in internal medicine, one in G. U. and skin, in an office doing \$30,000 to \$40,000, in town of 20,000 in Wisconsin which is the center of a community of approximately 100,000. Add. 2229 C, % AMA.

WANTED—A PSYCHIATRIST TO ESTABLISH and conduct a municipal psychological clinic in Rochester, N. Y.; to this position nearly full time would have to be given; salary \$3,500 a year. Add. Dr. George W. Goler, Health Bureau, Rochester, N. Y. C

(Continued on page 24)

SPENCER
Rejuveno
CORSETS
SURGICAL SUPPORTS

THE SPENCER ABDOMINAL BELT *for* MEN and WOMEN



The Spencer Abdominal Belt for Women

The Spencer Abdominal Belt for both men and women provides relief and protection in case of hernia; it guards against injury after surgical operations. It is used in cases of floating kidney, ptosis, maternity, and sacro-iliac sprain.

The Spencer Abdominal Belt gives as nearly as possible the same effect as nature's own abdominal wall. It relieves the sagging muscles and gives them a chance to regain their normal tone. Thin, emaciated persons can be given support as well as the stout, because by the Spencer System of Designing each support is designed for the individual who is to wear it.

Spencer Abdominal Belts **fit perfectly**, they are **comfortable**, and will give the desired results under all circumstances. Spencer Abdominal Belts are **non-elastic**; they are equipped with a patented **non-slip buckle**.



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Spencer Abdominal Belts are **not sold in stores**, but by registered Spencer corsetieres only. There is probably one in your town. If you do not find "Spencer corsetiere" in your phone book, write us for her address.

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Our Medical Department has issued booklets on the use of Spencer Supports for the relief of floating kidney, enteroptosis, hernia, chronic intestinal stasis, sacro-iliac sprain and maternity support. Use the coupon and mention the book you are interested in.

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3514 Lucas Ave.

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7 W. Madison St.

Protein and Pollen Sensitization Tests

for the diagnosis of Bronchial Asthma and Hay Fever

The patient must come to the laboratory for these tests. They are highly useful in determination of the etiology of these cases.

Blood Chemical Tests

in the diagnosis of
Early Nephritis, Dia-
betes, Gout, Operative
Risk.

We send containers for this work. Write for literature.

Pasteur Antirabic Virus

An efficient, mail order course, under Govern-
ment license, permit-
ting us to send it any-
where in the United
States.

In ordering, specify age of
patient, location of bite.

Every Laboratory Test of Merit

(Tonics and Sedatives continued)

DR. PEPYS' DIARY

Sept. 12.—Early awake and hastening to ye hospital to answer unto an obstetric call, taking with me a book of detective tales for these I find best to keep ye brain active and to pass away ye time in which ye physician must needs wait upon ye forces of nature. And a tale told of a doctor in Westby, Wisconsin, who expecting a birth and much excited too, hath telegraphed to his father-in-law ye result: "Twins, more later." And another of ye absent minded scientist to whom ye nurse did announce poetically: "A little boy hath come, sir," to which he answered: "Tell him to wait, I'll be down in a moment." Thus do ye physicians while away ye passing hours until at last ye nurse sayeth: "Doctor, ye head is on ye perineum," and ye scientific end of ye matter begins.

Sept. 13.—Now en route to mine office did meet Boyne and he telling me of a young maiden sent, by a gynecologist who treateth her, to ye ophthalmologist for refraction. The latter noticing somewhat of inflammation hath said to ye damsel: "You need somewhat else, besides refraction." And she hath murmured: "Oh, doctor, I did not think you could tell that from ye eyes." "Honi soit qui mal y pense!" say I.

NO POSER

"How long have you been indisposed, my poor fellow?" asked a fair visitor at a hospital of a big negro who was strapped up in bed with an injured back.

"Dis ain't no pose 'tall, miss," answered the patient in tones of disgust. "Dis am merely de careless manner in which dem forgetful doctors went away and lef' me yestiddy."—Pickup.

A Matter of Architecture

Advertisement issued by a Lincoln (Neb.)
Osteopath

SO far as the Heavens are above the Earth so far is Nebraska's New Capitol above other State Capitols. In the same ratio Osteopathy towers loftily above other methods of securing health, and gives one, correspondingly, a better chance in the uncertain but glorious pursuit of happiness. If an atom of doubt or an incorrigible germ lingers with you, consult the eut on the reverse side or cut a canter to

DOCTOR KATE STODDARD

in that other beautiful structure, the Security Mutual Life Building and line up architecturally for these terribly strenuous days of the war's aftermath.

AN INFALLIBLE RECIPE

Take one reckless, natural born fool.
Two or three big drinks of bad liquor.
A fast, high-powered motor car.

Soak the fool well in the liquor, place in the car and let him go. After due time, remove from wreckage, place in black, satin lined box, and garnish with flowers.—Walton (Ga.) News.

A Terrible Blow to Him

El Reno Oklahoman

John W. Onan, employed at the Rock Island shops, was the victim of a peculiar accident this afternoon while engaged in blowing saw-dust from his clothing with an air hose. The air at a pressure of one hundred pounds entered the man's rectum, inflating his stomach. He was taken to the El Reno sanitarium for treatment and it is said that his injuries are not serious.

ONE ON THE JUDGE

Mr. O'Brien was having heavy going on a slippery pavement in the days before prohibition. He slipped and sat down with force right in front of a judge who happened to know him.

"O'Brien," said the judge, "sinners stand on slippery ground."

"So I see, judge," answered O'Brien. "But it's more than I can do."—Pickup.

(Continued on page 26)

(Continued from page 22)

WANTED—SINGLE ASSISTANT PHYSICIAN at Weimar Joint Sanatorium for Tuberculars: 185 beds; must be able to handle x-ray and laboratory as well as assist in other institution work of care and treatment of patients; salary \$125 per month with full maintenance; position open at once; splendid opportunity to learn tuberculosis which is a coming specialty in the practice of medicine today. Add. Wm. L. Whittington, M.D., Medical Director, Weimar, Calif. C

WANTED—AT THE NEW JERSEY SANATORIUM for Tuberculosis, Glen Gardner, N. J., an assistant physician for the care of children and laboratory; salary \$1,200 per year with maintenance; give age, school, photo and experience in first letter. C

WANTED — PHYSICIAN FOR MINING practice in Virginia; salary \$200, drugs, office and supplies furnished; good roads, good schools and good living conditions; give college, age and weight, married or single in first letter; only applications of interest to the company will be acknowledged. Add. 2245 C, % AMA.

WANTED—ASSISTANT RESIDENT PHYSICIAN tuberculosis sanatorium; salary \$100 per month with full maintenance, single preferred. Address Dr. Chesley Bush, Livermore, Calif. C

WANTED — COMPETENT SINGLE MAN as assistant physician in state hospital for insane, middle West; state full particulars. Add. 2243 C, % AMA.

WANTED—WOMAN ASSISTANT PHYSICIAN in North Central State Hospital for the Insane; salary \$1,200 per annum and maintenance with excellent opportunity for advancement if competent and industrious; knowledge of ordinary laboratory work required. Add. 2241 C, % AMA.

WANTED—RECENT GRADUATE OR UNDERGRADUATE experienced minor surgery and obstetrics, to assist in mine practice east Tennessee; salary \$125, board and room; Mason or lodge man preferred; photo and references in first letter. Add. 2240 C, % AMA.

WANTED—A YOUNG MAN, RECENT graduate, who desires to enter institutional work; position offers an excellent future in connection with large state university; salary, \$1,800, with full maintenance for unmarried man. Add. 2235 C, % AMA.

WANTED—WOMAN PHYSICIAN AS ASSISTANT in eye, ear, nose and throat practice; second town in population in Louisiana; salary \$150 per month; state experience, training and all other qualifications in first reply. Add. 2210 C, % AMA.

WANTED—AN ETHICAL PHYSICIAN TO take a suite of three newly decorated rooms associated with a dental office in a town of 10,000 population. Add. V. C. Baldwin, D.D.S., Beardstown, Ill. C

WANTED—YOUNG AND PROGRESSIVE physician to associate with older physician with view to taking practice in few months; will have cooperation of other surgeon; thriving city of 7,000 in northern Michigan. Add. 2219 C, % AMA.

WANTED—PHYSICIAN FOR TOWN AND country practice; a large Catholic school, and 3 smaller towns; no physician; collections good; an excellent place to make money from the start, for one; will sell or rent; terms to suit; going to school. Add. Claude Lomax, M.D., St. Meinrad, Ind. C

WANTED—A WOMAN PHYSICIAN AS resident in girls' institution in the east; salary \$2,000 and complete maintenance; recent graduate preferred. Add. Box 233, Trenton, N. J. C

WANTED—FEMALE PHYSICIAN WITH knowledge of psychiatry for Mendocino State Hospital, Talmage, Calif.; salary ranges for psychiatric experience obtained anywhere as follows: 1st year, \$170 per month; 2d year, \$180 per month; 3d and 4th year, \$195 per month; 5th and 6th year, \$210 per month; 7th year and over, \$225 per month; salary includes board, living quarters and laundry; give experience, references and personal description; must be a citizen of the United States. C

WANTED — MINNESOTA — CATHOLIC doctor in city of 3,000, with Sisters Hospital; no investment. Add. 2159 C, % AMA.

(Continued on page 26)

The Heart Insists on Being Taken Seriously



The New York Hospital

Open for Patients Since Jan. 3, 1791

This Institution, for more than a century representative of the highest standards of medical practice, is equipped throughout with

Baumanometers

Similarly, it is the preferred instrument for bloodpressure in many other institutions where the watchword is Progress.

THAT big, sturdy, compensating pump which is the human heart will tolerate no indifference.

It will work and work and work to overcome obstacles; to *force* through, or over, or around the barrier the cleansing, purifying flood of human blood.

But permit it to over-exert, by a failure to know accurately the pressure under which it labors, and it is apt to prove that it is very human by simply ceasing to function.

Reason enough why the finest minds in the profession of medicine are refusing to accept "easiest-way-diagnosis." Reason enough if there were not a myriad others, why each succeeding Convention sees additional stress laid on the importance of the subject.

Reason enough, too, why "best practice" is coming more and more to emphasize the necessity of accuracy and consistency in bloodpressure readings.

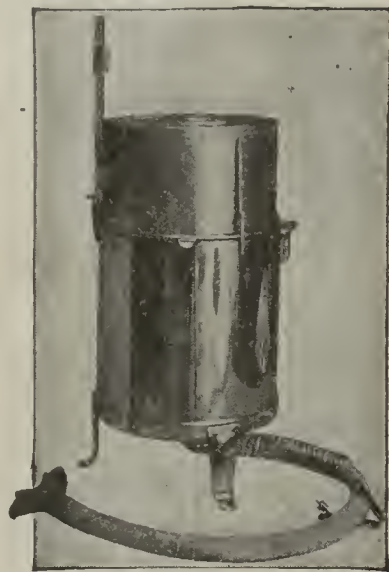
Baumanometer *The Super-sphyg*

was, is and will be built to serve the most exacting members of the profession. It was originally conceived to meet and has helped much to lift the clouds of uncertainty from bloodpressure. Why not let it help you?

Informative Literature Sent Upon Request

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SANBORN HANDY METABOLISM APPARATUS

In the service of physicians and institutions throughout the country, the Sanborn Handy Metabolism Apparatus has proved its real clinical usefulness.

Its accuracy in determination of the basal metabolic rate has been proved by many comparative tests.

Its simple technic has gained the full approval of users.

Your request for literature, complete information and list of users, involves no obligation.

SANBORN COMPANY

Makers of Scientific Instruments
1048 Commonwealth Ave.
Boston 47, Mass.

(Tonics and Sedatives continued)

DER KASSENARZT

Ich habe riesigen Gehalt:
Für jeden Kassenkranken,
Dem ärztliche Bemühung galt,
Bekomm ich eine Mark bezahlt!
O lasst mich herzlich danken!

Für zwei Patienten darf ich schon
Mir einen Hering kaufen;
Und ess' ich meine Fleischration,
So muss ich nur vorher um Lohn
Zu sechs Patienten laufen.

Zwar die bewusste Lauferei
Erfordert Stiefelsohlen,
Doch kann ich ja, wenn sie entzwei
Mir leicht das Geld für Stiefel bei
Vierhundert Kranken holen.

Und gehn dadurch aus Naht und Fug
Die Anzög', die patenten —
Mich kostet ja, bei Barbezug,
Ein neuer, flott (mit Bügelbug!)
Nur zweitausend Patienten!

So leb' ich voller Gaudium
Von Luft? Nein, von der Masse!
Mein Geld läuft auf der Strass' herum
Und ich lauf hinterdrein mich krumm
Und bin doch stets — bei Kasse!

A. D. R.

This poem taken from Jugend, Munich, refers to the trials and tribulations of the physician working under compulsory health insurance and cheap marks. Literally translated:

I have gigantic salary: For every insured person whom medical attention becomes am I one mark paid! O let me heartily thank. For two patients can I already myself one herring buy and eat I my meat ration so must I only first in order to receive my pay to six patients run. To be sure the already mentioned much running about requires (is hell on the) shoe soles; however can I indeed, when they are disrupted, myself easily the money for shoes from four hundred patients procure; etc.; etc.; etc.

Or into alleged poetry:

THE HEALTH INSURANCE PHYSICIAN

My income's quite tremendous now,
For ev'ry one to whom I go,
With whom my knowledge I endow,
One mark's the sum which they allow!
Praise God from whom all blessings flow!

Whene'er two patients I relieve
I buy a herring with my fee;
But if meat rations I'd receive,
Six patients—this you won't believe—
Must come that day to visit me.

I run about the whole day through,
My hursting shoe-soles show my feet,
And when I need shoes that are new
To get the money that is due
Four hundred patients I must treat.

And if my patent paper clothes
Should split and from my frame be lost,
To buy some new ones—goodness knows!—
With patent crease and style that shows,
Two thousand patients pay the cost.

And thus I live a life that's sweet.
On air? No! People full of piety!
My money's found upon the street,
I chase it but I meet defeat;
I'm the doctor of a sick society.



FROM THE DOCTOR'S CORRESPONDENCE

Received by R. M. J., Saskatchewan

Dear dockure kum kwick, Ime adyin. I got an offal hellufa pain in my bellay fit to jowg me in 2. It runs up my testiker to the bak of my neck. Hurri doc my agerny is terybull my god do hurri. If you ant home or kant kum get me another dockure for sure. You otto hear me yell an grone rite now.

Dan Budge.

(Continued on page 28)

(Continued from page 24)

WANTED—NEW JERSEY TUBERCULOSIS sanitarium physician for children and laboratory; \$1,200 yearly with maintenance; give age, school, photo, experience in first letter. Add. Samuel B. English, Supt., Glengardner, N. J.

WANTED—ASSISTANT HEALTH OFFI- cer in large southern city; applicants should state education, experience, salary desired and give references. Add. 2181 C, % AMA.

WANTED — ASSOCIATE PHYSICIAN — Single, with laboratory technique; knowledge of electro-diagnostic and therapy; chance for becoming owner or part owner for a doctor with capital. Add. Waldheim Park Sanatorium, Inc., Oconomowoc, Wis. C

WANTED—PHYSICIAN — SPLENDID LO- cation for physician in tobacco belt of Florida; small town; good school, 2 churches; territory thickly settled; 5-room bungalow at bargain; I am leaving to do special work. For information write Dr. M. T. Kemp, Greensboro, Fla. C

WANTED—ONE WOMAN AND TWO MEN physicians; must register in Michigan; send qualifications, references, and photograph with application. Add. Traverse City State Hospital, Box C, Traverse City, Mich. C

WANTED—SURGEON — MONTANA—TO join small group; must be capable operator, Protestant, not over 38 years of age; references and photo requested in first letter. Add. 2064 C, % AMA.

WANTED — CALEDONIA, MINN.—CATH- olic doctor, experienced and able to do surgery; nothing to buy; will rent building where a \$15,000 business was the annual income. Dr. J. S. Collins, Wabasha, Minn. C

WANTED—PHYSICIAN TO TAKE charge of the laboratory in a busy surgical hospital of 160 beds; good opportunity for the right man and chance for advancement. Add. 2110 C, % AMA.

WANTED — BY FIRM OF PHYSICIANS doing a large general and surgical practice in a middle western city of 30,000, an exceptionally well-trained man in surgery who must possess a literary degree as well as Class A medical and hospital training; must be willing to do general work, including obstetrics, and assist in operations with opportunity to do surgery in the future; write in full, stating age, social status, size, religion, etc.; photo appreciated; salary until ability proved, then percentage. Add. 2101 C, % AMA.

INTERNS WANTED

WANTED—INTERN FOR 150-BED HOS- pital; acceptable for internship to American Medical Association; Protestant preferred; salary \$50 per month and found; services to begin at once. Add. 2228 D, % AMA.

WANTED — MAN INTERN FOR 60-BED modern general hospital, October 1, New Jersey; full maintenance; also salary; plenty of surgical, obstetrical and medical experience; send photo, age, married or single, etc., with application. Add. 2069 D, % AMA.

WANTED—INTERNS AT ONCE; CLASS A school graduate; surgical, medical and obstetrical facilities excellent; terms one year; salary \$10 monthly, room and board; write stating references to Superintendent, French Hospital, San Francisco, Calif. D

WANTED — RESIDENT INTERN PRACTI- cally new railroad hospital, Paducah, Ky.; rotation 1 year service; salary \$50 per month, full maintenance; opportunity for additional fees from private patients; clinical material exceptionally fine; excellent opportunity for advancement and permanent appointment, especially for capable man desiring surgical training. Add. 1859 D, % AMA.

WANTED—INTERN FOR ONE YEAR; 150- bed hospital; rotating service; full maintenance except that collars and uniforms are not laundered; \$25 per month plus \$200 bonus on completion of service will be paid. Add. Saint Anthonys Hospital, Oklahoma City, Okla. D

WANTED—TWO INTERNS, OCTOBER 1ST for rotating service, 225-bed general hospital; well equipped and organized; \$25 monthly allowance, uniforms, and maintenance; 60 per cent. surgery, all specialties; school of graduation and references first letter. Add 2175 D, % AMA.

WANTED—ADDITIONAL INTERNS, Memphis General Hospital, Memphis, Tenn. Apply to Superintendent. D

WANTED—AN INTERN AT THE BAPTIST Sanitarium, Houston, Texas; the hospital has 112 beds; 4,000 patients last year, 80 per cent. of which were surgical; had 401 obstetrical cases. D

WANTED—INTERN; FULL MAINTEN-ance; \$125 per annum, when completed; service, 125 beds; good opportunity for orthopedic training and research; state particulars. Add. Iowa State University, Iowa City, Ia. D

WANTED — A RESIDENT INTERN FOR one year; 120-bed hospital in Pittsburgh, Pa.; salary \$25 per month and maintenance. Add. Superintendent of Hospital, Pittsburgh Hospital, Frankstown Ave. and Beechwood Blvd., Pittsburgh. Pa. D

SUPERINTENDENT WANTED

WANTED — SUPERINTENDENT FOR tuberculosis sanatorium; 104-bed capacity; New England city of 120,000 population; must be man of training in the treatment of tuberculosis and of proved administrative ability; good salary with full maintenance for self and family, and opportunity for office practice and consultation; applications treated confidentially if desired. Add. 2191, % AMA.

NURSES WANTED

WANTED—NURSE WITH INSANE HOS-pital experience as chief nurse and matron; large private institution, middle west; give personal details (age, religion, etc.), professional qualifications, experience, salary expected; send recent photograph in first letter. Add. 2100 T, % AMA.

SUPERINTENDENTS OF NURSES, ASSIS-tant superintendents, surgical, general duty nurses, supervisors, dietitians, etc., send for free book if interested in a hospital position anywhere. Aznoe's Central Registry for Nurses, 30 N. Michigan Ave., Chicago. T

WANTED—AT ONCE—GRADUATE NURSE for general duty in small surgical hospital; \$80 per month and maintenance. Hayswood Hospital, Maysville, Ky. T

LOCUM TENENS WANTED

WANTED — LOCUM TENENS IMMEDI-ately by graduate Class A school; prefer central states. Add. 2232 F, % AMA.

WANTED—PHYSICIAN TO TAKE CHARGE of my practice from October 20 to about December 1, as I am taking postgraduate work. Add. G. F. Zerzan, M.D., Holyrood, Kan. F

LAB. TECHNICIAN WANTED

WANTED—A MAN OR WOMAN, CAPABLE of taking charge of x-ray and laboratory work in the Outpatient Department of the College of Medicine of the University of Illinois; provision is also made for an assistant; for full particulars, apply to Mr. William H. Browne, Secretary of the College of Medicine of the University of Illinois, 508 S. Honore St., Chicago, Ill. V

WANTED — ROENTGENOLOGIST TO take charge of x-ray department in large clinical laboratory in middle West. Add. 2251 V, % AMA.

WANTED—A YOUNG MAN TRAINED OR interested in clinical pathology, particularly laboratory procedures; if suitably trained can take charge of a large clinical laboratory; if interested will be trained by others to assume such charge; salary, \$3,600 or better. Add. 2234 V, % AMA.

WANTED—LABORATORY TECHNICIAN, male, must be able to do Wassermann tests, make blood count, vaccines, and do microscopic blood examinations; must also have a knowledge of doing urinalysis, feces and sputum examinations and such other clinical work; state social condition, religion, age, and salary expected. Add. 2134 V, % AMA.

PARTNERS WANTED

WANTED—AN EXPERIENCED NEUROLO-gist and psychiatrist as associate in well-established private office and hospital business; this proposition is located in an important, prosperous midwest city, with ample hospital facilities; also two medical colleges; surrounding territory is of the best; an unusual opportunity for one desiring this line of specialty; state experience and give references. Add. 2171 G, % AMA.

(Continued on next page)

INSTITUTE OF SURGERY

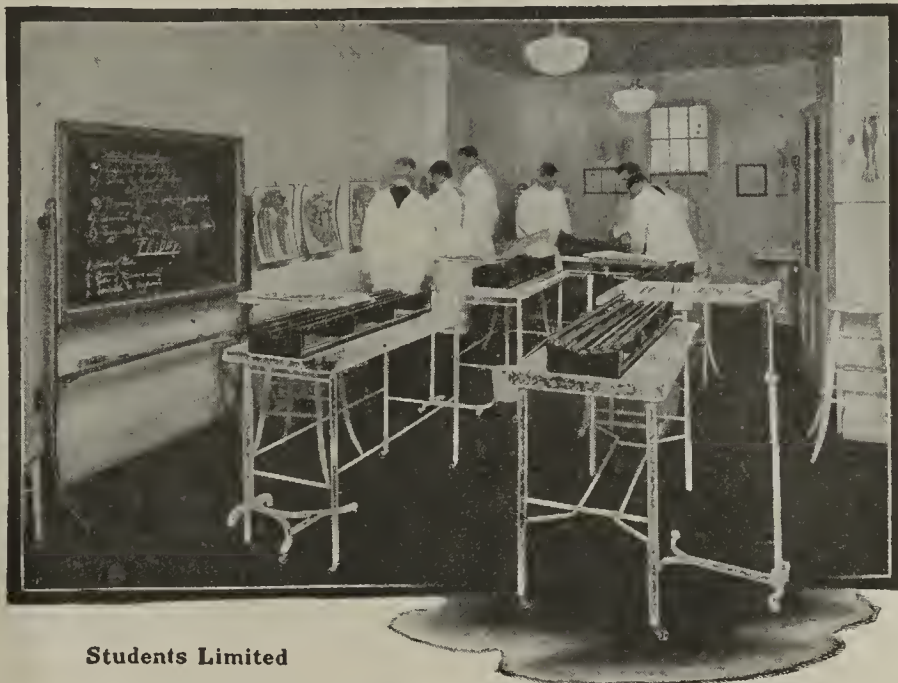
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Heart of City

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Operations by student include
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Special courses in
eye, ear, nose and throat.



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Master Operative Surgery

In a centrally located institution, dedicated to physicians who wish to do their own surgery.

Where fundamental surgical principles are taught and mastered by the physician. Individual instruction, intensified repetition.

A demonstration of the anatomy and the surgical anatomy on the cadaver is given of every operation in the course.

Over 35 operations on the head, neck, thorax, abdomen and extremities performed by the student himself.

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An Advance in Actinic Ray Therapy Burdick Mercury Quartz Lamps



Distinctive Features

MAXIMUM Ultra-Violet Ray Production from Burdick Quartz Generators has been proven by comparative laboratory and clinical tests.

UNEQUALLED Durability is obtained by special construction of the Generator, aided by the Burdick Ventilating System in the Casing which maintains a uniform temperature in operation.

THE Combined Features of Burdick Air-Cooled Lamps make them convenient and effective for Local as well as General work.

STANDARDIZED Dosage Measurement is made possible by the uniformity of Burdick Generators and the reliable meters and control devices with which the outfits are equipped.

THE Burdick Rectifier, used with alternating current outfits provides a wide range of intensity from mild to the most intensive discharge for quick, effective work.

FLEXIBILITY of Operation, made possible by the unique mechanical construction, enables the operator to adjust the Lamp to any height and to all angles in giving treatments.

You are invited to inspect Burdick Quartz Lamps at our Display Parlors, Suite 518-19 Stewart Bldg., Chicago. Opportunity will be provided to see the Lamps in practical test demonstrations.

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2400 Atlantic Ave.
Milton, Wisconsin



Dependable Digitalis is grown by Upsher Smith, Ph.C., at Foxglove Farm, Wayzata, Minnesota, cut at time of maximum potency and dried rapidly to avoid undue decomposition. The cleaned leaf is assayed by a leading pharmacologist, using the Hatcher cat method—which gives physicians a guide as to the therapeutic action to be expected. Standard toxic dose:—65 mgms. of dried leaf per kg. of cat.

CAPSULES FOLIA-DIGITALIS (Upsher Smith). Each contains 1 grain (65 mgms. or one cat unit) of the standard leaf. Readily assimilated, prompt and efficient in action, representing the entire active constituents of the leaf. More stable and uniform than the infusion. More accurate in dosage than the tincture. (In bottles of 24, 500 and 1000)

TINCTURE DIGITALIS (Upsher Smith). U. S. P. process, 10 minims representing one grain of the standard leaf or one cat unit. The same high grade, biologically tested tincture as was supplied to the U. S. Army during the war. (In 1 oz. bottles)

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& Elizabeth Sprague.
died Jan. 1, 1846; aged
9 years, 4 mo's & 3 days

She was stolen from the grave
by Roderick R. Clow & dissected
at Dr. P. M. Armstrong's office
in Hoosick, N. Y., from which place
her mutilated remains were
obtained & deposited here.

Her body dissected by fiendish men
Her bones anatomised.
Her soul we trust has risen to God
Where few physicians rise.

Sedatives

It is a wise doctor that does not say
"case" when he means "patient."

It is better to treat than to re-treat.

A murder a day makes the newspapers pay.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interests of our readers and as space permits.

TRAINING FOR THE PUBLIC PROFESSION OF THE LAW. Historical Development and Principal Contemporary Problems of Legal Education in the United States, With Some Account of Conditions in England and Canada. By Alfred Zantinger Reed. Bulletin Number Fifteen. Paper. Pp. 498. New York: Carnegie Foundation for the Advancement of Teaching, 1921.

GEOGRAFIA MEDICA DE LA ISLA DE MARGARITA. Por el Andres Sanchez, Doctor en Medicina y Cirujia de la Universidad Central de Venezuela. Con un Prologo de Francisco A. Riquez, Director y Profesor de la Escuela de Medicina de Caracas. Paper. Pp. 71, with 10 illustrations. Caracas: Tip. Americana, 1921.

THE ADMINISTRATION OF THE AID-TO-MOTHERS LAW IN ILLINOIS. By Edith Abbott, and Sophonisba P. Breckinridge. U.S. Department of Labor, Children's Bureau, Legal Series No. 7, Bureau Publication No. 82. Paper. Pp. 176. Washington: Government Printing Office, 1921.

A MANUAL OF THE MECHANICS OF WRITING. By Raymond Woodbury Pence, Professor of Rhetoric and English Composition in DePauw University. Cloth. Price, \$1.25. Pp. 211. New York: Macmillan Company, 1921.

TUBERCULOSIS AMONG THE NEBRASKA WINNEBAGO. A Social Study on an Indian Reservation. By Margaret W. Koenig, M.D. Paper. Pp. 48, with 20 illustrations. Lincoln: Nebraska State Historical Society, 1921.

L'IDRONEFROSI INTERMITTENTE. (Rivista sintetica e contributo clinico) Por el Dott. Giovanni Cavina. Paper. Pp. 140, with 13 illustrations. Bologna: Licinio Cappelli, 1921.

PROCEEDINGS OF TWENTY-FIFTH ANNUAL MEETING OF THE NATIONAL FIRE PROTECTION ASSOCIATION. Paper. Price, \$1. 1921.

BIENNIAL REPORT OF THE STATE SUPERINTENDENT OF PUBLIC HEALTH OF STATE OF ARIZONA. Paper. 1920.

TWENTY-SIXTH REPORT OF THE BOARD OF HEALTH OF THE TOWN OF MONTCLAIR, NEW JERSEY. Paper.

TRANSACTIONS OF THE NEW ENGLAND SURGICAL SOCIETY. Volume III. Paper. 1920.

(Continued from preceding page)

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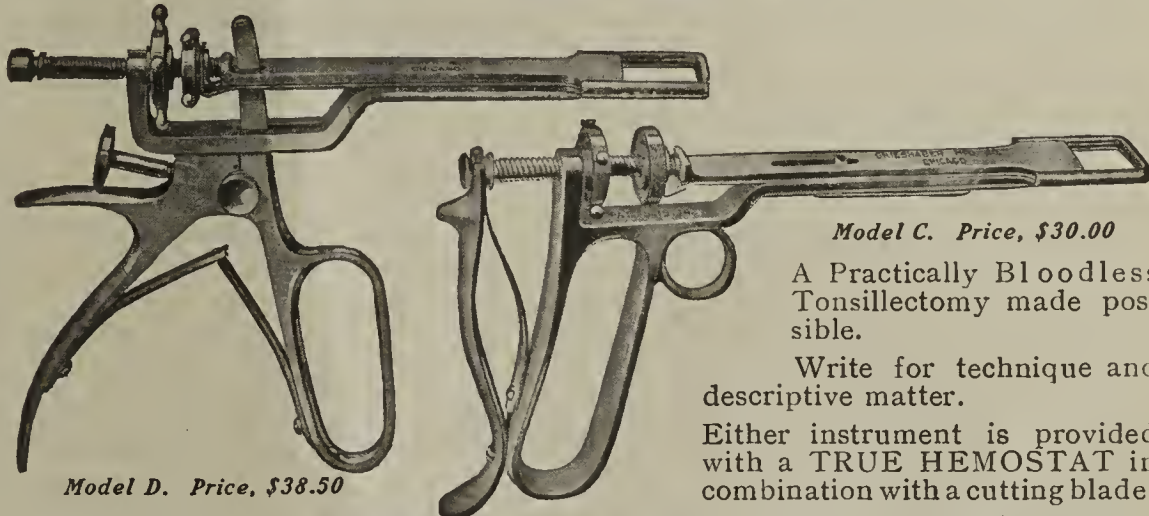
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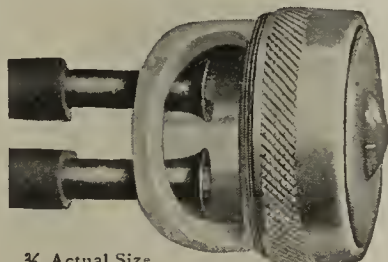
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FOR SALE—SOUTHERN IOWA—\$7,000 general practice, for price of new nine-room bungalow and office outfit; practically unopposed, town about 600; if you want to make money; write. Add. 1982 N, % AMA.

FOR SALE—IOWA—WEST CENTRAL part of state—To a Protestant physician in town of 800 population; good pay and roads; 9, 9, 14 and 17 miles to surrounding towns; one other doctor, a Catholic, as are 40 per cent. of the people; accredited high school, churches, electric lights, sewer, waterworks; established 18 years; entering group practice at hospital; collections good; booked \$9,565, 1920; \$8,952, 1919; \$8,100, 1918; appointments amount to \$420 cash per year; contents of office invoice \$1,285, at prices which they are worth; total \$1,705; will sell at \$1,500; no money needed if you can give security. Add. 2122 N, AMA.

FOR SALE—NORTH EAST KANSAS—Well established practice in the best corn and wheat section of the state; modern town 600; large territory, good roads; collections the best; will introduce; can put you to work at once; entire office equipment and practice \$800 cash; going to specialize. Add. 2176 N, % AMA.

FOR SALE—\$10,000 PRACTICE, TOWN OF 800; thickly settled farming country; situated on state highway and large river; eastern shore of Maryland; large stock of drugs; no opposition; \$2,000. Add. 2213 N, % AMA.

FOR SALE—MASSACHUSETTS—\$7,000 practice; town of 3,000 population; established 10 years; \$1,500 for drugs and office outfit; have a desirable home to go with practice; terms on application; this is an A1 proposition. Add. 2154 N, % AMA.

FOR SALE—HARBOR BEACH, MICH.—Forty year practice of the late Dr. Wagener; for doctor speaking German; population 2,000, with country practice; house, well equipped office, surgical instruments, library for sale. If interested write to Mrs. P. O. Wagener. N

FOR SALE—MICHIGAN—\$12,000 TO \$15,000 surgical practice in fast growing city of 15,000; price, \$3,000; actual cost of office equipment; must have cash and be a man of ability; this is a practice that can be transferred. Add. 2125 N, % AMA.

FOR SALE—CENTRAL MISSOURI—ES-tablished practice, drugs and residence; prosperous community, mainline road; only physician, steady business; extra collections; immediate possession; a real opportunity; reasons: have made competency and retiring. Add. 2129 N, AMA.

FOR SALE—IN PRIZE WHEAT SECTION of Montana, unopposed general practice \$5,000 to \$8,000 per year; two banks, good schools, churches, etc.; best fishing and hunting in state; railroad appointment transferable; can give possession by October 1; cheap, act quick; reason for selling moving to coast on account of health. Address Box 163, Reed Point, Mont. N

FOR SALE—MONTANA—UNOPPOSED general practice; farming community; lights, water, high school; mild winters, good roads; purchase \$6,000 residence and receive position county health officer, railroad surgeon and \$9,000 practice. Add. 2117 N, % AMA.

FOR SALE—A WELL ESTABLISHED, \$14,000, surgical and medical practice; in one of the best towns of Nebraska; rich farming community, hospital facilities, good schools, collections good; will pay to investigate; price very reasonable. Add. 2187 N, % AMA.

FOR SALE—SIX-ROOM BUNGALOW ON acre lot, furniture, horse, etc., \$650, in mountains of New Mexico, suitable for tubercular who wishes to live cheaply with his family while getting well. Dr. J. A. Van Horn, Elk, N. M. N

(Continued on next page)

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Special Sale of Eastman X-Ray Plates and Films

8 x 10 Films at \$1.30 per dozen (regular price \$2.59 net)
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Size I at 25 cents per dozen (regular price 56 cents net)
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These are all of usable quality. Surplus army stock. Slightly behind in date. Prices F. O. B. New York City; check or money order to accompany order.

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CHEMISTS, BACTERIOLOGISTS AND DOCTORS, LOOK! FOR THE WASSERMANN TEST



Capacity 6 c.c.

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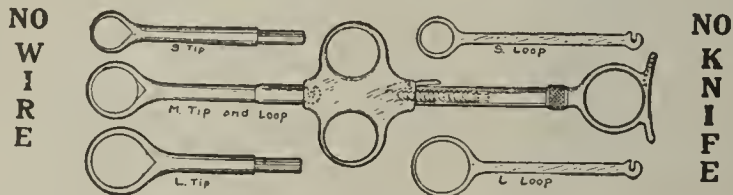
THE SHEPPARD "KEIDEL" TUBE

is the recognized standard instrument used for obtaining blood specimens for clinical diagnosis, especially adapted for the Wassermann Test. For sale by all dealers, price 25c each, \$2.00 per doz. postpaid. Write for prices in larger quantities. 5% discount will be allowed if this Journal is mentioned when ordering.

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A handy reference book for the busy physician on the pathology and therapeutics of cardiac diseases. The common affections are discussed in order of importance, and signs, symptoms and treatment of each are simply and systematically explained. The book is practical throughout and intended to meet the needs of everyday practice.

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(Continued from preceding page)

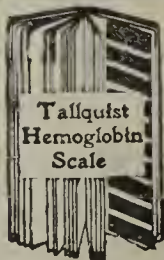
FOR SALE—NEW MEXICO \$8,000 PRACTICE; 150 miles from El Paso, Texas; good roads; mining center; 3,000 population with 15,000 surrounding population; good schools and state normal; good churches; best climate in America the year 'round; no real estate; only well established practice, complete office equipment, laboratory microscope, first class office outfit; all American town; can give possession at once; reason for selling other business interests require all my time; \$1,200 cash for quick sale. Add. 2207 N, % AMA.

FOR SALE—NEW YORK—GENERAL practice of 25 years; wonderful opportunity; town of 5,000; Greater New York; \$10,000 cash annually; only two other physicians; use auto year 'round; wonderful roads; beautiful place; hospital and other appointments; practice and equipment \$2,000; rent of office reasonable. Add. R. E. M., No. 183, Tottenville, N. Y.

FOR SALE—EASTERN NORTH CAROLINA established practice; \$8,000 yearly; \$10,000 easily if able to do eye work; one other physician; large rich territory; use car year 'round; small town; good schools and churches; collections good; practically no night work; fine office, furniture, equipment, complete line drugs, garage and car easily worth \$5,000; will sacrifice all for \$2,500 cash; refilling own prescriptions amounts to over \$1,500 yearly; chance of lifetime for man young or old; made fortune in few years; going to specialize and move to city; will introduce and turn over practice and appointments free. Add. 2215 N, % AMA.

FOR SALE—ON ACCOUNT OF DEATH, equipment and lease; Cleveland, Ohio; excellent opportunity for eye specialist; location in building occupied exclusively by physicians and dentists. Add. Dr. D. W. Peterson, 15701 Detroit Ave., Cleveland, Ohio.

FOR SALE—CENTRAL PENNSYLVANIA—Will sell complete and modern office equipment, including drugs, instruments, furniture and library recently purchased; \$5,500 cash my first year; best location in town of 5,000; 2½ miles from large city; available at once; can make money from start; office, etc., subject to rent; am leaving to specialize. Add. 2063 N, % AMA.



Color chart, with 150 test papers, in book form.

"Makes hemoglobin estimation as easy as feeling the pulse."—(Cabot.)

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They bear the maker's name

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FOR SALE—BY DOCTOR; DRUG STORE, soda fountain, office, practice and other profit bearing properties, in one of best small South Dakota towns, 300 population, large territory; no other store or doctor; just the place for physician-druggist or both; good churches, accredited high school, good roads and two "highways"; sales last year \$18,000; small overhead; practice \$5,000; collections good; do not reply unless you have at least \$10,000 to invest; good reasons for selling. Add. 2249 N, % AMA.

FOR SALE—CENTRAL SOUTH DAKOTA—Large equipment, good as new, in county seat, 1,200 population; business runs \$10,000 to \$15,000 yearly; all modern conveniences; good roads, schools, churches, lodges, hospital; excellent opportunity for surgery as well as general practice; leaving state to specialize; must sell equipment at once; equipment alone worth \$10,000; write for particulars. Add. 2072 N, % AMA.

FOR SALE—VIRGINIA—WELL-ESTABLISHED \$6,000 country practice; small village; collections good; use car all year; splendid large surrounding territory; no other physician; opening for drug store; 8-room dwelling; garage, nice lawn; vegetable garden; price for home and practice, \$4,800; \$3,500 cash; balance terms. Add. 2164 N, % AMA.

FOR SALE—SOUTHERN WASHINGTON—\$11,000 practice, long established, in town of about 2,000; good climate, large territory, splendid community; best of schools, churches, homes and railroad facilities, etc.; several appointments; price, \$3,500 cash; value of office equipment, \$2,500. Add. 2102 N, % AMA.

FOR SALE—PRACTICE IN STATE OF Washington, town of 20,000; splendid opportunity for Swedish or Finnish physician; no competition for such; also good for Catholic; \$1,000 buys complete outfit; reason, going to specialize. Add. 2153 N, % AMA.

FOR SALE—ONE OF THE BEST UN-opposed practices in Wisconsin; village of 800; on two highways and railroad; rich country; good roads; good prices and all kinds of work; sure money maker from start; good residence with suite of office rooms, practice, drugs, etc.; garage, tennis court and large garden, all at bargain; dandy opportunity. Add. 2222 N, % AMA.

FOR SALE—\$7,000 CASH PRACTICE TOGETHER with clinic building and home in city of 5,000 in central Wisconsin; ideal clinic building, a home and x-ray machine all for \$13,000; don't write unless you have the money. Add. 2244 N, % AMA.

FOR SALE—WISCONSIN—\$8,000 PRACTICE; village of 1,500; rich dairy community; good schools; 3 churches; railroad and liability appointments transferred; office equipment, practice and large stock drugs; price, \$1,500; residence optional. Add. 2199 N, % AMA.

FOR SALE—WISCONSIN—\$15,000 PRACTICE in growing industrial town of 25,000; drugs and equipment will invoice about \$2,500; books open to inspection; one of the best propositions in the state; am going to retire; price, \$3,000. Add. 2165 N, % AMA.

EDUCATIONAL

INTENSIVE POSTGRADUATE WORK IN actual surgery. If your time is really valuable and you wish to make the most of postgraduate training in surgery, get details regarding the Institute of Surgery. Actual operations are performed on living animal tissue. See advertisement, page 27, this Journal.

(Continued on page 34)



The X-ray Outfit— For You

HERE is real 1921 value in X-ray equipment. Here is an outfit with which you may do all kinds of radiographic work in a simple, sane, and certain manner. Here is a machine whose price reflects quantity purchasing power, satisfied workmen, and efficient design.

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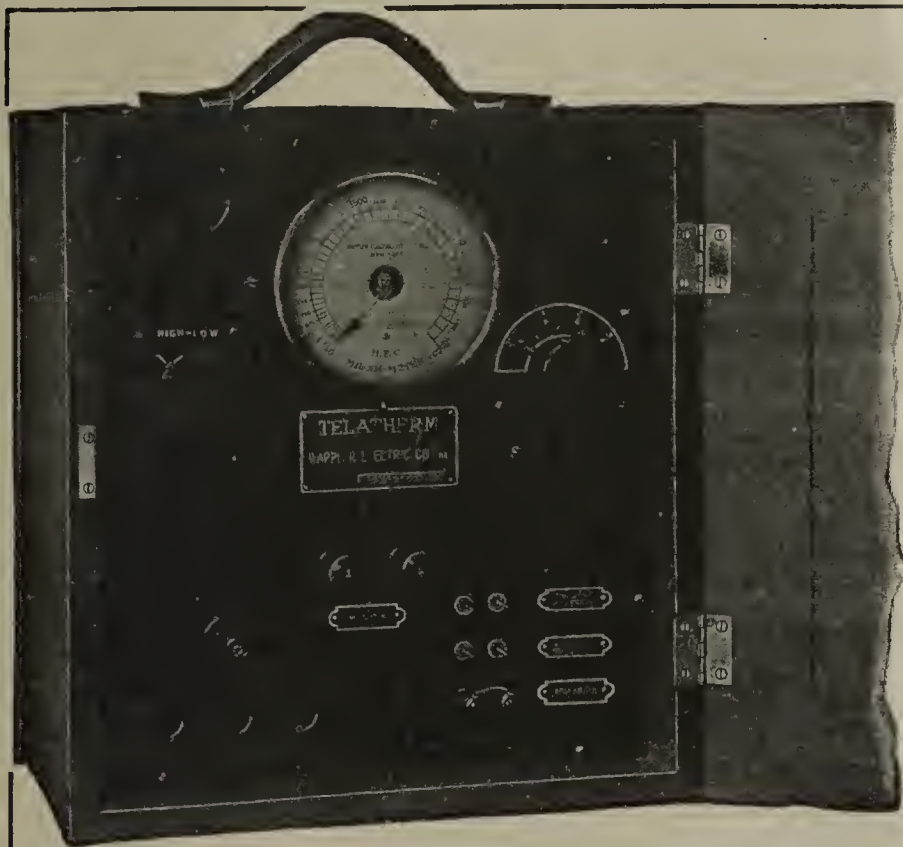
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The Wappler line of High Frequency Apparatus is complete—and has a reputation of "Twenty-Three Years of Satisfied Users." Bulletin No. 80 and Catalog Section C-1 describe the Portable Telatherm, Telatherm, Excell and their accessories. Send for them NOW.

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Show Rooms
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(Continued from page 32)

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FOR RENT OR SALE—IDEAL LOCATION for sanatorium, attractive homestead, 16 rooms, 6 open fireplaces, 3 baths, all modern conveniences, choice water, four acres high ground, spacious lawn, shade; near railroad, trolley, macadam highway, schools, churches, etc.; for particulars and photographs address owner, C. M. Taylor, Jr., 260 South Fifteenth Street, Philadelphia, Pa. O

FOR SALE—FINELY LOCATED SANATORIUM in Wisconsin; 1½ hours out of Chicago; express service C. & N. W. Ry.; old established business with splendid possibilities; 40 acres overlooking lake; present capacity 45 beds; 20 additional beds can be added by finishing two unoccupied floors of main brick building; general terms reasonable, but initial payment of \$12,000 necessary. Add. Wm. H. Brown, 6945 Seward Ave., Chicago.

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ALBUQUERQUE FOR THE TUBERCULOUS offers advantages not to be overlooked. It is a city of sufficient commercial importance to have excellent markets and good transportation. The Albuquerque Sanatorium is located one and one-half miles from the city and offers all the modern conveniences and accommodations of a metropolitan institution. Booklet A will give full details. See page 43, this Journal. PP

HAVE YOU A CHRONIC RHEUMATISM patient who has never had the full and complete advantages of treatment in a large, specializing institution? If so, the facilities of the Glen Springs may be of interest to you. Illustrated and detailed booklets will be gladly sent on request. See page 45, this Journal. PP

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CONSULTATION WITH DOCTORS, building committees and hospital superintendents upon planning construction. Equipment and operation of institutions for the care of the sick. Oliver H. Bartine, Hospital Consultant, formerly Superintendent of Hospitals in New York City, 152 Lexington Ave., New York City.

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FOR SALE—CHICAGO—COMPLETELY equipped and well established x-ray laboratory; doing good business; valuable lease; fine opportunity for some live physician. Add. 2205, % AMA.

FOR RENT

FOR RENT—CHICAGO—COMPLETE OFFICE, furnished for a physician, in Reliance Bldg. Add. 2223 Q, % AMA.

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AN AID IN DIAGNOSIS OF NEPHRITIS. A very complete and convenient classification chart for nephritic cases has been prepared by Dr. J. C. Bryant. It may be ordered direct. See announcement, page 22, this Journal. GG

"EDICION EN ESPAÑOL DEL JOURNAL of the American Medical Association." Si habla o lee Ud. el español, y desea conocer esta publicación quincenal, pida un número de muestra de la "Edición en Español del Journal," y con gusto se lo enviaremos libre de porte a su dirección. American Medical Association, 535 North Dearborn St., Chicago. GG

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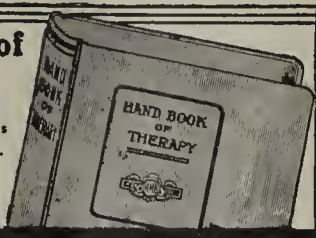
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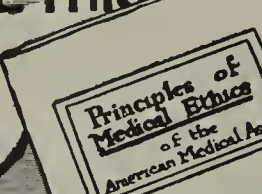
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NOW AVAILABLE. A REMINGTON PORTABLE Typewriter. An ideal machine for physician's use as it has a medical key-board and is adapted to typing case records, prescriptions, bills and all kinds of correspondence. Should you like to have full information regarding the service of this machine, return coupon attached to announcement on page 35, this Journal. RR

MISCELLANEOUS

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IS THIS YOUR "PET PEEVE"?—TO FIND that the hot water bottle has sprung a leak, or that when you want it most, no hot water is available. All this is avoided by the habit of using for hot applications the "Bag-o-Heat." It develops 170° of heat by the simple addition of an ounce of cold water. Performs all the functions of a hot water bottle and many others in addition. Why not order a Bag-o-Heat and sidestep the inevitable hot water bottle troubles. Full details on page 30, this Journal. KK

ATTRACTIVE PRICE ON INSTRUMENTS for thirty days. A wide range of instruments of everyday usefulness is featured in the Betz announcement on page 21, this Journal. Prices quoted hold for thirty days only. Now is the time to order. KK

THE NEW OBSTETRICAL SHOE HORN illustrated and described in the Huston Brothers Company announcement, page 37, this Journal, should be a part of the kit of every general practitioner or obstetrician. Place your order today before you forget where this useful article may be obtained. KK

A NEW X-RAY CATALOGUE HAS JUST been issued by the H. G. Fischer Company. It illustrates and describes in detail the Fischer apparatus and ought to be given careful consideration if you are thinking of installing x-ray equipment. Send for copy by using coupon attached to announcement, page 33, this Journal. KK

HEPCO FLOUR FOR THE DIABETIC makes many delicious and sustaining foods. Being practically starch-free, it admits of generous use. If you have a diabetic patient wishing for variation of diet, send today for physician's free sample of Hepco. See announcement, page 30, this Journal. KK

SCHOOL CHILDREN AND DIPHTHERIA. Outbreaks of diphtheria among schoolchildren could be practically abolished by universal use of the Schick Test to determine susceptibility and injections of Toxin Antitoxin for establishing immunity. Investigations have shown that the Toxin Antitoxin Mixture confers an immunity of at least several years' duration. Experience may show the immunity to be permanent. Interesting particulars regarding the Schick Test and action of Toxin Antitoxin may be had from Lederle Antitoxin Laboratories; see announcement, page 19, this Journal. KK



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KRYPTOK LENSES are the attainment of modern eye-glass efficiency for near and far vision. In comfort and convenience, in improving the wearer's appearance, in conserving the sight, KRYPTOKS are a revelation to every one who has been accustomed to wear two pairs of glasses—reading glasses or other style bifocals.

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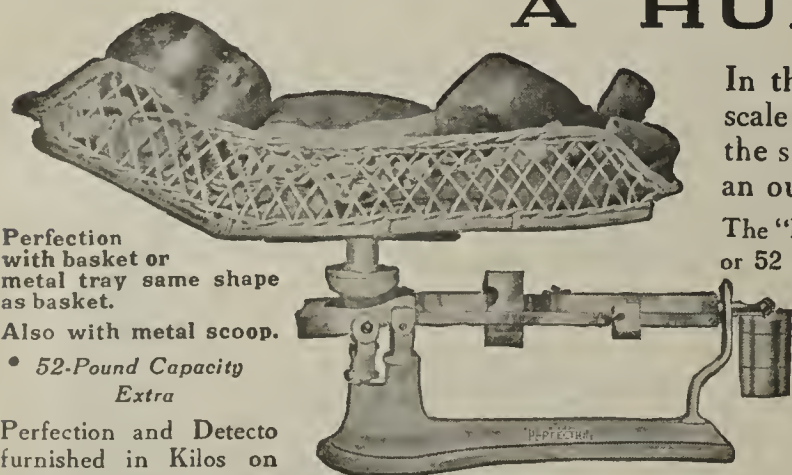
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Then write to us, or sign and mail this coupon, and we will send our illustrated "Your Ever Handy Helper" which tells you how to lighten all your writing tasks.

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Also with metal scoop.

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The "Perfection" registers every $\frac{1}{4}$ of an ounce up to 37 pounds or 52 pounds (52 pounds on request only). The simple construction and the fact that it has no springs give you permanent accuracy, durability and compactness. A few important users of the "Perfection": Post-Graduate Hospital of New York; Columbia Hospital of Washington, D. C.; American Hospital of Chicago, Ill.

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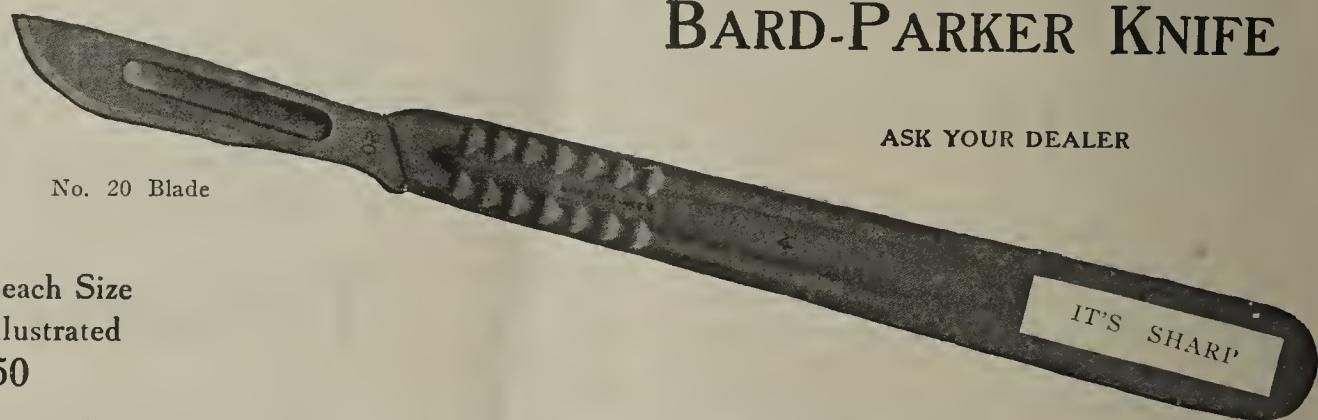
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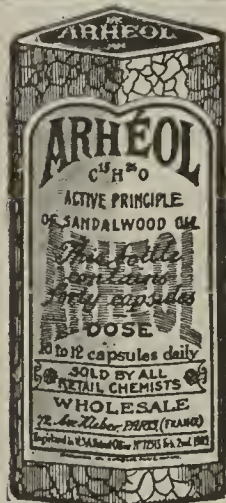
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In cases where the foetal head presses against the Symphysis pubes instead of emerging directly toward the birth canal, this instrument will be found worth its weight in gold. The head of the foetus may be readily deflected towards the canal. Eliminates hours of suffering and danger. Price, \$5.00.

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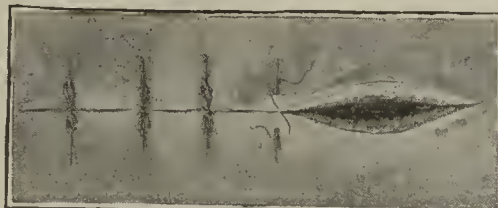


The New Huston's Akouophone (Jan. Patent)

A new stethoscopic principle enables you to detect subcrepitant and sibilant rales, feeble cardiac and haemic murmurs, ventricular lesions, acute pericarditis, etc. The contrast in sounds that Huston's Akouophone gives you makes sure of their pathologic character and clinches your diagnosis. Gives the normal sound, also the accentuated sound, also graduates all sounds as you wish. Price, \$4.75.

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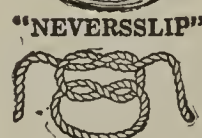
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9:30—10:30	Refraction Clinic	Refraction Clinic	Refraction Clinic		Refraction Clinic	
11—12	Ocular Therapeutics	Laboratory Demonstrations of Eye Specimens	Laboratory	Laboratory	Laboratory	
1:30—2:30	Didactic Lecture Diseases of Lid, Conjunctiva, Lens, Cornea, Sclera, Lach, App., Orbit	Ophth. Quiz	Operative Course 1:30—3	Ophth. Quiz.	Didactic Lecture Diseases of Uveal Tract, Vitreous, Retina, Optic Nerve and Glaucoma	Quiz Motor Anomalies
2:30—3:30	Industrial Ophthalmology	Practical Ophthalmoscopy		Practical Ophthalmoscopy	Neurology of the Eye	Didactic Lecture Embryology Anatomy Physiology
3:30—4:30	Clinical Exam. and Treatment of Patients, Eye Operations	Clinical Exam. and Treatment of Patients, Eye Operations	Clinical Exam. and Treatment of Patients, Eye Operations	Clinical Exam. and Treatment of Patients, Eye Operations	Clinical Exam. and Treatment of Patients, Eye Operations	Clinical Exam. and Treatment of Patients, Eye Operations

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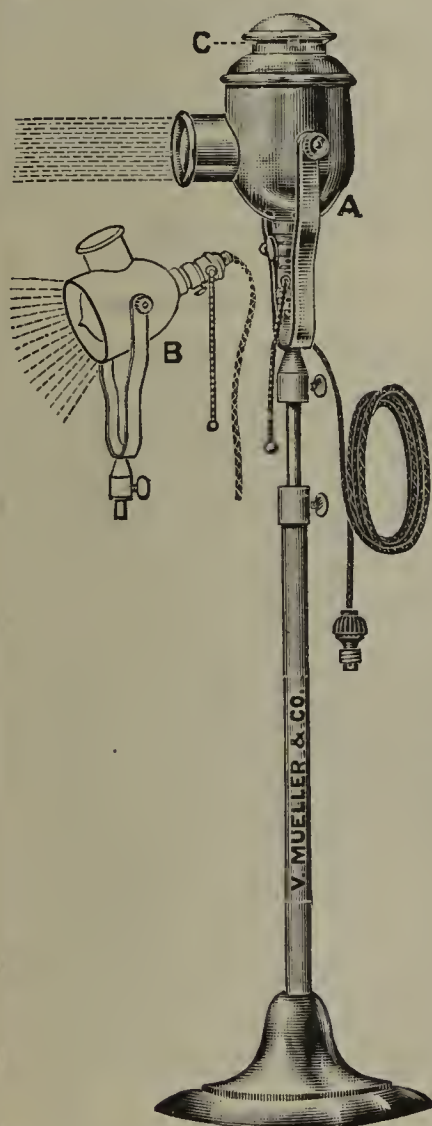
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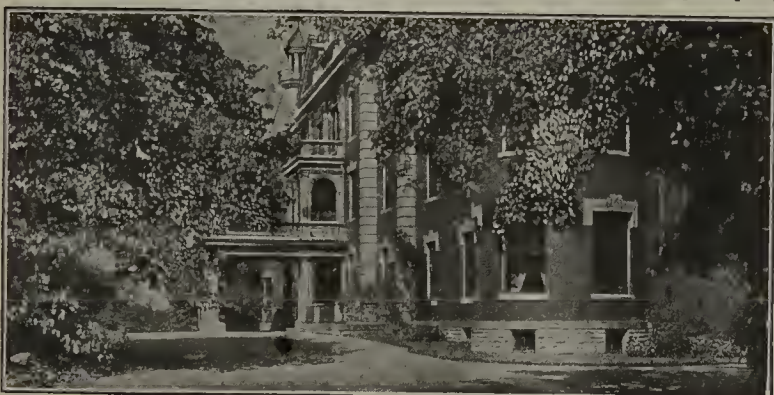
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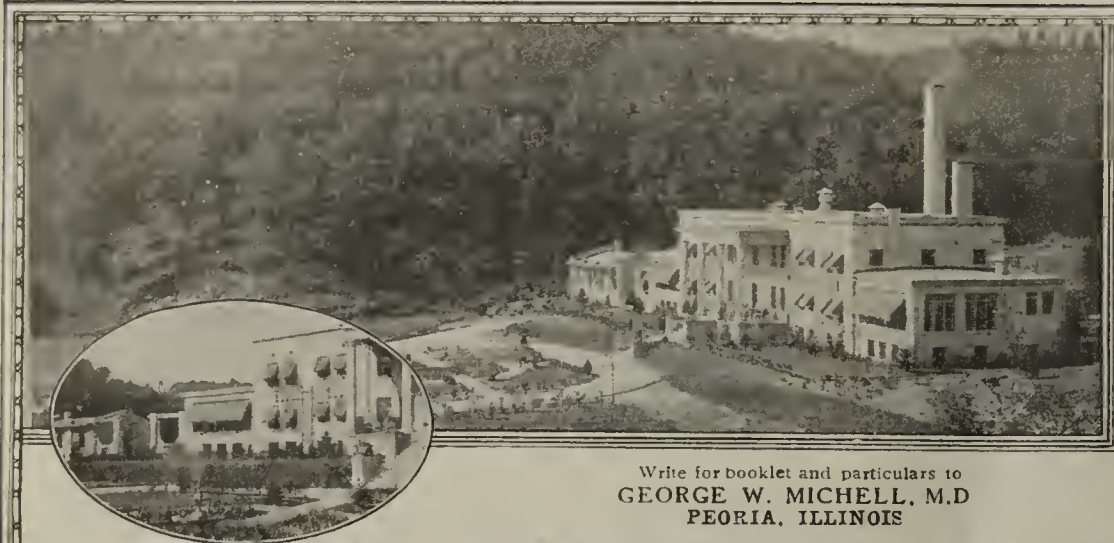
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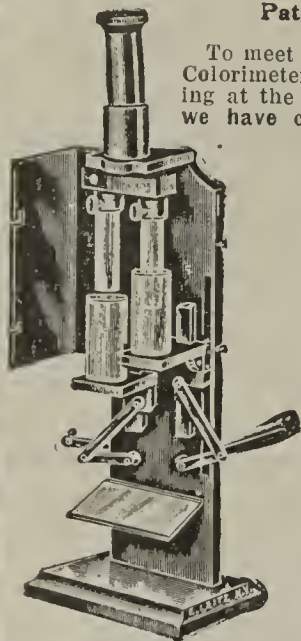
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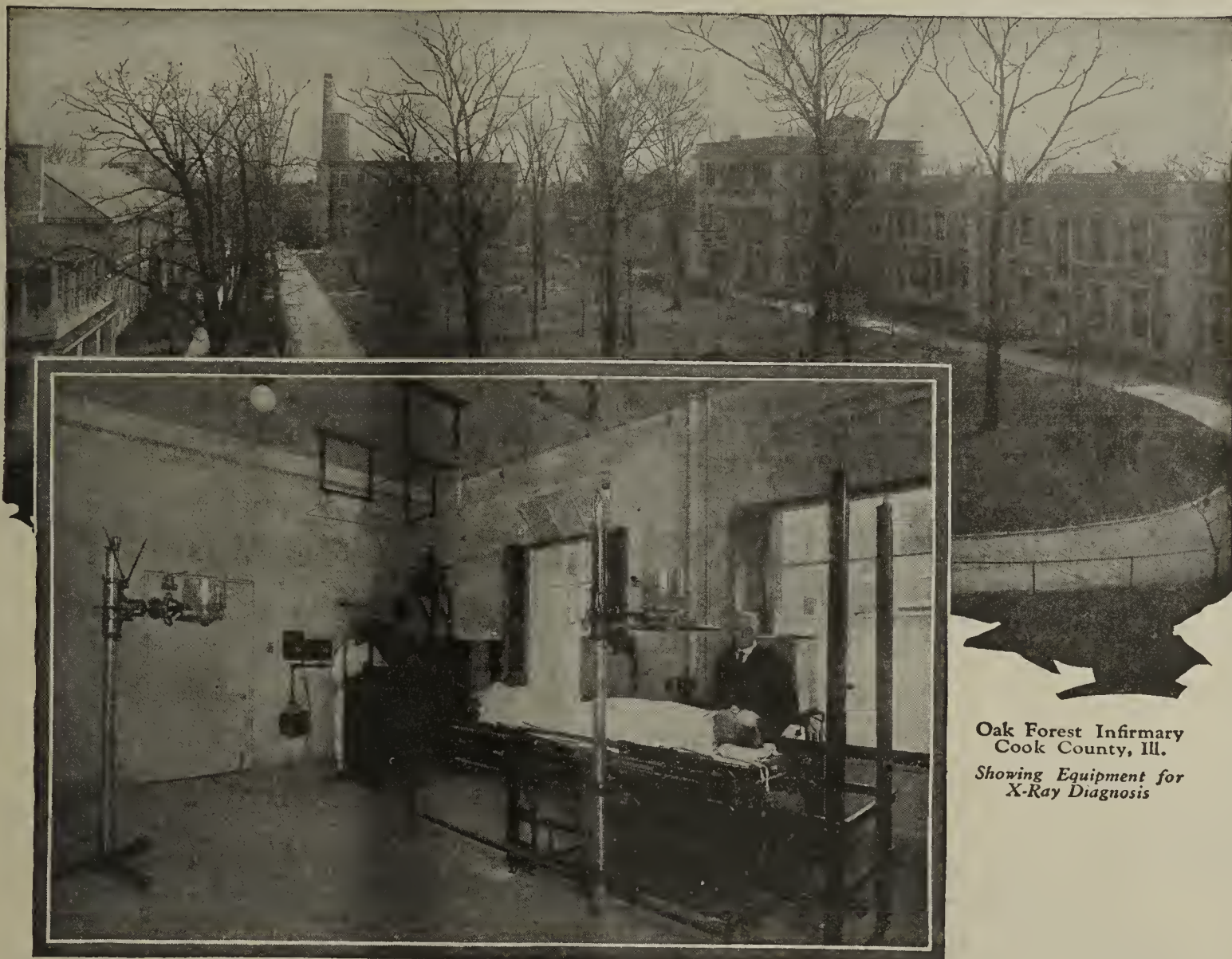
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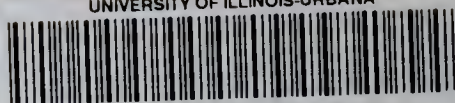
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